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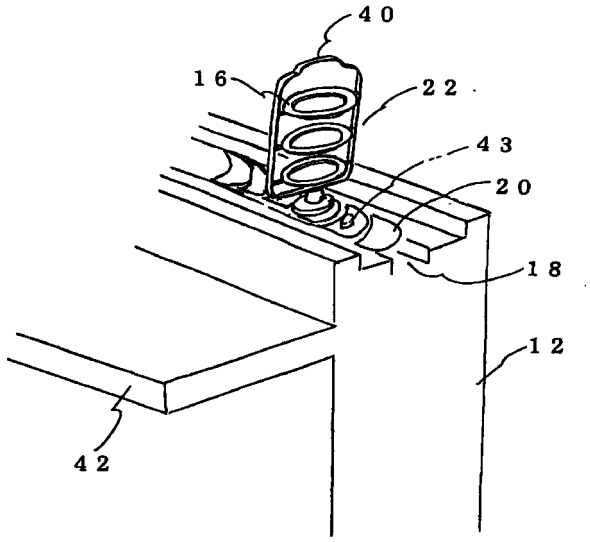
(54) METHOD OF PROVIDING FOODS ON ROTARY FOOD TABLE AND APPARATUS THEREFOR

(57) Methods of and apparatus for offering merchandise food items and/or such food items kept warm in a top area of a base stand in a rotary catering table system that conveys the food items around a looped conveyance path.

The features which characterize these methods and apparatus include using a merchandise item offering means (22) provided with a plurality of merchandise item loadable plate accepting portions (26), permitting servable merchandise items (14) to be conveyed around a common conveyance loop (44), in both an upper and a lower tier, supplying a given number of merchandise loaded plates (16) onto a crescent chain conveyer (18), allowing broiled or fried, or steamed food items, noodles (118) or a rice gruel (132) to be served with the aid of a water container (92) and a merchandise item loadable receptacle (96, 106), a noodle receptacle (10) or a rice gruel dish receptacle (134), and when a table at an outer peripheral area of the base stand (12) is to be shared by separate parties seating face to face, bisecting the top surface (212) of the table.

Fig. 1



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Description

Technical Field

[0001] The present invention relates to methods of and apparatus for offering servable merchandise items, e. g., "sushi" items (vinegared rice with fish and vegetables in the form of rolls, slices, oval-shaped and others), in a rotary catering table system having a crescent chain conveyer disposed in a top area of a base stand for conveying such servable merchandise items round along a looped path of conveyance, the system also possibly having a heater disposed at a suitable site in or on the crescent chain conveyer and connected to a power supply.

Background Art

[0002] For rotary catering table systems of the type described, their majority has hitherto had a single rotary conveyer path provided by a single crescent chain conveyer, i. e., a single chain of crescent shaped plates, turning round along a loop in a given plane. In such a conveyer system, sushi items individually placed on merchandise item plates as customary servable merchandise items have been offered by placing those merchandise item plates on such chain conveyer unit plates and thus offered individually but in one plane.

[0003] This has resulted in a limited number of merchandise food item dishes that can be offered, food items servable placed on food plates, the number being limited by the total length of a single looped path of conveyance. If it is desired to offer a greater number of merchandise food item dishes conveyed around the loop, it becomes necessary to form a looped path of conveyance that is longer in its total length, inconveniently with a high cost of additional investment in equipment or facilities forced.

[0004] It has also been of inconvenience that a guest must look over merchandise food items being offered and moving around and arriving in a single plane to choose ones and may feel it hard to choose.

[0005] There has been proposed a modified system designed to offer a larger number of servable merchandise items in which two separate crescent chain conveyers are used and arranged along an outer and an inner loop, each on a single common plane and in an upper and a lower tier, respectively.

[0006] Using two looped crescent chain conveyers arranged in upper and lower ties, however, not only requires a wider space of installment but also merely allows merchandise food items to be conveyed round individually along the inner and outer loops on the respective crescent chain conveyers. Thus, transferring food items from the inner loop to the outer loop or vice versa necessitates a person to do so.

[0007] Also in such a system, whilst one of the inner and outer crescent chain conveyers can be disabled to convey to allow only the other one to continue conveying in a time zone in which guests are of a reduced number, the crescent chain conveyer that has ceased conveying may then in a state in which it was installed be found inconveniently to be an eyesore or obstacle to guests in choosing or a service worker in service with one or more guests. This has become a problem.

[0008] It may also be mentioned that there has been no rotary catering table system whatsoever in which the looped path of conveyance formed by a crescent chain conveyers or each or either of two crescent chain conveyers arranged in upper and lower tires is liftable to move up and down.

[0009] Mention may also be made of certain systems for supplying servable merchandise items onto the crescent chain conveyer as disclosed in our earlier filed Japanese Utility Model Applications that issued into Japanese Utility Mode Registrations: No. 1991091 (published as JP U 5-3097 B) and No. 2133809 (published as JP U 5-3093098 B).

[0010] The former of those earlier applications discloses an arrangement in which an unloaded plate conveying apparatus is provided in a food item preparing area and in a direct communication with a crescent chain conveyer at an outer peripheral area of a rotary catering table system. A hand-pressed/shaped sushi making machine is disposed orthogonal to the unloaded plate conveying apparatus, and a sushi conveying apparatus is provided between the two. A sensor is provided for sensing absence of a merchandise food item at a position on the crescent chain conveyer that is somewhat behind the direct communication area of the unloaded plate conveying apparatus in a conveying direction of the crescent chain conveyer, and is operatively connected to the unloaded plate conveying apparatus and the sushi conveying apparatus.

[0011] The latter of those earlier applications discloses an arrangement in which an unloaded plate conveying apparatus is provided in a food item preparing area and in a direct communication with a crescent chain conveyer at an outer peripheral area of a rotary catering table system. A sensor is provided for sensing absence of a merchandise food item at a position on the crescent chain conveyer that is somewhat behind the direct communication area of the unloaded plate conveying apparatus in a conveying direction of the crescent chain conveyer, and is operatively connected to the unloaded plate conveying apparatus.

[0012] In these arrangements having the apparatus disposed in the merchandise food item preparing area and designed to automatically supply one or more merchandise food item loaded plates into a location where any merchandise food item loaded plate is absent, on the crescent chain conveyer, it should be apparent that whilst guests seated closer to the merchandise food item supply (preparation) area is always able to make their choice from a large number and a good variety of merchandise food item plates furnished and to enjoy

eating and drinking, guests with their seats remote from the merchandise food item supply area have no alternative but to choose from a reduced number and variety of food item plates and, in case no plate is arriving, they must order direct from a service worker working in the working space of the central area, and would likely miss enjoying their dinner or luncheon. This has become a problem.

[0013] It should also be noted that this problem would become even more serious, especially in case the looped path of conveyance formed by the crescent chain conveyer is in the form of character "I" with no working space at all in the central area.

[0014] Also in both the former and latter systems in which merchandise food item plates are conveyed by a single conveying mechanism such as a sole conveyer, merchandise food item plates can be loaded onto the crescent chain conveyer without difficulty if loaded each at a time. But, should several of them be loaded at a time, a service worker or attendant must have disposed those closely in advance. Such a requirement as being bothersome to meet has become a problem, too.

[0015] There is also a rotary catering table system in which prepared servable merchandise items are offered in a state in which they are kept warm as described in our earlier filed Japanese Utility Model application that issued into Registration No. 1874834 (published as JP U 2-8890 B).

[0016] In that system, a heated warming iron plate is fitted on a preselected plate (crescent shaped) of a crescent chain conveyer and prepared servable merchandise items that need to be kept warm are offered as loaded direct on such conveyer plates.

[0017] This arrangement permits such servable merchandise items as a bottle of coffer or tea to be so served but, if applied to a "yakimono" dish (broiled or fried food) such as "gyoza" (fried dumpling stuffed with minced pork) or a "mushimono" dish (steamed food) such as "shumai" [shao-mai] (steamed dumpling stuffed with minced pork), has been found unsuitable for use to offer, because there is no choice but to serve such a food item accepted receptacle as loaded direct on the heated warming iron plate, and then the receptacle direct in contact with the heated warming iron plate is becoming so hot that it cannot be held by hand. This limitation of food items servable has become a problem.

[0018] Also, such receptacles are mainly made of a plastic or ceramic wares and after use must be washed. They may often be re-served as they remain insufficiently washed, causing a problem of insanitation.

[0019] Also, such servable merchandise items as "sashimi" (slices of raw fish) have been offered by setting them on a ceramic plate and placing the latter on a counter.

[0020] Consequently, no attention has hitherto been paid to keep such servable merchandise items fresh.

[0021] Also, no consideration has hitherto been given to provide a partition for a table arranged outwards to adjoin the looped rotary catering conveyer, and different parties seated face to face across a common table are used to eat and drink as they are face to face.

[0022] As a consequence, different parties so seated not only may feel uneasy about eyes of their vis-à-vis, but may very well get desire much diminished to eat and drink when one has the picture coming into sight, of a vis-à-vis eating a food item distasteful to the one and, even more distasteful, especially when a preschool child of the vis-à-vis party is seen spilling what it is eating or drinking. This situation has become a problem, too.

[0023] Also, when the table surface has been occupied wider by the party seated earlier, the later seated party would have a reduced space for eating and drinking, and would be unable to eat and drink with comfort. This inconvenience has become a problem, too.

[0024] In a restaurant or cookhouse having a rotary catering table system installed, it has been the common practice to ask guests to serve themselves for tea or like beverages. To this end, the restaurant provides a receptacle storing tea-bags for green tea, oolong [oulong] tea and so forth, and a cup filler, a valve operated hot water feed mechanism. Thus, a guest takes a tea-bag from the tea-bag receptacle and puts it into a teacup. Then, he or she pushes with the teacup the valve of the hot water feed mechanism to receive an amount of hot water into the teacup through the hot water feeding inlet of the feed mechanism. In this way, guests have been allowed to take tea or like beverage as they want with no charge.

[0025] Consequently, it has become a problem that unrestricted supply of expensive tea-bags and hot water may invite their excessive amounts of consumption and hence lead to a serving cost to excess.

[0026] Also, the hot water feed mechanism in which pushing the valve body causes hot water automatically to come out at any time and may invite a preschool child accidentally to push the valve and may get scalded in hand. The use of such a mechanism and practice has become a problem, too.

[0027] Also, in a restaurant or cookhouse having a rotary catering table system installed, the method of merchandising includes offering different sushi items as different servable merchandise items upon placing them on plates that are respectively differentiated in color or pattern. A charge to a given individual or party guest for merchandise sushi items eaten is calculated by a service worker checking plates piled up on a portion of the counter in front of the guest as regards their types (colors and/or patterns) for sushi items consumed and their respective numbers. A bill for the charge is submitted to the guest who pays it at the cashier where amounts paid by guests are aggregated to manage sales or merchandising of the restaurant or cookhouse.

[0028] Also, restaurants or cookhouses having a rotary catering table system of this type installed adopts

a form of business that allows guests seated around the rotary catering table system to pick out merchandise food item plates furnished onto, and conveyed round and arriving on, a single crescent chain conveyer or two such conveyers tiered up and down and to receive them on the counter. The plates or dishes consumed are later paid for at the cashier as mentioned above.

[0029] Consequently, the counter arranged to lie encircling the rotary catering table must have its area taken widely. As a result, not only does the equipment become large in size, but the space for dining tends to be limited in the rush hours, or in dinner and luncheon time. In such time zones, it is often the case that guests waiting for their turns stand in a row lining as long as just behind the dining seats. Confused enough, a guest is unable to dine as relaxed.

[0030] Further, in the recent years "fast food" restaurants or cookhouses have become increasingly popular mainly with people in the young generation as guests. In such facilities, chosen merchandise food items or dishes are first ordered and paid for by a guest against the dishes supplied. The guest may then put the dishes "bought" on a tray and take a seat the person likes in the facilities to take the dishes with freedom. There are ardent wishes that such systems be introduced into Japanese restaurants offering sushis and the like, and Chinese restaurants serving teas and others.

[0031] Accordingly, in order to resolve such problems and inconveniences met in the prior art as mentioned above, the present invention is aimed to provide a method of and an apparatus for offering servable merchandise items in a rotary catering table system, that is, what:

allows a greater number of servable merchandise items to be offered on a single rotary path of conveyance whilst facilitating guests' selection of merchandise items being offered;

allows the system to be installed in a restaurant or cookhouse which is small in space, and permits a portion thereof to descend in a time zone in which guests are of a reduced number so that it may then not be an eyesore;

facilitates supply of servable merchandise items onto a merchandise item plate conveyer, and provides an ability enough to furnish servable merchandise items to guests as well who are seated on the side opposite to their supply side;

using throwaway receptacles which after service make washing superfluous, enables yakimonos and mushimonos to be offered in such a fresh state as it was prepared;

is capable of offering a noodle and a rice gruel dish in such a fresh state as it was prepared whilst dish ingredients and spices or condiments are served in a fresh state;

makes it possible to effect extremely easy switching between ordinary (cold) and warm merchandise food items offered, gives no hindrance to serve ordinary food items, allows a heater part to be repaired easily;

without standing a guest up for long, enables merchandise food item sales to be registered easily on a real time basis, and are thus extremely effective for introducing the fast-food service facilities' system in which a charge for merchandise food items to be eaten is paid for in advance;

by lowering a rotary path of conveyance in a time zone in which guests are of a reduced number, may then make the same or a portion thereof no longer be an eyesore;

allows separate parties seated face to face across a common table each to eat and drink comfortably;

allows reducing the cost in conjunction with offering tea and the like beverage; or

allows computing the classified total of charges for servable merchandise items offered and consumed each time one is consumed whilst permitting use of tableware large in size.

Disclosure of the Invention

[0032] The present invention resides in a rotary catering table system having a crescent chain conveyer for conveying servable merchandise items around a loop wherein the invention is characterized:

that the system is provided with a merchandise food item offering means that includes a frame and a plurality of merchandise food item loaded plate accepting portions established in a like plurality of tiers in the frame, respectively; merchandise food item loadable plates are loaded respectively with servable merchandise items; the merchandise food item loaded plates are placed on their respective plate accepting portions in the merchandise food item offering means; and the merchandise food item offering means with the plates so placed therein is positioned on a conveyer plate of the crescent chain conveyer, thereby permitting a number of such servable merchandise items to be offered together at a time, or alternatively

that the crescent chain conveyer is configured so as to provide in the said system a looped conveyer path that comprises a first conveyer path for conveyance from one side to a side opposite thereto, a second conveyer path disposed above the first conveyer path parallel thereto for conveyance from the opposite side to the one side and a pair of third conveyer paths which are each so inclined and run as to join the respective ends of the first and second conveyer paths and together at the one and opposite sides, respectively, so that merchandise food items may be conveyed round along the single looped conveyer path, in two tiers, upper and lower,

or alternatively

that the system is provided with a merchandise food item plate replenishment conveyer means that has one side communicating direct with the crescent chain conveyer from an inside thereof and a plurality of subdivided conveyer sections closer to the direct communicating side which are adapted to be individually driven; on the replenishment conveyer means there are loaded merchandise food item loaded plates and a succeeding merchandise food item loaded plate for standby in sequence; and in response to sensing of absence of a merchandise food item loaded plate on the crescent chain conveyer by a sensor arranged behind a position on the crescent chain conveyer of the direct communicating side of the replenishment conveyer means in a direction of movement of the crescent chain conveyer, there are fed a given number of the merchandise food item loaded plates from the replenishment conveyer means onto the crescent chain conveyer whilst the succeeding merchandise food item loaded plate on the replenishment conveyer means is transferred onto a section thereof towards the crescent chain conveyer for standby thereon, or alternatively

that a water container loaded with cold or hot water is placed on or over the heater; a paper made setting board is disposed inside of a paper made cylindrical body of a merchandise food item receptacle having a portion notched or incision made upwards from its lower rim that serves for such receptacles to be stacked one upon another; a "yakimono" (grilled or fried food) dish such as a piece or pieces of "gyoza" (fried dumpling stuffed with minced pork) is put in the merchandise food item receptacle; a plurality of such merchandise food item receptacles with "yakimono" dishes respectively placed therein are stacked one upon another with the aid of the notched portions and the receptacles so stacked are placed on or over the water container; the heater is actuated to vaporize water in the water container into a food item warming vapor for emanation into the merchandise food item receptacles; and the "yakimono" dishes in the merchandise food item receptacles are served in a state in which they are kept warm by the said warming vapor, or alternatively

that the paper made setting board of a said merchandise food item receptacle is formed with a number of small holes or orifices; a "mushimono" (steamed food) dish such as pieces of "shumai" [shao-mai] (steamed dumpling stuffed with minced pork) is put on the paper made setting board with the small holes or orifices in the merchandise food item receptacle; a plurality of such merchandise food item receptacles with "mushimono" dishes respectively placed therein are stacked one upon another with the aid of the notched portions or incisions and are then placed on the water container; and the heater are actuated to vaporize water in the water container into the food item warming and steaming vapor for emanation into the merchandise food item receptacles so that the "mushimono" dishes in the merchandise food item receptacles may be served in a state in which they are kept warm and steamed by the said warming vapor, or alternatively

that a water container loaded with cold or hot water is placed on or over the heater; on or over the water container there is placed a noodle dish receptacle that comprises a first receptacle member in which a soup is admitted and a second receptacle member placed on or over the first receptacle member and accepting noodles; and the heater is actuated to vaporize water in the water container into a food item warming vapor for emanation into the noodle dish receptacle and thereby rendering a noodle dish servable with the soup and the noodles in the noodle dish receptacles in a state in which they are kept warm by the said warming vapor, or alternatively

that on or over the second receptacle member there is placed a third receptacle member that accepts masses of noodle dish ingredients and spices or condiments, thereby permitting these ingredients and spices or condiments to be served separately of the soup and noodles and thus in a fresh state whilst substantially preventing vaporization of the water content of the noodles, or alternatively

that a water container loaded with cold or hot water is placed on or over the heater; on or over the water container there is placed a rice gruel dish receptacle that comprises a first receptacle member in which a rice gruel of a rice gruel dish is admitted and a second receptacle member placed on or over the first receptacle member and accepting masses of rice gruel dish ingredients and spices or condiments; and the heater is actuated to vaporize water in the water container into a food item warming vapor for emanation into the rice gruel dish receptacle and thereby rendering the rice gruel dish servable with the rice gruel in the rice gruel dish receptacle in a state in which it is kept warm by the said warming vapor, or alternatively

that the heater is constituted with a crescent plate of a crescent chain conveyer and a heater portion removably fitted to that crescent plate; and the heater portion is mounted onto the said plate connected to the power supply and a warm merchandise item is placed on or over the heater portion so that the warm merchandise item is kept warmed by the heater portion that emanates a heat, selectively when the said warm merchandise item is being offered, or alternatively

that a merchandise item loaded plate mounting

base is provided on which a plurality of merchandise item dishes of a given type of food items are stackable one upon another as a stack thereof, the base having an ID medium appended thereto and being affixed onto the crescent chain conveyer, there being provided a plurality of such bases with such stacks of merchandise item dishes of different types of food items mountable thereon, respectively; a first sensor means is disposed in a supply side of the merchandise item dishes for counting, for each of the different types of food items, a number of the merchandise item dishes supplied and for identifying the ID medium therefor; a second sensor means is disposed in a recovery side of the merchandise item dishes for counting, for each of the different types of food items, a number of the merchandise item dishes recovered and for identifying the ID medium therefor; a computer is used to store, for each of the different types of food items, the first sensor means counted number of the supplied merchandise item dishes as a supply side merchandise item dish count data and the first sensor means identified ID media therefor as a supply side ID medium data and to store, for each of the different types of food items, the second sensor means counted numbers of the recovered merchandise item dishes as a recovery side merchandise item dish count data and the second sensor means identified ID medium therefor as a recovery side ID medium data, and to collate, for each of the different types of food items, the said recovery side ID medium data and merchandise item dish count data with said supply side ID medium data and merchandise item dish count data and to count a number of merchandise item dishes consumed between the supply and recovery sides for each of the different types of food items, thereby computing charges and an amount of sales therefor and then recording and displaying a sales status of servable merchandise items for each of the different types, or alternatively

that the crescent chain conveyer is carried on a looped conveyer track, which is made vertically movable in a manner such that in a time zone in which guests are of a reduced number, it may be brought down and held to assume a lower position with the crescent chain conveyer held to cease conveying, to permit a merchandise item setting board configured to correspond to the conveyer track to be then selectively fitted therewith and thus to allow a merchandise item or items to be placed on the board and thereby served, or alternatively

that the looped conveyance track that carries the crescent chain conveyer is made shiftable to assume both an upper and a lower position in such a manner: that normally the looped conveyance track lies in the upper position to offer servable merchandise items whilst a separate conveyance track lies in the lower position, offering teacups, and that in a time zone in which guests are of a reduced number the conveyance track that has been in the upper position is shifted and held to assume the lower position, or alternatively

that a table is arranged in an outer peripheral area of the base stand, and a partition is provided for storing in an interior of the table, liftably by means of a lifting mechanism to come out on the surface of the table and then to stand at a position such as to halve the table surface, the lifting mechanism being made operable when the same table is to be shared by separate parties seating face to face, to allow the partition to be lifted from the table interior to rise on the table surface, thereby bisecting the latter, or alternatively.

that a hot water/tea supply mechanism associated with a coin slot is arranged at a side area of the base stand or on a top surface of a counter arranged lateral to the base stand, the hot water/tea supply mechanism being made operable in response to entry of an applicable coin into the coin slot to supply a given amount of tea or the like beverage into a cup/teacup, or alternatively

that a plurality of merchandise item loadable racks are provided each of which comprises a tray or top open box member and a cover member therefor, the cover member being provided with a merchandise item variety selection input means and a charge indicator means for displaying a total charge of a variety of input servable merchandise items as selected, the merchandise item loadable racks being arranged on a side area of the base stand or on an inner corner surface area of a counter disposed lateral to the base stand, to permit servable merchandise items for offering on service to be placed on the merchandise item loadable racks, and to allow a variety of the servable merchandise items to be selected through the selection input means and the charge indicator means to display a total charge of the various merchandise items so selected.

Brief Description of the Drawings

[0033]

Fig. 1 is a perspective view that depicts a state in which an apparatus of the present invention according to claims 1 and 16 is in use;

Fig. 2 is a front view that illustrates the apparatus depicted in Fig. 1;

Fig. 3 is a side view that illustrates the apparatus depicted in Fig. 1;

Fig. 4 is a front view that illustrates an essential portion of a drive mechanism for a crescent chain conveyer;

Fig. 5 is a perspective view that depicts an appara-

tus of the present invention according to claims 2 and 17;

Fig. 6 is a front view that depicts a third conveyer path in the apparatus shown in Fig. 5;

Fig. 7 is a perspective view that depicts an essential portion of Fig. 5 with a first and a second conveyer path, especially in a stage in which the conveyer paths are both in use;

Fig. 8 is a perspective view that depicts an essential portion of the apparatus of Fig. 5, especially in a stage in which only the second conveyer path is in use, illustrating how it is utilized;

Fig. 9 is a perspective view that depicts an apparatus of the present invention according to claims 3 and 18;

Fig. 10 is an enlarged top plan view that depicts an essential portion of the apparatus shown in Fig. 9;

Fig. 11 is a perspective view that depicts a state in which an apparatus of the present invention according to claims 4 and 19 is in use;

Fig. 12 is an enlarged perspective view that depicts a receptacle in the apparatus shown in Fig. 11;

Fig. 13 is a vertical cross sectional view of the receptacle shown in Fig. 11;

Fig. 14 is a front view that depicts such receptacles stacked one upon another;

Fig. 15 is an enlarged perspective view that depicts an receptacle of the present invention according to claims 5 and 20;

Fig. 16 is a front view that depicts an essential portion of the structure of a heater in a rotary catering table system;

Fig. 17 is a perspective view that illustrates a state in which a noodle receptacle of the present invention according to claims 6 and 7, and claims 21 and 22 is in use;

Fig. 18 is a perspective view that illustrates the receptacle of Fig. 17 which is decomposed;

Fig. 19 is a vertical cross sectional view that illustrates the receptacle shown in Fig. 17;

Fig. 20 is a vertical cross sectional view that depicts a rice gruel dish receptacle of the present invention according to claims 8 and 23;

Fig. 21 is a perspective view that depicts an essential portion of an apparatus of the present invention according to claims 9 and 24;

Fig. 22 is an enlarged top plan view that depicts of the essential portion of the apparatus shown in Fig. 21;

Fig. 23 is a vertical cross sectional view taken along the line A-A in Fig. 22;

Fig. 24 is an enlarged cross sectional view that depicts a state in which a crescent plate and a heater portion of a heater portion are fitted together;

Fig. 25 is an enlarged cross sectional view that depicts a portion as seen in a direction of the arrow B in Fig. 22;

Fig. 26 is an enlarged top plan view that depicts another example of the present invention according to claims 9 and 24;

Fig. 27 is a vertical cross sectional view taken along the line B-B in Fig. 26;

Fig. 28 is a perspective view that depicts an essential portion of a first sensor in an apparatus of the present invention according to claims 10 and 25;

Fig. 29 is a perspective view that depicts an essential portion of a second sensor in the apparatus of Fig. 28;

Fig. 30 is a top plan view that depicts an inside of a restaurant or cookhouse in which a system provided with the apparatus of Figs. 28 and 29 is installed;

Fig. 31 is a front view that depicts a computer display screen indicating the sales status in the system of Fig. 30;

Fig. 32 is a front view that depicts how the first and second sensors and the computer are connected together in the system of Fig. 30;

Fig. 33 is a perspective view that depicts an apparatus of the present invention according to claims 11 and 12, and claims 26 and 27;

Fig. 34 is a top plan view that depicts the apparatus shown in Fig. 33;

Fig. 35 is a perspective view that depicts an essential portion of the apparatus of Figs 33 and 34, especially in a state in which a looped conveyer path is lowered;

Fig. 36 is a perspective view that depicts an apparatus of the present invention according to claims 13 and 28;

Fig. 37 is a perspective view that depicts a lifting mechanism for a partition in the arrangement in Fig, 36;

Fig. 38 is a perspective view that depicts a hot water supply outlet in the arrangement shown in Figs. 36 and 37;

Fig. 39 is a perspective view that depicts a tea bag receptacle in the arrangement shown in Figs. 36 and 37;

Fig. 40 is a perspective view that depicts an alternative tea bag receptacle;

Fig. 41 is a perspective view that depicts another form of the lifting mechanism for the partition in the apparatus shown in Fig. 36;

Fig. 42 is a perspective view that depicts a further form of the lifting mechanism for the partition in the apparatus shown in Fig. 36;

Fig. 43 is a perspective view that depicts yet a further form of the lifting mechanism for the partition in the apparatus shown in Fig. 36;

Fig. 44 is a front view that depicts another form of a placement board for use in the apparatus shown in Fig. 36;

Fig. 45 is a top plan view of the placement board shown in Fig. 44;

Fig. 46 is a perspective view that depicts another form of the partition for use in the apparatus shown in Fig. 36;

Fig. 47 is an enlarged perspective view that depicts an apparatus of the present invention according to claims 14 and 29;

Fig. 48 is a perspective view that depicts a paper cup storing receptacle for use in the apparatus shown in Fig. 47;

Fig. 49 is a perspective view that depicts a tray storing means for use in the apparatus shown in Fig. 47;

Fig. 50 is a plan view that depicts an inside of a restaurant or cookhouse in which a system provided with the apparatus shown in Fig. 47 is installed;

Fig. 51 is a perspective view that depicts an apparatus of the present invention according to claims 15 and 30;

Fig. 52 is a perspective view that depicts a portion of the apparatus of Fig. 51 as decomposed; and

Fig. 53 is a vertical cross sectional view of the apparatus shown in Fig. 51.

Best Modes for Carrying Out the Invention

[0034] Referring first to Figs. 1 to 4, there is shown an apparatus for offering servable merchandise items in a rotary catering table system in accordance with the present invention, the apparatus relating to claims 1 and 16 and being constructed as described below.

[0035] The rotary catering table system for the purposes of the present invention makes use of a crescent chain conveyer 18 disposed in a top area of a base stand 12 for conveying round along a loop, merchandise food item plates 16 on which servable merchandise food items 14 such as pieces of sushi or sushi items are placed.

[0036] The crescent chain conveyer 18 is made of a large number of crescent shaped conveyer unit plates 20 for loading and offering thereon the merchandise food item plates 16 on which the merchandise food items 14 are placed.

[0037] The apparatus is designed to offer a greater number of merchandise food items 14 at a time and includes a merchandise item offering unit 22 that comprises a frame 24 and a plurality of merchandise item loaded plate accepting portions 26 established in a like plurality of tiers in the frame 24, respectively

[0038] In this form of embodiment as illustrated, the frame 24 is a rectangular frame, and the merchandise food item loaded plate accepting portions 26 are three rings with a diameter that is larger than a root diameter of the merchandise food item loadable plates 16 and smaller than their outer diameter.

[0039] The merchandise food item offering unit 22 with its construction described above is simple in structure and light in weight, and provides a good handleability.

[0040] The merchandise food item offering unit 22 also has a weight 28 attached to its lower end. The weight 28 is provided to allow the merchandise item offering unit 22 to be conveyed with a lowered center of gravity and thus with an enhanced stability on the looped path of conveyance.

[0041] A drive mechanism for the crescent chain conveyer 18 as shown in Fig. 4 includes a driving sprocket 30 provided at one side corner of the crescent chain conveyer 18 as having its drive shaft 32 coupled via a reduction gear 34 and a driving chain 36 to a motor 38.

[0042] In operation, driving the motor 38 causes the driving shaft 32 to be driven via the driving chain 36 and the reduction gear 34, and in turn the crescent chain conveyer 18 to be driven to move along its looped path of conveyance.

[0043] The merchandise food item offering unit 22 further includes a hand hold or grip portion 40 which is provided to facilitate its handleability by making it portable and permitting it to be carried before and when it is placed on the crescent chain 18. The hand hold or grip portion 40 also allows a guest who made a choice for merchandise food items to take from the moving crescent chain conveyer 18 the merchandise food item offering unit 22 as a whole in which they are placed, onto an area of a counter 42 in its front.

[0044] In the use of the merchandise food item offering unit 22 to offer merchandise food items, the merchandise food item loadable plates 16 loaded with merchandise food items 14, sushi items, are first placed on the plate accepting portions 26, respectively.

[0045] In this case, the merchandise food items 14 loaded, as placed on their respective plates 16, onto their respective plate accepting portions 26 in the offering unit 22 may be of either an identical type or different sorts.

[0046] Then, a given number of such merchandise food item offering units 22 each loaded with a plurality of such plates 16 are placed on plates 20 of the moving crescent chain conveyer 18.

[0047] This permits guests themselves to take the plates loaded with those merchandise food items 14 which they like, out of the plate accepting portions 26 in the offering unit 22 arriving and to eat them.

[0048] Also, loading the offering unit 22 with a group of merchandise food items 14 of different kinds permits a guest who likes those food items 14 as a whole to take the offering unit 22 itself onto the counter 42 and then to eat them.

[0049] In taking the merchandise food item offering unit 22 onto the counter 42, the guest can conveniently hold the hand grip 40, lift up the offering unit 22 from the crescent plate 20, and take it onto the counter 42.

[0050] The merchandise food item offering unit 22 has an ability to arrange and display servable merchandise food items in tiers which permits a greater number of them to be offered at a time in a given rotary conveyer

path (single crescent chain conveyer 18) than by the conventional arrangement in which such food items are simply offered on a single and common plane. And, in effect it is capable of uniquely offering servable merchandise food items so large in number essentially equivalent as could be offered by a rotary catering table system provided with a plurality of looped conveyance paths which are arranged in tiers.

[0051] Also, a number of the offering unit 22 conveyed around whilst each individually carrying merchandise food items in tiers permits a guest without the need to look over right and left extending on a single plane to make a choice from a group of items on each individual offering unit 22 arriving to pass by in front of the guest. Thus, making a choice by a guest is very much facilitated.

[0052] Although in this form of embodiment the merchandise food item offering unit 22 is shown as having the frame 24 that is rectangular in form and the merchandise food item loaded plate accepting portions 26 each in the form of a ring, the frame 24 and the portions 26 may each be freely altered in form as are deemed fit.

[0053] Also, the merchandise food item loaded plate accepting portions 26 are not limited to three in number, and providing them in a plurality suffices to achieve the effects described above.

[0054] Further, the weight 28 for the merchandise food item offering unit 22 may be dispensed with. The merchandise food item offering unit 22 can still be conveyed around then with stability by virtue of a mating arrangement for coupling its lower part to a crescent plate 20 of the rotary chain conveyer 18, e. g., by a matable recess 41 and a mating projection 43 provided for the offering unit 22 and the crescent plate 20, respectively (as indicated by two dot chain lines in Figs. 1 and 2).

[0055] Also, the merchandise food item offering unit is suitable to accept a low temperature or cold insulating container loaded with a merchandise food item kept cool, possibly along with a cold storage material. Such a container can be placed on a merchandise food item loaded plate accepting portion 26, and to this end it is desirable to provide the latter thereunder with a waterdrop receiver for preventing unrestricted fall of water droplets from a condensed surface of the cold receptacle.

[0056] Further, whilst the present form of embodiment has been shown and described as for a rotary catering table system with a single looped conveyance path (formed by a single crescent chain conveyer 18), it can obviously be applied to a rotary catering table system provided with a plurality of looped conveyance paths (which are arranged in tiers).

[0057] Referring next to Figs. 5 to 8, there is shown an apparatus for offering servable merchandise items in a rotary catering table system in accordance with the present invention, the apparatus relating to claims 2 and 17 and being constructed as described below.

[0058] The rotary catering table system in this form of embodiment of the present invention as in its preceding form of embodiment makes use of the crescent chain conveyer 18 disposed in a top area of the base stand 12, along the outer peripheral side of which the counter 42 is provided.

[0059] The crescent chain conveyer 18 is here configured to provide a looped path of conveyance 44 that comprises a first path of conveyance 46 in which the crescent chain 18 is movable rectilinearly from one side to the other side of the base stand 12, and a second path of conveyance 48 which is disposed above the first path of conveyance 46 parallel thereto and in which the crescent chain 18 is movable rectilinearly from the other side to the one side of the base stand 12 and a pair of third paths of conveyance 50 that connect the downstream end of the first path conveyance 46 to the upstream end of the second path of conveyance 48, and the downstream end of the second path of conveyance 48 to the upstream end of the first path of conveyance 46, respectively, each of the third path of conveyance 50 having portions of inclination intermediate between the first and second paths of conveyance 46 and 48.

[0060] In the present form of embodiment of the invention as illustrated, the first and second paths of conveyance 46 and 48 are the same in length. Each of the third paths of conveyance begins with the downstream end of the first or second path of conveyance 46 or 48 and ends with the upstream end of the second or first path of conveyance 48 or 46. Specifically, as shown in Figs. 5 and 6 the third paths of conveyance 50 have each a rectilinear portion 52 that extends horizontally perpendicular to the first path of conveyance 46, a portion of inclination 54 that is inclined upwards from the rectilinear portion 52, a horizontal portion that extends horizontally from the portion of inclination 54, a turning or second horizontal portion 58 that lies outside of the first horizontal portion 56 and extends parallel thereto, a second portion of inclination 60 that is inclined upwards from the turning or second horizontal portion, and a second rectilinear portion 62 that extends horizontally from the second portion of inclination 60.

[0061] Consequently, a merchandise food item loadable plate 16 loaded with a merchandise food item 14 can be conveyed by the crescent chain conveyer 18 moving on the first path of conveyance 46 from the left hand side to the right hand side of the base stand 12 (as shown in Fig. 5 and indicated by the arrow C), on one of the third paths of conveyance 50 from down to up, on the second path of conveyance 48 from the right hand side to the left hand side of the base stand 12 (as shown in Fig. 5 and indicated by the arrow D), on the other third path of conveyance 50 from up to down, and again onto the first path of conveyance 46, thus completing one circulation or rotary catering cycle.

[0062] It should also be noted that the base stand 12 which carries the crescent chain conveyer 18, providing therefor the looped path of conveyance 44 is

designed to be liftable or movable up and down.

[0063] In the present form of embodiment of the invention as illustrated, means for lifting or moving up and down the base stand 12 comprises a pair of hydraulic jacks 64 which are arranged so as to support the base stand 12 at its opposite sides (and thus below the third paths of conveyance 50), respectively.

[0064] Fig. 8 shows a merchandise food item setting board 66 for selective use when the crescent chain conveyer 18 is set to cease conveyance.

[0065] The merchandise food item setting board 66 has its width corresponding to that of the second path of conveyance 48 and is inclined downwards towards the counter 42 from one side of the crescent chain conveyer 18 so that merchandise food items 14 placed thereon may be viewed easily by guests.

[0066] Also shown in Figs. 5 through 8 is a hydraulic unit 68 for controlling hydraulic pressure applied to the hydraulic jacks 64.

[0067] An explanation in detail is given below in respect of a method of offering servable merchandise food items 14 by using the apparatus described above.

[0068] Plates 16 loaded thereon with merchandise food items 14 are supplied one by one onto the moving crescent chain conveyer 18 from a given supply site of the rotary path of conveyance 44.

[0069] In this case, because the plates 16 loaded with merchandise food items 14 are supplied onto and carried by the crescent chain conveyer moving along the looped path of conveyance 44 in the upper and lower tiers in which the first and second paths of conveyance 46 and 48 are disposed, respectively, the merchandise food item loaded plates 16 and hence the merchandise food items 14 as furnished two-dimensionally or in tiers can be offered greater in number to a guest at a time than by the conventional arrangement in which such plates 16 (merchandise food items 14) are supplied one by one on a single plane or in a single tire, and carried one-dimensionally.

[0070] In this connection, it is desirable that the third paths of conveyance 50 be covered with such as outer walls so that they may not come in guests' sight.

[0071] In a time zone in which guests are reduced in number, the crescent chain conveyer 18 is set to cease conveyance, the second path of conveyance 48 in the upper tier of the looped path of conveyance 44 is lowered to a level of the first path of conveyance 46 in the lower tier. Then, the merchandise food item setting board 66 is fitted to the second path of conveyance 48. Merchandise food items 14 may then be placed directly on the board 66 and thereby offered and served.

[0072] In this case, the first path of conveyance 46 not in stored use is housed below the level of the counter 42, and is concealed together with the third paths of conveyance 50, it may not be an eyesore to a guest making a choice of merchant food items or to a service worker or cook in service for a guest.

[0073] Also, housing or storing the first path of conveyance 46 below the level of the counter 42 and concealing it as well as the third paths of conveyance 50 may keep a guest unknown of the rotary catering table system. The shop then becomes a traditional, exclusive sushi restaurant to a guest in which a cook on receipt of a guest's order prepares a sushi and serves it on the merchandise food item setting board 66.

[0074] Although the first and second paths of conveyance 48 and 48 that constitute the display parts of the looped path of conveyance 44 are shown and described as rectilinear, they may be of a curved, undulating, rectangular or any other suitable shape as well.

[0075] Also, the third paths of conveyance 50 each formed of the two rectilinear portions 52 and 62, the two portions of inclination 54 and 60 and the two turning portions 56 and 58 is shown and described as not for service of any of these portions. Yet, it can be modified to make, for service, longer the turning portion 58, the portion of inclination 60 and the rectilinear portion 62 which constitutes outer parts of those portions or paths 50.

[0076] Further, the third paths of conveyance 50 may be configured in the form of a spiral or helix, or any other shape.

[0077] Also, whilst in the time zone in which guests are reduced in number the merchandise food item setting board 66 is shown and described as fitted to the second path of conveyance 48 lifted down to a level of the lower tier, it is also possible, without using the board 66, to use the second path of conveyance for service by moving the crescent chain conveyer 18 along the looped path of conveyance to permit plates 16 loaded thereon with merchandise food items 14 to be carried by the second path of conveyance 48 and thereby to pass by in front of guests. It is further possible, without lowering the second path of conveyance 48, to use the same together with the first path of conveyance 46. In that case, the merchandise food item setting board 66 may be fitted to each of the first and second paths of conveyance 46 and 48.

[0078] Also, although means for lifting the base stand 12 up and down is shown and described as comprising two hydraulic jacks 64, it may be one or three such jacks. Also, it may not be hydraulic means but may be a motor, an air cylinder or any other structure capable of raising and lowering the base stand 12.

[0079] Referring next to Figs. 9 and 10, there is shown an apparatus for offering servable merchandise items in a rotary catering table system in accordance with the present invention, the apparatus relating to claims 3 and 18 and being constructed as described below.

[0080] In the present form of embodiment of the invention as in its previous forms of embodiment described, the crescent chain conveyer 18 is disposed in a top area of the base stand 12. Here, however, it has its looped path of conveyance whose one side projecting into a merchandise food item preparing area or

kitchen K and whose entire area but for this one side is open to a hall H.

[0081] This looped path of conveyance 44 along which the crescent chain conveyer 18 is allowed to move is configured in the form of character I with no working space in its central area.

[0082] The crescent chain conveyer 18 is associated with a merchandise food item replenish conveyer means 70 that communicates direct therewith from the inside of the rotary catering table system, the conveyer means 70 having its seven subdivided conveyer portions A, B, C, D, E, F and G connected together in series.

[0083] In the present form of embodiment, the merchandise food item replenish conveyer means 70 is arranged to communicate directly with the crescent chain conveyer 18 at a position lying about midway of the looped path of conveyance 44 on the side of the hall H.

[0084] The merchandise food item replenishment conveyer means 70 as illustrated consists of six (6) short unit conveyer members 72, A to F lying closer to its direct communication side with the crescent chain conveyer 18 and one (1) long unit conveyer member 74, G lying remote from that direct communication side. Each of the unit conveyer members 72 and the conveyer member 74 are adapted to be driven individually by their respective drive sources (not shown) operable independently of each other.

[0085] This arrangement is thus provided to circumvent the design much to be desired of a conventional merchandise food item replenishment conveyer that is unitary and in which in order for a plurality of merchandise food item loaded plates 16 to be replenished at a time onto the crescent chain conveyer 18, these plates 16 must have been placed in advance in a close alignment for standby on the replenish conveyer. The present invention by providing the merchandise food item replenish conveyer means 70 having a plurality of subdivided portions or unit conveyer members A through G is designed to smooth replenishment and transfer of merchandise food item loaded plates 16 onto and towards the crescent chain conveyer 18 by causing, as a standby merchandise food item loaded plate 16 is transferred from the A unit conveyer member 72 onto the crescent chain conveyer 18, each of the B to G unit conveyer members 72 to transfer a standby merchandise food item loaded plate 16 thereon onto its immediate forward unit conveyer member 72 for standby there and, when the standby merchandise food item loaded plate 16 is transferred from the forward end side of the G unit conveyer member 74 to the F unit conveyer 72 for standby there, causing the G unit conveyer member 74 to transfer a standby merchandise food item loaded plate 16 at its supply end side to its forward end side for standby there.

[0086] This mechanism will be found extremely effective when it is recognized that preparing sushi items 14 being merchandise food items 14 by a cook is time consuming and it is almost impossible to place on the G conveyer member 74 such merchandise food item loaded plates 16 side by side with no spacing between them.

[0087] Provided as disposed behind a position where the merchandise food item loaded plate replenish conveyer means 70 communicates directly with the crescent chain conveyer 18 in the direction of movement of the crescent chain conveyer 18 is a sensor 76 for sensing absence of a merchandise food item loaded plate 16 in the vicinity thereof.

[0088] Further sensors 78 are also provided each as disposed on a side area of each of the unit conveyer members 72 and 74 for sensing absence of a standby merchandise food item loaded plate 16 respectively thereon.

[0089] Provided as disposed on the crescent chain conveyer 18 behind a position where the sensor 76 lies in the direction of movement of the crescent chain conveyer 18 is a movable stopper 80 for temporarily halting conveyance of merchandise food item loaded plates 16 thereon.

[0090] In the form of embodiment illustrated, the stopper 80 is constituted by a pair of pins movable from the outside towards the inside of the crescent chain conveyer 18 and adapted to be moved by means of a drive motor and gear (not shown).

[0091] The sensor 76, the further sensors 78, the unit conveyer members 72 and 74 which constitute the merchandise food item loaded plate replenishment conveyer means 70, and the stopper 80 have a computer (not shown) connected thereto as a control mechanism therefor.

[0092] An explanation in detail is given in respect of a method of offering servable merchandise food items whilst replenishing servable merchandise food item loaded plates 16 onto the crescent chain conveyer 18 in the rotary catering table system.

[0093] The merchandise food item loaded plate replenishment conveyer means 70 is driven to place one merchandise food item loaded plate 16 for standby onto each of the A to F unit conveyer members 72. On the G unit conveyer member 74, merchandise food item loaded plates 16 need not be placed by side by side with no spacing between them; they may be placed for standby either with a suitable spacing or with no spacing between them.

[0094] In this stage, merchandise food item loaded plates 16 sufficient in number are or have been supplied onto the moving crescent chain conveyer 18 inside of the kitchen K or from the hall H side.

[0095] In a next stage, vacant spaces created on the crescent chain conveyer 18 upon guests taking merchandise food item loaded plates 16 for eating are sensed by the sensor 76, and a given number of merchandise food item loaded plates 16 are replenished into that space by the merchandise food item loaded

plate replenishment conveyer means 70 that operates ganged with sensing by the sensor 76.

[0096] In the merchandise food item replenishment conveyer means 70, a plurality of subdivided unit conveyer members or sections 72 and 74 are made individually operable to effect such replenishment. The A to F unit conveyer sections 72 are each loaded thereon with one standby merchandise food item loaded plate 16 for transfer. These sections operate in a manner such that transfer of a merchandise food item loaded plate 16 from the A conveyer section 72 onto the crescent chain conveyer 18 causes the B to F conveyer sections 72 each to transfer a merchandise food item loaded plate 16 thereon onto its immediate succeeding conveyer section for standby and causes the G conveyer section 74 to transfer a merchandise food item loaded plate 16 on its forward end side onto the F conveyer section 72 for standby and then to transfer a succeeding merchandise food item loaded plate 16a thereon to that forward end side immediate behind the F conveyer section 72 for standby. Thus, the operation makes the conveyer sections 72 and 74 each prepared individually for a subsequent cycle of transferring merchandise food item loaded plates 16 successively towards the crescent chain conveyer 18.

[0097] If the sensed vacant spaces in which merchandise food item loaded plates 16 are absent are not for those of an even number but for those that are, e. g., one and half in number, the sensor 7 acts through the control mechanism to move the stopper 80 towards the crescent chain conveyer 18 and thereby to temporarily bring the succeeding merchandise food item loaded plate 16b to a halt. Then, upon the merchandise food item plate replenishment conveyer means 70 replenishing a give number, e. g., two or three, of merchandise food item loaded plates onto the crescent chain conveyer 18, the stopper 80 is restored to its original position.

[0098] Replenishing merchandise item loaded plates 16 in this way at a site about midway of the looped path of conveyance 44 for the crescent chain conveyer 18 on the hall H side allows sufficient merchandise item loaded plates 16 to be furnished for guests seated ahead of the path in the direction of rotary movement crescent chain conveyer 18.

[0099] Also, supplying merchandise item loaded plates 16 onto the crescent chain conveyer directly from the kitchen K inside as they are required permits sufficient merchandise loaded plates 16 to be furnished for guests as well who are seated closer to the kitchen K as is usual.

[0100] Further, the rotary path of conveyance 44 if shaped in the form of character I for the crescent chain conveyer 18 allows guests seated to the counter 42 to take for eating merchandise food item loaded plates 16 not only on the rotary path of conveyance 44 but also on the merchandise food item loaded plate replenishing conveyer 70. The guests may thus make a choice from a greater number of merchandise food items than in the conventional, single rotary catering table system to enjoy a meal.

[0101] In the present form of embodiment of the invention, it should be noted that the rotary path of conveyance 44 for the crescent chain conveyer 18 configured in the form of character I is not imperative and may be rectangular as is usual or of any other suitable shape.

[0102] Also, whilst seven conveyer sections are shown provided for the merchandise food item loaded plate replenishing conveyer 70, they may be two or more enough to achieve the effects and advantages contemplated for the invention of the claims referred to.

[0103] Further, employing a ganged control for the conveyer sections or unit conveyer members 72 and 74 that constitute merchandise food item loaded plate replenishment conveyer means 70 may omit the further sensors 78.

[0104] Also, whilst a stopper 80 is shown as a pair of pins that can pivot from the opposite sides in the direction of the width of the crescent chain conveyer 18 towards its center side, it may alternatively be, e. g., a pair of pins that can be raised from under the crescent chain conveyer 18. Any structure is sufficient therefor which enables one or more merchandise food item loaded plates 16 temporarily to come to a halt.

[0105] Further, in replenishing or filling a vacant space in which there is no merchandise food item loaded plate 16 with a required number of such plates 16, if, for example, the space is for one merchandise food item loaded plate 16 and a half, and that space is then to be filled with only one such plate, or alternatively such space or spaces are manually adjusted by bringing one or more succeeding plates temporarily to a halt by hand on the crescent chain conveyer 18, the stopper 80 is not required.

[0106] Also, whilst the merchandise food item loaded plate replenishing conveyer means 70 is shown provided with a drive mechanism, designing the same in a roller conveyer structure and manually pushing merchandise food item loaded plates 16 onto the crescent chain conveyer 18 makes the drive mechanism unnecessary.

[0107] Referring next to Figs. 11 to 16, there is shown an apparatus for offering servable merchandise items in a rotary catering table system in accordance with the present invention, the apparatus relating to claims 4, 5, 19 and 20 and being constructed as described below.

[0108] In this form of embodiment of the invention as well, the rotary catering table system as shown in Figs. 11 and 15 makes use of a crescent chain conveyer 18 disposed in a top area of a base stand 12. Further, below the crescent chain conveyer 18 and inside of the base stand there is disposed a rail 82. Disposed slidably on the rail 82, an electrical supply feeder 84 is connected to a given crescent plate 20 via a connecting

pipe suspended therefrom and via a support arm 88, and is thus designed to be carried by that crescent plate 20 for conveyance thereby and joint movement therewith along the rotary path of conveyance.

[0109] In that given crescent plate 20 of the crescent chain conveyer 18 there is fitted or incorporated a heater 90 electrically connected to the supply feeder 84.

[0110] A water container 92 containing cold or hot water W is shown as placed on the crescent plate 20 in which the heater 90 is fitted or incorporated.

[0111] In the present form of embodiment of the invention as illustrated, the water container 92 is top open and is provided with a horizontal stepped portion 94 along an inner peripheral surface and at a give level thereof.

[0112] A "yakimono" (grilled or fried food) dish container or receptacle 96 of claims 4 and 19 is shown in Figs. 11 to 14 to include a paper made and top open cylindrical body 98, and a paper made setting board 102 disposed inside of the paper made cylindrical body 98 and formed with a number of projecting stripes 100. The paper made cylindrical body 98 has incisions made or portions 104 notched upwards from its lower rim which are designed to aid in stacking a plurality of such container or receptacles 96 one upon another.

[0113] In the present form of embodiment as illustrated, the projecting stripes 100 are in the form of concentric rings each rising from the surface, and five such rising rings are shown as formed on the paper made setting board 102. The stacking aide notched portions or incisions 104 are shown as three such portions formed at sites that trisect the perimeter of the lower rim of the paper made cylindrical body 98, and are each with two parallel cuts. To facilitate stacking a plurality of such cylindrical bodies 98 one upon another, each of these paper made cylindrical bodies is formed to have its bottom diameter somewhat smaller than its top diameter. Also, it is desirable that the paper made cylindrical bodies and setting boards 98 and 102 be made of a paper material that has a good water resisting property.

[0114] A stack of the "yakimono" dish receptacles or containers 96 for service is placed on the horizontal stepped portion 94 of the water container 92.

[0115] A "mushimono" (steamed food) dish receptacle or container 106 as recited in claims 5 and 20 is shown in Fig. 16.

[0116] Such "mushimono" dish receptacles or containers 106 are identical to "yakimono" dish receptacles or containers 96 except that the paper made setting boards 102 are each further formed with a number of small holes or orifices 108. Hence, a repeated explanation is omitted.

[0117] An explanation in detail is given below in respect of a method of offering servable "yakimono" (grilled or fried food) dishes (as merchandise food items) such as "gyoza"s (fried dumplings stuffed with minced pork) by using the "yakimono" dish receptacles in the rotary catering table system.

[0118] First, the water container 92 loaded with cold or hot water (W) is placed on the crescent plate 20 having the heater 90 fitted therein.

[0119] Then, a yakimono dish receptacle 96 is loaded on its paper made setting board 102 with a yakimono dish heated to a suitable temperature. A plurality of such yakimono dish receptacles 96 so loaded are prepared and stacked one upon another successively, using the stacking aide notched portions 104, and a stack of them is placed on the water container 32.

[0120] In this case, so forming each of the yakimono dish receptacles 96 that its paper made cylindrical body has its bottom diameter somewhat smaller than its top diameter allows the yakimono dish receptacles 96 to be readily stacked one upon another. The lowermost yakimono dish receptacle 96 of the stack is then placed into the water container 92 so that its lower rim hangs on the horizontal stepped portion 94.

[0121] Preparing such a stack of a plurality of yakimono dish receptacles 96 allows yakimono dishes larger in number to be offered and served at a time.

[0122] Thereafter, the heater 90 in the crescent plate 20 is turned on or actuated to vaporize water W in the water container 92 into a steam for emanation into the yakimono dish receptacles 96 and to keep therein the yakimono dishes warm with the steam.

[0123] Keeping warm yakimono dishes on the paper made setting boards 102 in the yakimono dish receptacles 96 with a steam emanating from the water container 92, rather than by heating direct with the heater 90, enables a guest to take such a yakimono always in its fresh state, if the yakimono dish receptacles 96 is allowed to go round on the rotary catering table for some prolonged time period.

[0124] In this way, yakimono dishes kept warm in their fresh state in the yakimono dish receptacles 96 are allowed to go round on the rotary catering table and in stacks are successively offered to guests.

[0125] A guest may take one yakimono dish receptacle 96 from a stack or more than one such receptacles in a stacked state, place the same on the counter 42 and for eating, remove a yakimono dish from the paper made setting board 102 thereof.

[0126] In this case, the rising stripes 100 formed on the paper made setting board 102 makes a yakimono dish resistant to stick to the paper made setting board 102 and makes it readily removable.

[0127] Also, yakimono dish receptacles 96 made of a paper material is a throwaway article and once used can be discarded as used, imposing no burden on its cleaning operation.

[0128] Also, yakimono dish receptacles 96 provided as throwaway articles are always available as anew and afresh, and are thus sanitary.

[0129] A method of offering servable "mushimono" (steamed food) dishes (as merchandise food items) such as "shumai" [shao-mai] (steamed dumplings stuffed with minced pork) by using the "mushimono"

dish receptacles 106 in the rotary catering table system is similar to the method of offering yakimono dishes described above except that the receptacles 106 are used in place of the receptacles 96. A repeated explanation is therefore omitted.

[0130] As in the case of offering merchandise food items with the yakimono dish receptacles 96, keeping mushimono dishes warm on the paper made setting boards 102 in the mushimono dish receptacles 102 with a steam emanating from the water container 92, rather than by heating direct with the heater 90, enables a guest to take such a mushimono dish always in its fresh state.

[0131] A number of small holes or orifices 108 formed in the paper made setting board 102 of each of the mushimono dish receptacles 106 permits steam to diffuse from one to a next of the mushimono dish receptacles 102, if stacked one upon another with the aide of the notched portions 104, through these holes or orifices 108, and allows a mushimono dish in each of the receptacles 106 to be steamed

[0132] It should be understood at this point that the heater 90 that constitutes the warming (keep warm) mechanism and the power supply therefor are not limited in configuration to those illustrated.

[0133] Also, whilst both a stack of the yakimono dish receptacles 96 and a stack of the mushimono dish receptacles 106 are illustrated in each instance as placed direct on the water container 92, they may in each case be mounted via a "seiro" (steaming basket) over the water container 92.

[0134] Further, whilst the paper made setting board 102 for each of the receptacles 96 and the receptacles 106 are shown and described as formed with a number of rising stripes 100, they may be omitted if removability of a yakimono or mushimono dish is not taken into consideration.

[0135] Also, the configurations of the rising stripes 100 and the stacking aide notched portions for the receptacles 96, 106 may not be limited to those illustrated.

[0136] It should further be noted that the receptacles 96 and the receptacles 106 shown and described as used each in a stack may not be so used but can be used in singles as well.

[0137] Referring next to Figs. 17 to 20, an apparatus of the present invention is also shown that relates to claims 6, 7, 8, 21, 22 and 23 and is constructed as described below.

[0138] In this form of embodiment of the invention as in the preceding form of embodiment thereof, a crescent chain conveyer 18 is mounted in a top area of a base stand 12, and a heater 90 is incorporated in a given crescent plate 20 of the chain conveyer 18.

[0139] A water container 92 loaded with cold or hot water W is, as in the preceding form of embodiment, placed on the crescent plate 20 having the heater 90 incorporated therein.

[0140] A "seiro" (steaming basket) 112 is received in a snug fit by an open top of the water container 92.

[0141] As used here, the seiro 112 is in the form of a flat cylinder with both its top and bottom open, and has a support disk (illustration omitted) fitted therein at a given level near the open bottom and made integral with the cylinder by means of a resin. The function of the seiro here is to moderate heat of steam emanating from the water container and transfer heat moderated to a noodle dish receptacle 110 being described.

[0142] The seiro 112 rests on the horizontal stepped portion 94 to rise above the water container 92.

[0143] The noodle dish receptacle 110 for use in the present form of embodiment comprises, as shown in Figs. 17 and 18, a first component receptacle 116 for accepting a noodle soup 114, a second component receptacle 122 formed in its bottom with small holes 120 for accepting noodles such as "ramen" (Japanese modified Chinese noodles), "udon" (white Japanese noodles made from wheat flour) or "soba" (buckwheat noodles [vermicelli]) and for mounting on the first component receptacle 114, and a third component receptacle 126 for accepting noodle dish "gu"s (ingredients) and "yakumi"s (spices and condiments used in Japanese dishes) such as "chashu"s (roasted pork fillets), onion, ginger etc. and for mounting on the second component receptacle 122.

[0144] As illustrated, the first, second and third component receptacles 116, 122 and 126 are used as mounted one upon another in a close contact with one to next, and are all composed of ceramic. As regards their depths, the first 116 is deeper than the second 122 which is deeper than the third 126.

[0145] As shown in Figs. 17 and 18, the first component receptacle 116 is provided in its upper peripheral rim with handles 128, and also has a seal ring 130 fitted thereon to seal the regions of mutual contact of the seiro 112 and the first component receptacle 116 of the noodle dish receptacle 110, thereby enhancing its heating efficiency.

[0146] An explanation in detail is given in respect of a method of offering noodle dishes (merchandise food items) on the rotary catering table by using the noodle dish receptacle.

[0147] The water container 92 loaded with cold or hot water W is placed on the crescent plate 20 having the heater 90 incorporated therein, and the seiro 112 is placed on this water container 92.

[0148] Then, a soup 114 heated to a suitable temperature is put into the first component receptacle 116, half-boiled noodles 118 are put into the second component receptacle 122, noodle ingredients and spices or condiments are put into the third component receptacle 126, and the component receptacles 116, 122 and 126 are laid one on top of another to form the noodle dish receptacle which is then laid on the seiro 112.

[0149] After that, the heater 90 incorporated in the crescent plate 20 is actuated or energized to vaporize

cold or hot water in the water container 92 into a steam emanating, thereby rendering the soup 114 kept warm in the noodle dish receptacle 110 and rendering the noodle ingredients and spices or condiments kept in their fresh states in isolation from the soup 114 and the noodles 118. The noodles 118 are here not heated direct by the steam from the water container 92, but by a vapor emanating from the soup 114, which is introduced into the second component receptacle 122 gradually through the small holes or orifices 120 formed therein to keep the noodles 118 moist and warm. Since the top of the second component receptacle 122 is here covered with the third component receptacle 126 to check escape of the moisture, the noodles are effectively prevented from drying and kept in their fresh state.

[0150] A plurality of such noodle dish receptacles 110 each with a noodle dish kept in a fresh state as described are carried and conveyed around a looped path of conveyance on the rotary catering table and thereby successively offered to guests.

[0151] A guest may take a noodle dish receptacle 110 by holding grips 128 of the first component receptacle 116, lifting the latter together with the second and third component receptacles 122 and 126 laid on and over it, and placing them separately on the counter 42. The guest may then transfer the needles 118 from the second component receptacle 122 into the first component receptacle 116 in which the soap 114 is received for mixture with the noodles 118. After mixing the noodles 118 and soup 114 together, the guest may transfer the noodle ingredients and spices or condiments 124 from the third component receptacle 126 onto the soup 114 and the noodles 118 in the first component receptacle 116. Then, using the latter as an eating receptacle or utensil, the guest may take the noodle dish prepared therein in a fresh state.

[0152] A method, according to 8 and 23, of offering a rice gruel dish (as a merchandise item) on a rotary catering table by using a rice gruel dish receptacle 134 is the same as the method of the preceding form of embodiment except that the rice gruel dish receptacle 134 is replaced for the noodle dish receptacle 110, and as shown in Fig. 20, omits the second component receptacle 122, and loads a rice gruel 132 into the first component receptacle 116 and rice gruel ingredients and condiments or spices into the third component receptacle 124. A repeated explanation is thus omitted.

[0153] A rice gruel 132 in the first component receptacle in the rice gruel dish receptacle 134 if carried and conveyed round for a long period of time on the rotary conveyer is here again kept warm by a steam emanating from the water retainer 92, rather than being heated direct by the heater 90. Laying the third component receptacle 126 loaded with rice gruel ingredients and spices or condiments on the top of the first component receptacle 116 prevents the rice gruel 132 in the first component receptacle 116 from losing moisture (from drying) and thus prevents it from burning and sticking. Being kept in its fresh state, the rice gruel always is offered and can be had by a guest.

[0154] Whilst the noodle dish receptacle 110 is shown as comprising the first, second and third component receptacles 116, 122 and 126, it should be noted that the third component receptacle 126 for loading with noodle dish ingredients and spices or condiments 124 can be omitted.

[0155] As shown in Fig. 17, a plurality of seiro's 122 may be used as laid one on top of another, each of which may be loaded with food and drink such as "shumai" [shao-mai] (steamed dumpling staffed with minced pork) pieces, a "chimaki" (rice dumpling wrapped in iris or bamboo leaves), a "tenshin" (dessert in a Chinese dinner), or a cup of tea.

[0156] Also, the heater 90 and its power supply forming the warming mechanism need not to be limited to those shown and described.

[0157] Further, whilst each of the noodle dish receptacle 110 and the rice gruel dish receptacle 134 is illustrated as placed over the water container 92 via the seiro 112, it may be placed on the water container 92 by omitting the seiro 112.

[0158] Also, whilst the second component receptacle 122 of the noodle dish receptacle 110 is shown and described as formed with small holes 120, the small holes 120 may be omitted from the second component receptacle 122, disabling moistening the noodles 118 therein, but the presence of the third component receptacle 126 thereon still allows preventing moisture vaporization of the needles 118.

[0159] Referring next to Figs. 17 to 20, an apparatus is shown of the present invention relating to claims 9 and 24 and is constructed as described below.

[0160] In the rotary catering table for use in this form of the invention as in its preceding form of embodiment, a crescent chain conveyer 18 is disposed in a top area of a base stand 12 and has a heater member 136 that constitutes a heater incorporated in a given crescent plate 20.

[0161] The heater member 136 as shown in Figs. 22 to 24 comprises the crescent plate 20 of the chain conveyer 18 that is connected to an electrical feeder implement (power supply) 84, and a heater portion 138 detachably mounted on the crescent plate 20.

[0162] The heater portion 138 desirably includes an electric power switch for an internal heater 140.

[0163] An explanation in detail is given in respect of a setup means for the crescent plate 20 and the heater portion 138 which constitute the heater member 136. An L-shaped projection 144 formed to rise on the back of the heater portion 138 is inserted in snug fit into a long hole 142 drilled in the crescent plate 20. By rotating the heater portion 138 relative to the plate 20, a flexed end 146 of the L-shaped projection 144 is brought into contact with the back of the plate 20. The heater portion 138 is attached to and set up for the crescent plate 20.

[0164] As illustrated, three long holes 142 are pro-

vided in a central region of the plate 20, and three L-shaped projections 144 corresponding thereto are provided in the heater portion 138.

[0165] As a means for connecting a power supply to the plate 20 and the heater portion 138, the electric cords of the electrical feeder implement (power supply) 84 are led through a connecting member 148 to have their end exposed to the upper side of the plate 20. The electric cords for the internal heater 140 are led through a connecting member 150 to have their end rising to the back side of the heater portion 138. Then, the connecting members 148 and 150 are connected together and are made electrically conductive.

[0166] In order to ensure fitting the crescent plate 20 and the heater portion 138 together, the plate 20 is formed with a small hole 152, and a projection 156 are inserted and biased by a spring 154 as movable to rise above and to sink below the back surface of the heater portion 138. When the plate 20 and the heater portion 138 are fitted together (or when the L-shaped projections 144 are held in place in the long holes 142), fitting the projection 156 into the small hole 152 with the biasing force applied by the spring 154 increases the tightness of fitting between the plate 20 and the heater portion 138.

[0167] As illustrated, one such projection 156 is provided, and correspondingly one such hole 152 is formed through the crescent plate 20.

[0168] In Figs. 17 through 20, an L-shaped member 158 is shown which is connected to the upper end of the projection 156 for removing the projection 156 fitted into the small hole 152. Shown also is a withdrawal lever 160 movable to push the L-shaped member 158 and thereby to lift the projection 156. Numeral 164 designates a tea cup.

[0169] An explanation in detail is given in respect of offering a merchandise food item kept warm, e. g., "shumai".

[0170] First, the connection member 150 for the heater portion 138 is connected to the connecting member 148 inside of the crescent plate 20 connected to the electric feeder implement (power supply) 84. The L-shaped projections 144 of the heater portion 138 is fitted into the long holes 142 of the plate 20. Then, by rotating the heater portion 138 relative to the plate 20, the flexed end 146 of the L-shaped projection 14 is brought into contact with the back surface of the plate 20. The heater portion 138 is fastened to and fitted with the plate.

[0171] In this case, fitting the projection 156 of the heater portion 138 into the small hole 152 in the plate 20 with the biasing force of the spring increase the tightness of fixing or fastening the crescent plate 20 and the heater portion 138 together.

[0172] Next, the water container 92 loaded with cold or hot water W is laid on the heater portion 138 of the heater member 136.

[0173] Next, the seiro 112 accommodating a mushimono dish as a merchandise food item is laid on the water receptacle 92.

[0174] Thereafter, actuating the internal heater 140 of the heater member 136 permits cold or hot water in the water container 92 to evaporate into a steam emanating, which moistures the mushimono dish in the seiro 112 and thereby to keep it warm.

[0175] A plurality of such mushimono dishes as merchandise food items kept warm in respective seiros to be carried and conveyed round and thereby offered to guests successively.

[0176] A guest may take a seiro 112 loaded with a mushimono dish from the rotary catering table, place it on the counter 42, and take the mushimono dish out of the seiro 112 for eating.

[0177] When only ordinary merchandise food items are offered using this apparatus, heater portions 138 of heater members 136 may simply be removed from crescent tables 20 to allow all such merchandise food items to be carried and conveyed round in a single plane in the apparatus with no interference with its availability.

[0178] Another example of this apparatus is shown in Figs. 21 and 22.

[0179] This example employs the rotary catering table that is basically the same in construction as in the preceding example, except for the manner modified in which the heater member 136 is constructed, of which an explanation is given below.

[0180] In the modified heater member 136, the heater portion 138 is fastened to the crescent plate 20 by inserting the projections 166 rising on the back surface of the heater portion 138, in a snug fit into the small holes 152 formed in the plate.

[0181] To ensure fitting the crescent plate 20 and the heater portion 138 together, the plate 20 is formed of an iron stock, and a magnet 168 is attached to the back surface of the heater portion 138 for magnetically attracting and thereby fastening the plate 20 thereto with an increased tightness.

[0182] In this case, the entire crescent plate 20 needs not to be formed of an iron material and only a portion thereof that corresponds to the magnet 168 attached to the back surface of the heater portion may be so formed.

[0183] The method of using this example is carried out in the same way as in the preceding example, and a repeated explanation is omitted.

[0184] In both the illustrations, it should be noted that the arrangement described for fastening the heater 136, the manner described in which the L-shaped projections 144 are held in place in the long holes 142, the means described whereby the projection is fitted into the small hole, and the arrangement described of magnetically attracting the iron formed crescent plate to the magnet 168 may be employed independently of one another and used in any combination.

[0185] The heater member 136 and the electric feeder implement (power supply) 84 that provide for the

warming mechanism may not be limited in construction to those described.

[0186] Also, whilst for the warmable merchandise food item an example is given of a "mushimono" (steamed food) such as "shumai" [shao-mai] (steamed dumpling with minced pork) and use is shown and described as made of the "seiro" (steaming basket) 112 and the water container 92, it should be noted that if the warmable merchandise food item is a "yakimono" such as "gyoza" (fried dumpling with minced pork), then the seiro and the water container may be replaced with a hot plate having grips and, loaded thereon with the yakimono may be laid on the heater 138 in offering the yakimono dish.

[0187] Further, when ordinary merchandise food items are offered together with merchandise food items kept warm, it suffices to say that they are offered as placed on crescent plates not connected to the power supply.

[0188] Referring next to Figs. 28 to 32, there is shown an apparatus according to the present invention that relates to claims 10 and 25 and is constructed as described below.

[0189] The rotary catering table for use in this form of embodiment has, as in those form of embodiment relating to claims 1 to 3 and 16 to 18, a crescent chain conveyer 18 disposed in a top area of a base stand 12, and a counter 42 arranged along its outer peripheral side.

[0190] In this form of embodiment, merchandise food item loadable plates 16 are each a cylindrical body made of a water-proof paper material and provided with a merchandise food item accepting portion therein and, being structurally identical to traditional wooden "sushi" receptacles, permits stacking or laying one on top of another.

[0191] Fastened onto the crescent chain conveyer 18, there are a large number of merchandise food item plate loaded bases 172 each having an ID medium 170 applied thereto.

[0192] As illustrated, the ID medium 170 carries a two-dimensional bar code, and is attached to a side surface of the merchandise food item plate loaded base 172.

[0193] On a merchandise food item plate supply side of the base stand 12, a first sensor means 174 is arranged for identifying the ID medium of each particular outgoing merchandise food item plate loaded base 172 and counting a number supplied of the particular merchandise food item loaded plates 16 in a stack on that base 172.

[0194] As illustrated, the first sensor means 174 comprises a scanner 176 for reading the ID medium 170 of the merchandise food item plate loaded base 172, and a first read-out sensor for reading the number of merchandise food item loaded plates supplied in a stack on that base 172. As indicated by reference character X, the first sensor 174 means is located one sideways and above one part of the base stand 12 in a region of the kitchen K where merchandise item loaded plates 16 have been supplied.

[0195] On a merchandise food item plate recovery side of the base stand 12, a second sensor means 180 is arranged for identifying the ID medium of each particular incoming merchandise food item plate loaded base 172 and a recovery number of the particular merchandise food item loaded plates 16 in a stack on that base 172.

[0196] As illustrated, the second sensor means 180 has a same construction as the first sensor means 174, and as indicated by reference character Y is located one sideways and above the other part of the base stand 12 in a region of the kitchen K where merchandise food item loaded plates 16 have been recovered.

[0197] Data for the ID medium of the merchandise food item plate loaded base 172 identified, and data for the supplied number of the merchandise food item loaded plates 16 counted, by the first sensor means 174 for each of all different types of food items, and data for the ID medium of the merchandise food item plate loaded base 172 identified, and data the recovered number of the merchandise food item loaded plates counted, by the second sensing means 180 for each of all the different types of food items, are collated by a computer 182 provided in a cashier, to determine a number of merchandise food item plates (dishes) consumed between the supply and recovery sides for each of the different types of food items, and to compute and supervise respective charges and amounts of sales for merchandise food items of the different types.

[0198] As illustrated, the computer 182 is a personal computer.

[0199] The computer 182 has the first and second sensor means 174 and 180 tied (connected) thereto, respectively.

[0200] Shown also in Fig. 30 are a robot 184 for making "nigiri-sushi" (small oval-shaped vinegared balls topped with sliced fillet of a variety of fish and shellfish, mostly raw but sometimes cook, or a small slice omelet), a robot 188 for making "maki-sushi" (vinegared rice rolled in a sheet of layer with various ingredients in the center, e. g., egg, mushroom, dried gourd, greens, but sometimes only with boiled dried gourd or cucumber in the center), a robot 186 for making "gunkan-maki" (a combination of nigiri-sushi and maki-sushi), and a plurality of cashiers 190.

[0201] An explanation in detail is given in respect of a method of offering servable merchandise items by using the apparatus described above.

[0202] In the merchandise item supply side, the ID medium 170 of each outgoing merchandise item plate loaded base 172 is identified, and the supplied number of merchandise item loaded plates 16 thereon is counted, by the first sensor means 174. Data for the ID medium 170 of the base 172 and data for the counted supply number of merchandise item plates 16 are

stored on the computer 182 for each of all different types of merchandise item plates 16. In this case, a plurality of merchandise item loaded plates 16 of a given identical type are laid one on top of another in a stack on a base 172, and a plurality of such bases 172 with stacks of different types of merchandise item plates are supplied onto the crescent chain conveyer 18 successively.

[0203] In this case, supplying a plurality of merchandise item loaded plates 16, some in a stack of a given type and all in stacks of different types, onto the crescent chain conveyer 18 permits these merchandise item loaded plates to be offered in tiers or two-dimensionally in contrast to the prior art in which they are offered one by one on a single plane one-dimensionally, and thus allows merchandise item loaded plates 16 (thus merchandise items) to be offered in a greater number at a time.

[0204] A guest may take plates 16 loaded with merchandise items the guest likes from the crescent chain conveyer 18, may pay its bill for the dishes and may then be free to take them at any table (illustration omitted) the guest likes in the hall H.

[0205] On the merchandise item plate recovery side, the ID medium 170 of each incoming merchandise item plate loaded base 172 is identified, and the recovered number of merchandise item loaded plates 16 thereon is counted, by the second sensor means 180. Data for the ID medium 170 of the base 172 and data for the counted recovery number of merchandise item plates 16 are sent to the computer 182 for each of all different types of merchandise item plates 16.

[0206] Data for the ID medium of the merchandise food item plate loaded base 172 identified, and data for the supplied number of the merchandise food item loaded plates 16 counted, by the first sensor means 174 for each of all different types of food items, and data for the ID medium of the merchandise food item plate loaded base 172 identified, and data the recovered number of the merchandise food item loaded plates counted, by the second sensing means 180 for each of all the different types of food items, are collated by the computer 182, to determine a number of merchandise food item plates (dishes) consumed between the supply and recovery sides for each of the different types of food items, and to compute and supervise on a real time basis respective charges and amounts of sales for merchandise food items of the different types.

[0207] The first and second sensor means 174 and 180 basically perform their sensing operations for each rotary cycle of the crescent chain conveyer 18, but may be arranged to perform those operations for every two to 10 such rotary cycles.

[0208] The ability to check the merchandise item sales status on a real time basis permits types of merchandise food items becoming short to be seized, conveyed to cooks, and then replenished. It also allows judging in a moment if a merchandise food item likely to remain unsold should be sold at half its price, or should be altered to a takeout, and so forth. Thus, that ability serves to sharply decrease stocking loss, and drastically improve selling efficiency.

[0209] A plurality of cashiers 190 provided inside of the rotary catering table makes it unnecessary for a guest to make entry for different merchandise items whilst paying its bill. A guest needs not to order merchandise food items it wants and then to wait for them prepared, but may take plates 16 for those food items from the crescent chain conveyer 18, hold them out to a service worker at the cashier, and simply pay its bill for those merchandise food item plates or dishes it took. The guest is therefore not kept waiting at the cashier.

[0210] As illustrated, the ID medium 170 affixed to the merchandise item plate base 172 is a two-dimensional bar code, but may be a prevailing bar code.

[0211] Also, whilst the first and sensor means 174 and 180 are shown and described as comprising a scanner 176 and readout sensor 178, they may as will be apparent be of any other construction that permits identifying the ID medium 170 and counting the number of merchandise item plates 16 in a stack.

[0212] Referring next to Figs. 33 to 35, an apparatus of the invention shown relates to claims 11 and 12, claims 26 and 27 and is constructed as described below.

[0213] In this form of embodiment of the present invention as in its preceding form of embodiment, a crescent chain conveyer 18 is disposed in a top area of the base stand 12. A counter 42 is provided along an outer peripheral edge of the base stand. In this form of embodiment of the invention, however, there is included a second crescent chain conveyer 192 designed to move on and along a second looped path or track of conveyance 194 that lies below the first looped path or track of conveyance 44 on and along which the first crescent chain conveyer 18 is designed to move, and shifted somewhat outwards.

[0214] As illustrated, the first crescent chain conveyer 18 carried on the upper tier looped path or track of conveyance 44 offers merchandise food items 14, and the second crescent chain conveyer 192 carried on the lower tier looped path or track of conveyance 194 provides tea cups 164.

[0215] The base stand 12 that carries both the first and second paths of conveyance 44 and 194 is here designed to be liftable up and down.

[0216] As illustrated, the base stand 12 for lifting is carried by hydraulic jacks 64 which for each of its longer segments are arranged below it at three sites.

[0217] Indicated by reference character 66 in Fig. 35 is a merchandise food item setting board for use selectively when the crescent chain conveyer 18 is made inoperative. The merchandise food item setting board 66 as in the form of embodiment shown in Fig. 8 has a width corresponding to the upper tier looped path of conveyance 44, and is inclined downwards from the

crescent chain conveyer 18 side towards the counter 42 to make it easier for guests to see merchandise food items 14 when set thereon.

[0218] Depicted also in Figs. 33 to 35 are gear boxes 202, a gear motor 204, casings 206 for displacing merchandise food items, sushi neta (ingredients or materials), and a cooking table 208.

[0219] An explanation in detail is given below in respect of a method of offering servable merchandise food items by using the apparatus described above.

[0220] Plates 16 loaded with merchandise food items are supplied onto the upper tier looped path or track of conveyance 44 successively from a given site thereof whereas tea cups are supplied onto the lower tier looped path or track of conveyance 194 successively from a given site thereof,

[0221] In a time zone in which guests are decreased in number, both the crescent chain conveyers are made inoperative, the base stand is lifted down to lower the upper tier looped path of conveyance 44 to the level at which the lower tier looped path of conveyance lay before, and the merchandise food item setting board 66 is fitted onto upper tier looped path of conveyance 44. Merchandise food items 14 can now be placed direct on the merchandise food item setting board 66 and served.

[0222] In this case, the lower tier looped path of conveyance 196 not in use stored under the counter 42may not be an eyesore to a customer making a choice of merchant food items or to a service worker or cook in service for a guest.

[0223] Also, storing the lower tier looped path of conveyance 46 below the level of the counter 42 may keep a guest unknown of the rotary catering table. The shop then becomes a traditional, exclusive sushi restaurant to a guest in which a cook on receipt of a guest's order prepares a sushi and serves it on the merchandise food item setting board 66.

[0224] Although in the present form of embodiment of the invention the rotary catering table as illustrated has had two looped paths of conveyance in an upper and a lower tier, 44 and 194, it should be noted that it may have only one looped path of conveyance.

[0225] Also, whilst the upper and lower tier looped paths of conveyance 44 and 194 have been shown and described as rectangular, they may be of a curved, undulating, or any other suitable shape as well.

[0226] Also, whilst in the time zone in which guests are reduced in number the merchandise food item setting board 66 has been shown and described as fitted to the upper tier looped path of conveyance 44 lifted down to a level of the lower tier, it is also possible, without using the board 66, to use the upper tier looped path of conveyance for service by moving the crescent chain conveyer 18 along that looped path of conveyance to permit plates 16 loaded thereon with merchandise food items 14 to be carried by the upper tier looped path of conveyance 44 and thereby to pass by in front of guests.

[0227] It is further possible, without lowering the upper tier looped path of conveyance 48, to use the same together with the lower tier looped path of conveyance 46. In that case, the merchandise food item setting board 66 may be fitted to each of the upper and lower tier looped paths of conveyance 4 and 194.

[0228] Also, although means for lifting the base stand 12 up and down has been shown and described as comprising six hydraulic jacks 64, it may be one or more such jacks. Also, it may not be hydraulic means but may be a motor, an air cylinder or any other structure capable of raising and lowering the base stand 12.

[0229] Referring next to Figs. 36 to 46, there is shown an apparatus according to the present invention that relates to claims 13 and 28 and is constructed as described below.

[0230] In the present form of embodiment of the invention as in its previous forms of embodiment, a crescent chain conveyer 18 is disposed in a top area of a base stand 12, and a counter 42 is arranged along the outer peripheral edge of the base stand. In addition, there is included another crescent chain conveyer 192 designed to move on and along a looped path or track of conveyance 194 that lies, below the looped path or track of conveyance 44 on and along which the crescent chain conveyer 18 is designed to move, and shifted somewhat outwards.

[0231] Here, the upper tier looped path or track of conveyance 44 is designed to offer merchandise food items 14, and the lower tier looped path or track of conveyance 194 is designed to offer tea cups 164.

[0232] This rotary catering table system is provided with tables each with a partition adapted to be stored therein.

[0233] Such a table in this form of embodiment of the invention has a partition 214 positioned to bisect a table top 212 across the seats 210 and adapted to be lifted by a lifting mechanism 216 to rise on the table top 212 from thereunder.

[0234] The partition 214 may just be long enough to have a width corresponding to the width of the table. It may also have a height enough to cut or shade a guest's gaze, and thus preferably of about 30 cm. As illustrated, the partition 214 is divided in the direction of its length into two parts with a spacing 218 between them.

[0235] As shown in Figs. 36 and 38, a bifurcated hot water outlet 220 is provided to rise above a surface region of the table top 212 in which there is the spacing 218, where a placement board 222 for placing thereon tableware, receptacles for a seasoning and a condiment and so forth is mounted so as to cover above the hot water outlet 220.

[0236] As illustrated, the hot water outlet 220 is connected to a hot water conduit laid to extend along the rotary catering table, and is designed to supply hot water into a tea cup 164 when its valve body is pushed with the tea cup. A guest may take a tea bag from a tea bag container 224, 226 described below, into the tea

cup 164, and then supply hot water into the tea cup to have tea.

[0237] Covering above the hot water outlet 220 with the placement board 222 prevents a guest's hand from touching its upper margin and hence protects it from a hazard of scalding.

[0238] A tea bag container 224 with an opening in each of its two opposite sides as shown in Fig. 39 or a tea bag 226 with two openings in its top as shown in Fig. 40 is placed by the placement board 222.

[0239] Two such openings are provided for each of the containers 224 and 226 to ease taking a tea bag (not shown) out of it from either of the seats 210 across the table.

[0240] As illustrated, the lifting mechanism 216 for the partition 214 is shown in Fig. 37 to include a pair of pulleys 232 journaled on a shaft extending through a lower end of the partition 214 inside of the table, and a pair of wires 230 formed of, e. g., a piano wire and turned round these pulleys 232, respectively. To carry the partition 214 via the pulleys 232, the wires 230 have their respective one ends fastened to the table and its upper end portions in two opposite side faces of a partition lifting space 228 as viewed in its longitudinal direction inside of the table, and their respective other ends fastened to and wound round a rotary shaft 236 having a handle 234 detachably attached thereto. By attaching the handle 234 to the rotary shaft 236 and rotating the shaft 236 via the handle 234 to wind onto or unwind from it the wires 230, the partition 214 carried by the wires 230 is allowed to rise from the table inside above the table top, or to descend from the position rising on the table top into the table inside.

[0241] The rotary shaft 236 in this lifting mechanism 216 needs to be equipped with a stopper means to terminate its rotations and then to fix it in position.

[0242] An explanation in detail is given below in respect of a method of offering servable merchandise food items by using the apparatus mentioned above wherein a given table is shared by separate parties seated face to face and the table top is bisected into separate zones.

[0243] The handle 234 is attached to the rotary shaft 236 in the lifting mechanism 216 for the partition 214. The rotary shaft 236 is then rotated by means of the handle 234 to wind the wires 230 onto the rotary shaft 236 and thereby to lift the partition 214 carried by the wires 230 through the partition lifting space 228. The partition 214 rising on the table top 212 bisects it into two separate zones.

[0244] Separate parties seated face to face across the table may separately take from the rotary catering table merchandise food items which they individually like, onto the divided table zones to eat them.

[0245] In this case, bisecting the table top 212 with the partition 214 into the separate zones permits each party to take a meal or dinner relaxed, without caring about the opposite party's eye and what it is taking.

[0246] To store the partition 214 inside of the table, the handle 234 is attached to the rotary shaft 236 in the lifting mechanism 216, and the rotary shaft 236 is then rotated by means of the handle 234 to unwind the wires 230 from the rotary shaft 236 and thereby to lower the partition 214 carried by the wires 230 through the partition lifting space 228. The partition 214 descending from the table top 212 to the inside of the table is stored in the table inside.

[0247] Storing the partition 214 in the table inside allows the table top 202 to be used widely as for a usual table.

[0248] Permitting the partition 214 to be stored in the table inside as desired prevents the partition 214 when set onto the table top 212, from sliding on, or falling from, the table top 212 and thus prevents either the table top 212 or the partition 214 from being damaged.

[0249] An alternative form of the lifting mechanism 216 for the partition 214 is shown in Fig. 42.

[0250] This form of the lifting mechanism 216 for the partition 214 includes pulleys 238 journaled on lower end portions in one side surface of each of part partitions 214, pulleys 240 journaled on upper end portions of one side faces of table's partition lifting spaces 228 as viewed in their longitudinal directions inside the table, and a wire formed of, e. g., a piano wire having its one end fastened to a rotary shaft 236 for winding on and unwinding from it. To carry the partition or part partitions 214, the wire 230 has its other end fastened to the table and to an upper end portion of one side of its partition lifting apace 228 as viewed in its longitudinal direction inside of the table, and is turned round, first on the pulleys 238, then on the pulleys 240, next on the pulleys 238, and then on the pulley 240 and led to the rotary shaft 236. The rotary shaft 236 has a handle 234 removably attached thereto. By attaching the handle 234 to the rotary shaft 236 and rotating the shaft 236 by means of the handle 234 to wind on and unwind from it the wire 230, the partition or part partitions 214 carried by the wire 230 can be raised or lowered through the partition lifting spaces 228. Thus, the partition 214 is allowed to rise on the table top 212, or to descend from its position rising on the top surface 212 into the inside of the table.

[0251] Fig. 43 shows another form of the lifting mechanism 216 for the partition 214.

[0252] In this form of the lifting mechanism 216 for the partition 214, the table is formed inside thereof with a pair of stoppers 242 elastically biased inwards across the opposite ends of a table's partition lifting space 228 in the direction of its length. Correspondingly, the partition 214 is formed with a pair of stopper accepting recesses 244 so that when the partition 214 terminates lifting, the stoppers 242 and the stopper accepting recesses 244 are mated together to hold the partition 214 in place.

[0253] This form of the lifting mechanism 216 for the partition 214 is designed to be operated by hand

through a finger grip 246 formed on the upper face of the partition 214. The partition 214 for rise or storage is lifted or lowered through the finger grip 246.

[0254] Fig. 44 shows still another form of the lifting mechanism 216 for the partition 214.

[0255] In this form of the lifting mechanism 216 for the partition 214, the table is formed inside thereof with a pair of stoppers 248 facing one side surface of a table's partition lifting space 228 in an upper end level thereof. Correspondingly, the partition 214 is formed with a pair of stopper catches 250 which extends from the lower end or surface of the partition to oppose the pair of stoppers 248, respectively so that when the partition ends lifting, the stoppers 248 engage the stopper catches 250.

[0256] Here again, the lifting mechanism 216 for the partition 214 is designed to be operated by hand, as in the form shown in Fig. 43, through a finger grip 246 formed on the upper face of the partition 214. The partition 214 for rise or storage is lifted or lowered through the finger grip 246.

[0257] Figs. 45 and 46 show another form of the placement board 222.

[0258] This form of the placement board is formed at its both sides across the hot water outlets 220 with a chopsticks receptacle 252 and a tea bag receptacle 245, respectively. Its usage is the same as the one shown in and described in connection with Figs. 36 to 40. Hence a repeated description is omitted.

[0259] Fig. 47 shows another form of the partition 214.

[0260] This form of the partition 214 rather than a two part partition is a single body partition having a length corresponding to the width of the table. Its lifting mechanism may be of any of the forms, and may be operated in any of the manners, which are shown in and described in connection with Figs. 37 and 42 to 44. Hence a repeated explanation is omitted.

[0261] Whilst in the forms of the lifting mechanism 216 for the partition 214 use is made of the handle 234 for rotation to raise and lower the partition 214, it should be noted that the handle 234 may be driven to rotate either manually by hand or electrically by, e. g., an electric motor.

[0262] It should also be noted that the lifting mechanism 216 for the partition 214 is not limited to those forms shown in and described in connection with Figs. 37 and 42 to 44, but may be any other mechanism using, e. g., a cylinder or a screw motor, and capable of raising and lowering the partition 214.

[0263] Although tables are shown and described as disposed adjacent or integral with the rotary catering table, it will be obvious that they may each be used as an ordinary table independent of the rotary catering table.

[0264] It will also be obvious that where a partition 214 is divided into its two separate parts, the hot water outlets 220 and the placement board 222 shown and described as disposed in the space 218 between the two part partitions 214 may be omitted.

[0265] Also, whilst the partition 214 is shown and described as comprising either a single body or two divided parts, it will be obvious that it may be divided into three or more parts.

[0266] It should further be noted that the height of the partition is not limited to 30 cm, but may be more or less than 30 cm and may be, for example, 50 cm.

[0267] Referring next to Figs. 47 to 50, an apparatus according to the present invention is shown that relates to claims 14 and 29 and is constructed as described below.

[0268] In this form of embodiment of the invention as in its previous forms of embodiment, a crescent chain conveyer 18 is disposed in a top area of a base stand 12, Further, a heater 90 is incorporated into a given crescent plate 20 of the chain conveyer 18.

[0269] The counter 42 disposed along the side edge of the base stand 12 is shown provided in its upper surface with coin slots 256.

[0270] Adjacent to each of the coin slots 265, a hot water or tea supply mechanism (hot water outlet) for supplying a given amount of hot water or tea in response to entry of a coin.

[0271] The hot water or tea supply mechanism 220 in this form of embodiment of the invention is not a conventional hot water outlet with a valve body and rather omits the valve body. It has an electromagnetic valve (not shown) included therein and is so constructed that entry of a coin into the coin slot 256 allows the electromagnetic valve to remain open for a given period of time (several seconds), which permits hot water to be supplied from the hot water supply outlet.

[0272] Disposed adjacent to the hot water or tea supply mechanism 220 are a tea bag receptacle 258 and a paper cup storing receptacle 262.

[0273] As illustrated for this form of embodiment, the tea bag receptacle 258 has a plurality of racks or trays for storing a like plurality of kinds of tea bags.

[0274] Also in this form of embodiment, the paper cup storing receptacle 262 as shown in Fig. 48 comprises an outer frame 266 which has its top open and formed with a stopper 264 on its upper peripheral edge for loading with a large number of paper cups 260 placed one on top of another as a stack thereof on a spring 268 seated in the frame 266. The spring 268 acts to bias a stack of paper cups against the stopper 264 to hold them in place within the frame 266.

[0275] Also, in order to ease a guest taking a tray 270, the counter 42 is provided with a tray storing means 272.

[0276] In the illustrated form of embodiment, the tray storing means has an opening 274 formed vertically through the counter 42 and a tray storing space 276 formed below the opening 274, and includes a spring 278 seated on the bottom of the tray storing space 276. A number of trays 270 are placed one on top of another

as a stack thereof on the spring 278. The spring 278 here acts to elastically bias a stack of the trays 270 upwards and to permit the uppermost tray 270 to project or rise out of the space 276 through the opening 274. Upon removal of that tray 270, a tray 270 that was immediately below that is urged to rise, assuming the uppermost tray position.

[0277] In Figs. 47 to 50, tables are shown as indicated by reference numeral 280.

[0278] An explanation in detail is given in respect of a method of offering servable merchandise food items by using the apparatus described above.

[0279] First, merchandise food items such as sushi and fruit items that need not be heated or kept warm are placed on ordinary plates 20, and merchandise food items such as shumai and gyoza items that need be heated or kept warm are placed on the plates 20 each having the heater incorporated therein, of the crescent chain conveyer 18, as carried on their plates (not shown) and carried in their receptacles (not shown), respectively.

[0280] After that, a guest may pull out one that tray 270 of the uppermost position in the stack of trays in the tray storing means 272 which rises on an upper surface of the counter 42 through the opening 274. Then, the guest may take merchandise food items on plates and/or in receptacles from their respective plates 20 of the moving crescent chain conveyer 18, and place them on the tray 270.

[0281] The guest may take one paper cup out of the paper cup storing receptacle 262 and a tea bag it likes out of the tea bag receptacle 258, put the tea bag in the paper cup 260 and position that paper cup immediately under the hot water supply mechanism 220 on the counter 42.

[0282] The guest may then put a coin, e. g., ¥10, ¥50 or ¥100 coin, into the coin slot 256 to enable the hot water supply mechanism 220 to operate supplying a given amount of hot water into the paper cup 260, thus making a cup of tea.

[0283] The guest on placing on the tray 270 the paper cup 260, now the cup of tea, may carry the tray 270 and the merchandise food items and the cup of tea thereon to a cashier, may pay a bill therefor and may have them as the guest likes at any table in the shop or catering establishment.

[0284] Forming merchandise food item plates and receptacles as well as tea cups of a disposable material such as paper permits them after services to be thrown into a trash bin.

[0285] Forming merchandise food item plates and receptacles as well as tea cups of a disposable material such as paper permits them after use to be thrown into a trash bin and thus eliminate the need altogether to clean tableware after services.

[0286] Making tea drinking payable sharply cuts down the cost of offering it free as in the past and at the same time permits resolving the other problems so far met such as a risk of scalding in handling hot water.

[0287] Whilst the present form of embodiment of the invention is shown and described as applied to a rotary catering table system in which both types of merchandise food items, i. e., those merchandise food items which are ordinary and those merchandise items which need be heated or kept warm are offered around a rotary path (a single loop of crescent chain conveyer 18), it will obvious that it may be used with a rotary catering table system in which only ordinary merchandise food items are offered, and also to a rotary catering table system having a plurality of tires of rotary path or paths of conveyance.

[0288] Also, whilst the hot water or tea supply mechanism 220 is shown and described as supplying hot water, it may be adapted to prepare in advance and direct supply Japanese tea, oolong [oulong] tea, jasmine tea, etc.

[0289] Also, whilst the coin slot 256 is shown and described as provided on the counter 42, it may be provided at a side edge portion of the base stand 12 in the rotary catering table.

[0290] Also, whilst the coin cast into the coin slot 256 is described to be a coin of currency in circulation, it may be a special coin for tea drinking to be bought in advance from the shop or catering establishment and used by a guest therefor.

[0291] Also, whilst the tea cup is shown and described to be a paper cup, it may be made of ceramic. Then, the paper cup storing receptacle can be omitted, and such tea cups may be placed in advance on the counter 42 direct or on ordinary plates 20 of the crescent chain conveyer 18 for offering.

[0292] Also, whilst trays 270 are shown and described to be stored in the tray storing means 272, the tray storing means 270 may be omitted, and a tray storing rack may be provided beneath the counter 42 for storing trays in a stack therein.

[0293] Further, whilst tea bags are shown and described to be stored in the tea bag receptacle 258 as classified, they may be offered with ordinary plates 20 of the crescent chain conveyer 18, as placed on their respective merchandise item plates and in their respective merchandise item receptacles thereon.

[0294] Referring next to Figs. 51 to 53, there is shown an apparatus in accordance with the present invention, that relates to claims 15 and 30 and is constructed as described below.

[0295] In this form of implementation of the invention as in its previous forms of implementation, a crescent chain conveyer 18 is disposed in a top area of a base stand 12, and a counter 42 is also arranged as previously described.

[0296] Here, a plurality of merchandise item loadable rack setting boards 290 are arranged in series on the counter 2 in its innermost corner regions. Each merchandise item setting board 290 comprises a top open box-like member 282 and a cover member 288 therefor.

Attached to the cover member 288 are an input device 284 for entering varieties or kinds of merchandise items, and an indicator or display 286 for displaying a total charge for merchandise items entered kind by kind.

[0297] As illustrated for this form of implementation, the kind input device 284 is shown constituted by push-buttons for merchandise items classified by their kinds. Here, the input device in combination wit the display 286 may be enough to have functions to be able to totalize charges according to kinds entered and display the charges and a total charge thereof, and may thus be a calculator having functions as able as a scientific electronic calculator.

[0298] Also, the merchandise item setting boards 290 to ease a guest to see merchandise items loaded thereon are each declined towards the guest and in a plurality are arranged in series.

[0299] Also, to possess an enhanced sense of quality, the merchandise item setting boards 290 have each a decorative design 292 applied to the surface of the cover member 288.

[0300] In Figs. 51 to 53, the merchandise item loadable rack or setting board 290 is shown provided therein with a cooling material 296 such as blocks of ice as contained in a receptacle 294. A slice of "sashimi" (sliced raw fish) is indicated at 298 as a merchandise food item kept cold.

[0301] An explanation in detail is given below in respect of a method of offering merchandise food items by using the apparatus described above.

[0302] First, a service worker loads each merchandise item setting board 290 with a set of sushi items as merchandise food items 14, and pushes classified input push-buttons as the variety kind input device 8 according to, and thereby enters, the kinds of the sushi items 14 loaded.

[0303] Then, a total charge according to the classified input push-buttons pushed is displayed on the indicator 286. Later, if a cook serves the board 290 with further merchandise food items 14, each time the cook pushes a classified input push-button for the kind of each such further merchandise food item served, an accumulated total charge is displayed on the indicator 286.

[0304] This permits a guest to be known of a charge for the merchandise items the guest has so far had, and to judge in a moment how much the guest may have further within its budget, and also allows a service worker to eliminate the need to calculate at a cashier by checking on a display on the indicator 286. Consequently, the guest will no longer be kept waiting at the cashier for long.

[0305] Also, interposing a receptacle 294 containing a cooling material 296 within the box member 286 of the merchandise food item setting board 290 permits loading on the board 290 in a region thereof corresponding to an area where the receptacle 294 is placed, a merchandise food item such as sashimi which differing from sushi need be kept cold and thus enhancing the efficiency of maintaining freshness of such a food item.

[0306] In this case as well, the cook may push a classified input push-button in the kind input device 284, thereby permitting a charge for a merchandise food item kept cold to be added as well and an accumulated total charge here again to be displayed on the indicator 286.

[0307] Further, a merchandise food item setting rack or board 290 configured in a box like structure is light in weight and can be readily removed from the counter 42. Thus, exchanging the board 290 after service at the place the guest left with such a but cleaned hygienic merchandise food item setting board, and removing only boards after services into the kitchen for cleaning, troubles in no way guests around dinning on the counter 42 and allows receiving a new guest forthwith.

[0308] Also, in contrast to a conventional merchandise food item setting board fixed in place on the counter, the merchandise food item setting board or rack described above permits widening the top surface of the counter 42 and allows pieces of tableware which are large in size to be placed as they are, thus expanding the range of offering merchandise food items to guests whilst providing the ability to offer merchandise food items in elaborate fashions.

[0309] Also, as the imaginary lines in Fig. 53 indicate, the kind input device 284 can be arranged on a working table 208 on the side of service workers to the base stand 12 to enable a service worker in making kind entries for merchandise food items 14 to do so quite easily at hand.

[0310] Whilst as illustrated the kind input device 284 is constituted by the classified kind input push-buttons, it may enough be a mechanism capable of making a plurality of entries for kinds of merchandise food items 14.

[0311] Also, whilst the indicator or display 286 is shown and described as attached to a top surface of the cover member 290, it may be attached to any place which permits a guest to check on display for a charge, for instance on a front side surface of the cover member 288 and a front side surface of the box member 282. The place to which it is attached may also be altered suitably.

[0312] Optionally, it is also possible to additionally provide on the cover member 288 of the merchandise food item setting board 290 a mechanism for issuing a receipt with a printing made of a charge displayed.

[0313] Further, the merchandise food item loadable rack setting board 290 may be altered in shape, and it is also optional to apply a design on a top surface of the cover member 288.

[0314] Also, whilst the merchandise food item setting boards 290 are represented as three, they may be in any number as the space in the shop accommodate.

[0315] Further, whilst the receptacle 294 containing

a cooling material 296 shown and described to be disposed in the merchandise item setting board 290 is not indispensable and may be omitted if merchandise items to be kept cold is not offered or served.

[0316] It should further be noted that features recited in the claims for the apparatus of the present invention can be implemented in a variety of combinations.

Industrial Applicability

[0317] The method of and apparatus for offering servable merchandise items according to the present invention are extremely effective and useful in catering shops and establishments provided with a rotary catering table system having a crescent chain conveyer disposed in a top area of a base stand for conveying merchandise items round along a rotary or looped path of conveyance, the system also having a heater disposed at a suitable site on the crescent chain conveyer and connected to a power supply.

Claims

1. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, characterized in that the method includes:

   providing the system with a merchandise item offering means (22) that comprises a frame (24) and a plurality of merchandise item loaded plate accepting portions (26) established in a like plurality of tiers in the frame (24), respectively;
   loading merchandise item loadable plates (16) with servable merchandise items (14);
   placing the merchandise item loaded plates (16) on the plate accepting portions (26) in the merchandise item offering means (22); and
   setting the merchandise item offering means (22) with the plates (16) so placed therein, on a crescent plate (20) of the crescent chain conveyer (18),
   thereby permitting a number of such merchandise items (14) to be offered together at a time.

2. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, characterized in that the method includes:

   configuring the crescent chain conveyer (18) to provide a looped conveyer path (44) in said system that comprises a first conveyer path (46) which extends from one side to a side opposite thereto, a second conveyer path (48) which lies above the first conveyer path (46) parallel thereto and extends from the opposite side to the one side and a pair of third conveyer paths (50) which are each so inclined and run as to join the respective ends of the first and second conveyer paths (46) and (48) together at the one and opposite sides, respectively, thereby permitting servable merchandise items (14) to be conveyed round along the single looped conveyer path (44) in two tiers, upper and lower.

3. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, characterized in that the method includes:

   providing the system with a merchandise item plate replenishment conveyer means (70) that has one side communicating direct with the crescent chain conveyer (18) from an inside thereof and a plurality of subdivided conveyer sections closer to the direct communicating side which are adapted to be individually driven;
   loading on the replenishment conveyer means (70), merchandise item loaded plates (16) and a succeeding merchandise item loaded plate (16a) for standby in sequence; and
   in response to sensing of absence of a merchandise item loaded plate (16) on the crescent chain conveyer (18) by a sensor (76) arranged behind a position on the crescent chain conveyer (18) of the direct communicating side of the replenishment conveyer means (70) in a direction of movement of the crescent chain conveyer (18), feeding a given number of the merchandise item loaded plates (16) from the replenishment conveyer means (70) onto the crescent chain conveyer (18) whilst transferring the succeeding merchandise item loaded plate (16a) on the replenishment conveyer means (70) onto a section thereof towards to the crescent chain conveyer (18) for standby thereon.

4. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to

a power supply (84), characterized in that the method includes:

placing on or over the heater (90) a water container (92) containing cold or hot water (W);
preparing a plurality of merchandise item receptacles (96) each of which comprises a paper made cylindrical body (98) and a paper made setting board (102) disposed inside thereof, a said receptacle (96) having incisions or portions notched (104) made upwards from its lower rim that serve for such receptacles (96) to be placed one upon another as snugly fitted and thus to form a stack thereof for mounting on or over the water container (92);
loading each of the merchandise item receptacles (96) with a "yakimono" (grilled or fried food) dish such as pieces of "gyoza" (fried dumpling stuffed with minced pork), and mounting a stack formed as aforesaid with the aid of the incisions (104), of such merchandise item receptacles (96) loaded respectively with "yakimono" dishes, on or over the water container (92); and
vaporizing with the heater (90), water (W) in the water container (92) into a food item warming vapor for emanation into the merchandise item receptacles (96), thereby rendering the "yakimono" dishes in the merchandise item receptacles (96) servable in a state in which they are kept warm by said warming vapor.

5. A method of offering servable merchandise items in a rotary catering table system as set forth in claim 4, characterized in that:

the paper made setting board (102) of such a merchandise item receptacle (106) is formed with a number of small holes or orifices (108);
"mushimono" (steamed food) dish such as pieces of "shumai" [shao-mai] (steamed dumpling stuffed with minced pork) is placed on the paper made setting board (102) with the small holes or orifices (108) in the merchandise item receptacle (106);
a stack formed as aforesaid with the aid of the incisions (104), of such merchandise item receptacles (06) with "mushimono" dishes respectively placed therein is mounted on or over the water container (92); and by means of the heater (90), water (W) in the water container (92) is vaporized into a food item warming and steaming vapor for emanation into the merchandise item receptacles (96), thereby rendering the "mushimono" dishes in the merchandise item receptacles (106) servable in a state in which they are kept warm and steamed by said warming and steaming vapor.

6. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method includes:

placing on or over the heater (90) a water container (92) loaded with cold or hot water (W);
placing on or over the water container (92) a noodle dish receptacle (110) that comprises a first component receptacle (116) in which a soup (114) is admitted and a second component receptacle (122) placed on or over the first receptacle member (116) and accepting noodles (118); and
with the heater (90), vaporizing water (W) in the water container (92) into a food item warming vapor for emanation into the noodle dish receptacle (110) and thereby rendering a noodle dish servable with the soup (114) and the noodles (118) in the noodle dish receptacle (110) in a state in which they are kept warm by said warming vapor.

7. A method of offering servable merchandise items in a rotary catering table system as set forth in claim 6, characterized in that the method further includes:

placing on or over the second receptacle member (122) a third component receptacle (126) that accepts masses (124) of noodle dish ingredients and spices or condiments, thereby permitting these ingredients and spices or condiments to be served separately of the soup (114) and noodles (118) and thus in a fresh state whilst substantially preventing vaporization of the water content of the noodles (118).

8. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method includes:

placing on or over the heater (90) a water container (92) loaded with cold or hot water (W);
placing on or over the water container (92) a rice gruel dish receptacle (134) that comprises a first receptacle member (116) in which a rice gruel (132) of a rice gruel dish is admitted and

a second receptacle member (126) placed on or over the first receptacle member (116) and accepting masses (124) of rice gruel dish ingredients and spices or condiments; and

with the heater (90), vaporizing water (W) in the water container (92) into a food item warming vapor for emanation into the rice gruel dish receptacle (134) and thereby rendering the rice gruel dish servable with the rice gruel (132) in the rice gruel dish receptacle (134) in which it is kept warm by said warming vapor.

9. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method includes:

constituting the heater (90) with a crescent plate (20) of a crescent chain conveyer (18) and a heater portion (138) removably fitted to that crescent plate (20); and

selectively when a warm merchandise item is being offered, mounting the heater portion (138) onto said plate (20) connected to the power supply (84) and placing the warm merchandise item on or over the heater portion (138) so that the warm merchandise item is kept warmed by the heater portion (138) that emanates a heat.

10. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method includes;

stacking a plurality of merchandise item dishes (16) of a given type of food items one upon another as a stack thereof on a base (172) that has an ID medium (170) appended thereto and that is affixed onto the crescent chain conveyer (18) and affixing onto the crescent chain conveyer (18) a plurality of such bases (172) with such stacks of merchandise item dishes (16) of different types of food items mountable thereon, respectively;

preliminarily in a supply side of the merchandise food item dishes (16), with a first sensor means (174), for each of the different types of food items, counting a number of the merchandise item dishes supplied (16) and identifying the ID medium (170) therefor and storing in a computer (182) the counted number of the supplied merchandise item dishes (16) as a supply side merchandise item dish count data and the identified ID medium (170) therefor as a supply side ID medium data;

subsequently in a recovery side of the merchandise food item dishes (16), with a second sensor means (180) connected to the computer (182), for each of the different types of food items, counting a number of the merchandise food item dishes recovered (16) and identifying the ID medium (170) therefor and storing in the computer (182) the counted number of the recovered merchandise item dishes (16) as a recovery side merchandise item dish count data and the identified ID medium (170) therefor as a recovery side ID medium data; and

by using the computer (182), collating for each of the different types of food items said recovery side ID medium data and merchandise item dish count data and said supply side ID medium data and merchandise item dish count data to count a number of merchandise item dishes consumed between the supply and recovery sides for each of the different types of food items, to compute charges and an amount of sales there for and then to record and display a sales status for servable merchandise items of each of the different types.

11. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) held in a looped conveyer track to turn round in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method includes:

carrying the crescent chain conveyer (18) on a looped conveyer track (44) made vertically movable; and

in a time zone in which guests are of a reduced number, positioning the looped conveyer track (44) at a lower level, halting the crescent chain conveyer (18) to turn around in the track (44) and convey, fitting onto the looped conveyer track (44) a merchandise item setting board (66) configured to correspond thereto, and serving merchandise items (14) on the board (66).

12. A method of offering servable merchandise items in a rotary catering table system having a crescent

chain conveyer (18) held in a looped conveyer track to turn around in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method includes:

carrying the crescent chain conveyer (18) on a looped conveyer track(44) made vertically movable;
providing an additional crescent chain conveyer looped conveyer track (194) at a level that is lower than a level where the crescent chain conveyer carrying looped conveyer track (44) lies;
offering by conveying merchandise items and teacups on the looped conveyer tracks (44) and (194), respectively; and
in a time zone in which guests are of a reduced number, bringing the looped conveyer track (44) down to the lower level.

13. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that:

a table is arranged in an outer peripheral area of the base stand (12), and a partition (214) is provided for storing in an interior of the table, liftably by means of a lifting mechanism (216) to come out on the surface of the table (212) and then to stand at a position such as to halve the table surface (212); and
when the same table is to be shared by separate parties seating face to face, the lifting mechanism (216) is actuated to lift the partition (214) from the table interior to rise on the table surface (212), thereby bisecting the table surface (212).

14. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method comprises:

providing a coin slot (256) and a tea or the like beverage supply mechanism (220) on a side wall portion of the base stand (12) or on a top surface area of a counter (42) arranged along a side wall portion of the base stand (12); and
feeding a given amount of tea or the like beverage into a teacup from the supply mechanism (220) in response to entry of a coin or coins into the coin slot (256).

15. A method of offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the method comprises:

preparing a plurality of merchandise item loadable racks (290) each of which comprises a tray or top open box member (282) and a cover member therefor (288), the cover member being provided with merchandise item variety selection input means (284) and charge indicator means (286) for displaying a total charge of a variety of input merchandise items as selected;
arranging the merchandise item loadable racks (290) on a side area of the base stand (12) or on an inner corner surface area of a counter (42) disposed lateral to the base stand (12);
loading servable merchandise items (14) for service on the merchandise item loadable racks (290); and
permitting a variety of the servable merchandise items (14) to be selected through the selection input means (284) and the charge indicator means (286) to display a total charge of the various servable merchandise items so selected.

16. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, characterized in that:

the apparatus includes a merchandise item offering means (22) that comprises a frame (24) and a plurality of merchandise item loaded plate accepting portions (26) established in a like plurality of tiers in the frame (24), respectively,
the plurality of merchandise item loaded plate accepting portions (26) being adapted to have placed thereon a like plurality of merchandise

item loadable plates (16) as loaded with servable merchandise items (14), respectively,

the merchandise item offering means (22) being mounted on a crescent plate or plates (20) of the crescent chain conveyer (18).

17. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, characterized in that:

the crescent chain conveyer (18) is adapted to form a looped conveyer path (44) that comprises a first conveyer path (46) for conveyance from one side to a side opposite thereto, a second conveyer path (48) disposed above the first conveyer path (46) parallel thereto for conveyance from the opposite side to the one side and a pair of third conveyer paths (50) which are each so inclined and run as to join the respective ends of the first and second conveyer paths (46) and (48) together at the one and opposite sides, respectively, so that servable merchandise items (14) may be conveyed round along the single looped conveyer path (44) in two tiers, upper and lower.

18. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, characterized in that the apparatus includes:

a merchandise item plate replenishment conveyer means (70) that has one side communicating direct with the crescent chain conveyer (18) from an inside thereof and a plurality of subdivided conveyer sections closer to the direct communicating side which are adapted to be individually driven,

the replenishment conveyer means (70) being adapted to be loaded with merchandise item loaded plates (16) and a succeeding merchandise item loaded plate (16a) for standby in sequence; and

a sensor means disposed behind a position on the crescent chain conveyer (18) of the direct communicating side of the replenishment conveyer means (70) in a direction of movement of the crescent chain conveyer (18) for sensing absence of a merchandise item loaded plate (16) on the crescent chain conveyer (18),

whereby sensing of absence of a merchandise item loaded plate (16) on the crescent chain conveyer (18) by the sensor (76) effects feeding a given number of the merchandise item loaded plates (16) from the replenishment conveyer means (70) onto the crescent chain conveyer (18) whilst transferring the succeeding merchandise item loaded plate (16a) on the replenishment conveyer means (70) onto a section thereof towards the crescent chain conveyer (18) for standby thereon.

19. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the apparatus includes:

a water container (92) loaded with cold or hot water (W) and placed on or over the heater (90); and

a plurality of merchandise item receptacles (96) each of which comprises a paper made cylindrical body (98) and a paper made setting board (102) disposed inside thereof for receiving a "yakimono" (grilled or fried food) dish such as pieces of "gyoza" (fried dumpling stuffed with minced pork) therein,

a said receptacle (96) having incisions (104) or portions notched made upwards from its lower rim that serve for such receptacles (96) to be placed one upon another as snugly fitted to form a stack thereof for mounting on or over the water container (92),

the heater (90) when actuated vaporizing water (W) in the water container (92) into a food item warming vapor for emanation into the merchandise item receptacles (96), thereby rendering such "yakimono" dishes in the merchandise food item receptacles (96) servable in a state in which they are as kept warm by said warming vapor.

20. An apparatus for offering servable merchandise items in a rotary catering table system as set forth in claim 19, characterized in that:

each of the paper made setting board (102) of the merchandise item receptacles (96) is formed with a number of small holes or orifices (108) to form a merchandise item receptacle (106), and

such merchandise item receptacles (106) are adapted to accept "mushimono" (steamed food) dishes such as "shumai" [shao-mai] (steamed dumpling with minced pork) on such paper made setting boards (102) with the small

holes or orifices (108), and then placed one upon another as snugly fitted with the aid of such incisions (104) made therein to form a stack thereof for mounting on or over the water container (92),

the heater (90) when actuated vaporizing water (W) in the water container (92) into a food item warming and steaming vapor for emanation into the merchandise item receptacles (96), thereby rendering ""mushimono" dishes in the merchandise item receptacles (106) servable in a state in which they are as kept warm and steamed by said warming and steaming vapor.

21. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the apparatus includes:

a water container (92) loaded with cold or hot water (W) and placed on or over the heater (90); and

a noodle dish receptacle (110) placed on or over the water container (92), the noodle dish receptacle (110) comprising a first receptacle member (116) in which a soup (114) is admitted and a second receptacle member (122) placed on or over the first receptacle member (116) and for accepting noodles (118),

the heater (90) when actuated vaporizing water (W) in the water container (92) into a food item warming vapor for emanation into the noodle dish receptacle (110), thereby rendering a noodle dish servable with the soup (114) and the noodles (118) in the noodle dish receptacle (110) in a state in which it is kept warm by said warming vapor.

22. An apparatus for offering servable merchandise items in a rotary catering table system as set forth in claim 21, characterized in that the noodle dish receptacle includes a third receptacle member (126) placed on or over the second receptacle member (122) for accepting masses (124) of noodle dish ingredients and spices or condiments, which permits these ingredients and spices or condiments to be served separately of the soup (114) and noodles (118) and thus in a fresh state while substantially preventing vaporization of the water content of the noodles (118).

23. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the apparatus includes:

a water container (92) loaded with cold or hot water (W) and placed on or over the heater (90); and

a rice gruel dish receptacle (134) placed on or over the water container (92), comprising a first receptacle member (116) in which a rice gruel (132) of a rice gruel dish is admitted and a second receptacle member (126) placed on or over the first receptacle member (116) for accepting masses (124) of rice gruel dish ingredients and spices or condiments,

the heater (90) when actuated vaporizing water (W) in the water container (92) into a food item warming vapor for emanation into the rice gruel dish receptacle (134), thereby rendering a rice gruel dish servable with the rice gruel (132) in the rice gruel dish receptacle (134) kept warm by said warming vapor.

24. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that:

the heater (90) is constituted with a crescent plate (20) of the crescent chain conveyer (18) and a heating portion (138) that is detachably mountable onto said plate (20) connected to the power supply (84), the heating portion (138) being mounted to the plate (20) selectively when a warms merchandise item is offered,

wherein the warm merchandise item is placed on or over the heating portion (138) so that the warm merchandise item is servable in a state in which it is kept warmed by the heating portion (138) that emanates a heat.

25. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), the apparatus

comprising:

a merchandise item loaded plate mounting base (172) on which a plurality of merchandise item dishes (16) of a given type of food items are stackable one upon another as a stack thereof, the base (172) having an ID medium (170) appended thereto and being affixed onto the crescent chain conveyer (18), there being provided a plurality of such bases (172) with such stacks of merchandise item dishes (16) of different types of food items mountable thereon, respectively;
a first sensor means (174) disposed in a supply side of the merchandise item dishes (16) for counting, for each of the different types of food items, a number of the merchandise item dishes supplied (16) and for identifying the ID medium (170) therefor;
a second sensor means (180) disposed in a recovery side of the merchandise item dishes (16) for counting, for each of the different types of food items, a number of the merchandise item dishes recovered (16) and for identifying the ID medium (170) therefor;
a computer for storing, for each of the different types of food items, the first sensor means (174) counted number of the supplied merchandise item dishes (16) as a supply side merchandise item dish count data and the first sensor means (174) identified ID media (170) therefor as a supply side ID medium data and storing, for each of the different types of food items, the second sensor means (180) counted numbers of the recovered merchandise item dishes (16) as a recovery side merchandise item dish count data and the second sensor means (180) identified ID medium (170) therefor as a recovery side ID medium data, and for collating, for each of the different types of food items, said recovery side ID medium data and merchandise item dish count data with said supply side ID medium data and merchandise item dish count data to count a number of merchandise item dishes consumed between the supply and recovery sides for each of the different types of food items, to compute charges and an amount of sales therefor and then to record and display a sales status of servable merchandise items for each of the different types.

26. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that:

a looped conveyer track (44) that carries the crescent chain conveyer (18) is vertically movable in a manner such that in a time zone in which guests are of a reduced number, the looped conveyer track (44) may be shifted and held to assume a lower position with the crescent chain conveyer (18) held to cease conveying, to permit a merchandise item setting board (66) configured to correspond to the conveyer track (44) to be then selectively fitted with the conveyer track (44) and thus to allow a merchandise item or items (14) to be placed on the board (66) and thereby served.

27. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that:

the crescent chain conveyer (18) is carried on a looped conveyer track (44), which is made vertically movable in such a manner:
that normally the looped conveyer track (44) lies in an upper level, offering servable merchandise items (14) whilst a separate conveyer track (194) lies in a lower level, offering teacups (164), and
that in a time zone in which guests are of a reduced number the conveyer track (44) is brought down to the lower level.

28. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that:

a table is arranged in an outer peripheral area of the base stand (12), and a partition (214) is provided for storing in an interior of the table, liftably by means of a lifting mechanism (216) to come out on the surface of the table (212) and then to stand at a position such as to halve the table surface (212), and
the lifting mechanism (216) is operable when

the same table is to be shared by separate parties seating face to face, to allow the partition (214) to be lifted from the table interior to rise on the table surface (212), thereby bisecting the latter.

29. An apparatus for offering merchandise food items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that:

a hot water/tea supply mechanism (220) associated with a coin slot (256) is arranged at a side area of the base stand (12) or on a top surface of a counter (42) arranged lateral to the base stand (12),
the hot water/tea supply mechanism (220) being operable in response to entry of an applicable coin into the coin slot (256) to supply a given amount of tea or the like beverage into a cup/teacup (164).

30. An apparatus for offering servable merchandise items in a rotary catering table system having a crescent chain conveyer (18) disposed in a top area of a base stand (12) for conveying servable merchandise items (14) around a loop, the system also possibly having a heater (90) disposed at a suitable site in or on the crescent chain conveyer (18) and connected to a power supply (84), characterized in that the apparatus includes:

a plurality of merchandise item loadable racks (290) each of which comprises a tray or top open box member (282) and a cover member therefor (288),
the cover member being provided with merchandise item variety selection input means (284) and charge indicator means (286) for displaying a total charge of a variety of input servable merchandise items as selected,
the merchandise item loadable racks (290) being arranged on a side area of the base stand (12) or on an inner corner surface area of a counter (42) disposed lateral to the base stand (12), to permit servable merchandise items (14) for service to be placed on the merchandise item loadable racks (290), and to allow a variety of the servable merchandise items (14) to be selected through the selection input means (284) and the charge indicator means (286) to display a total charge of the various merchandise items so selected.

Fig. 1

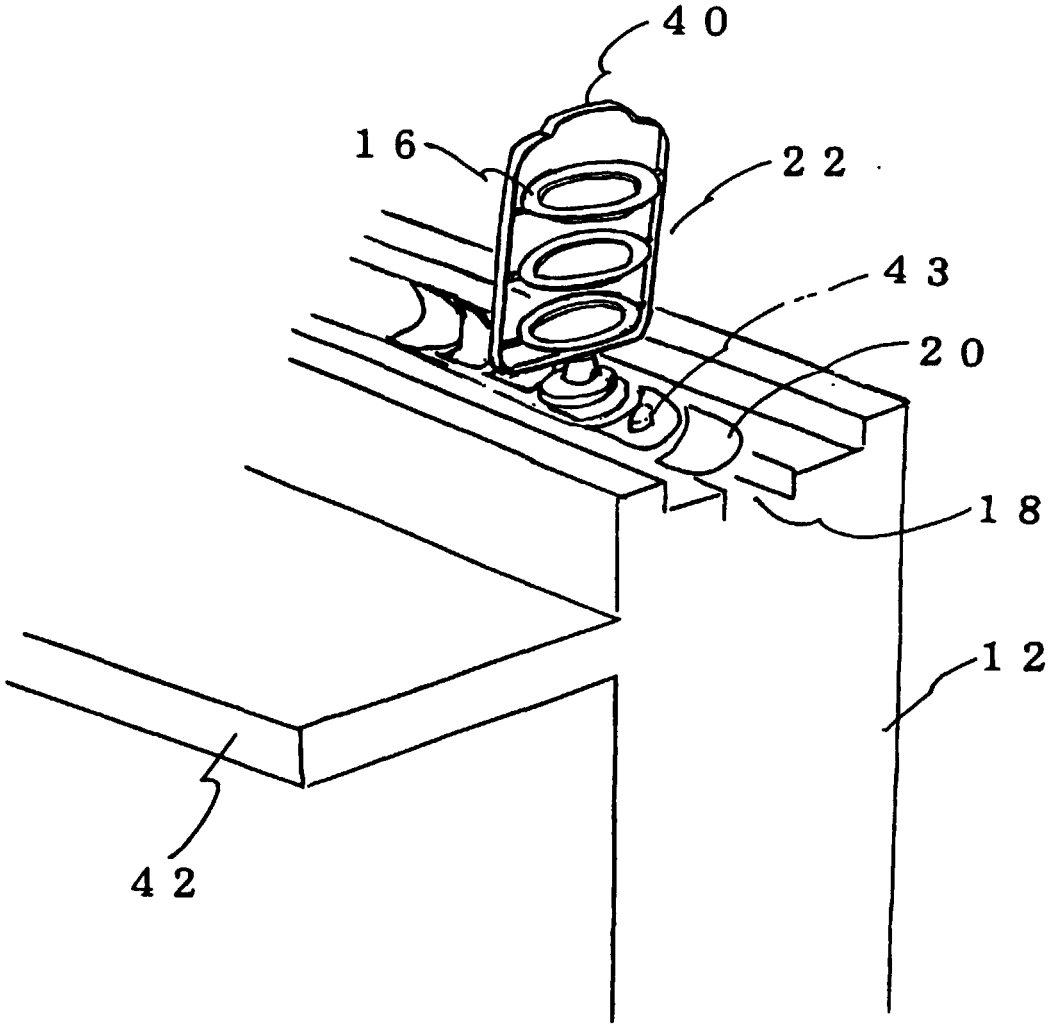


Fig. 2

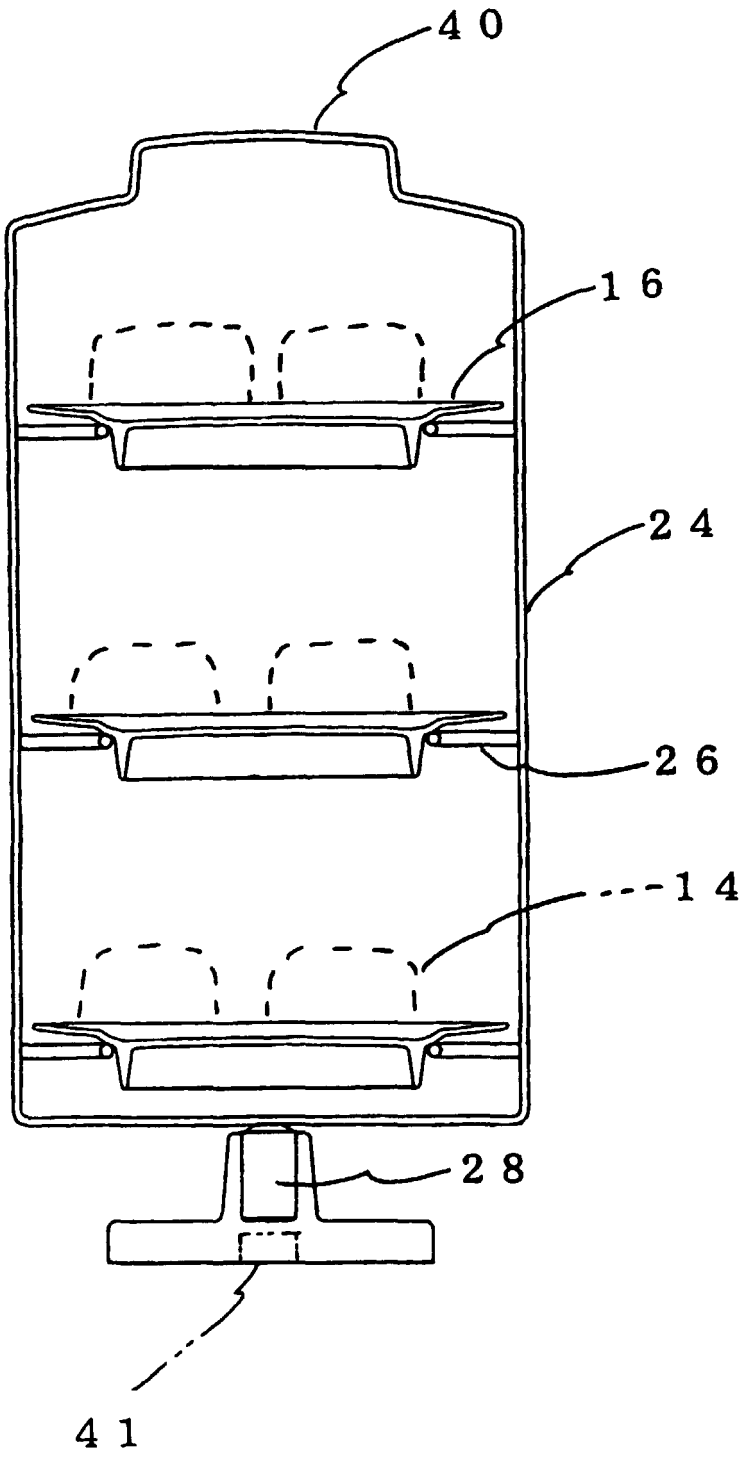


Fig. 3

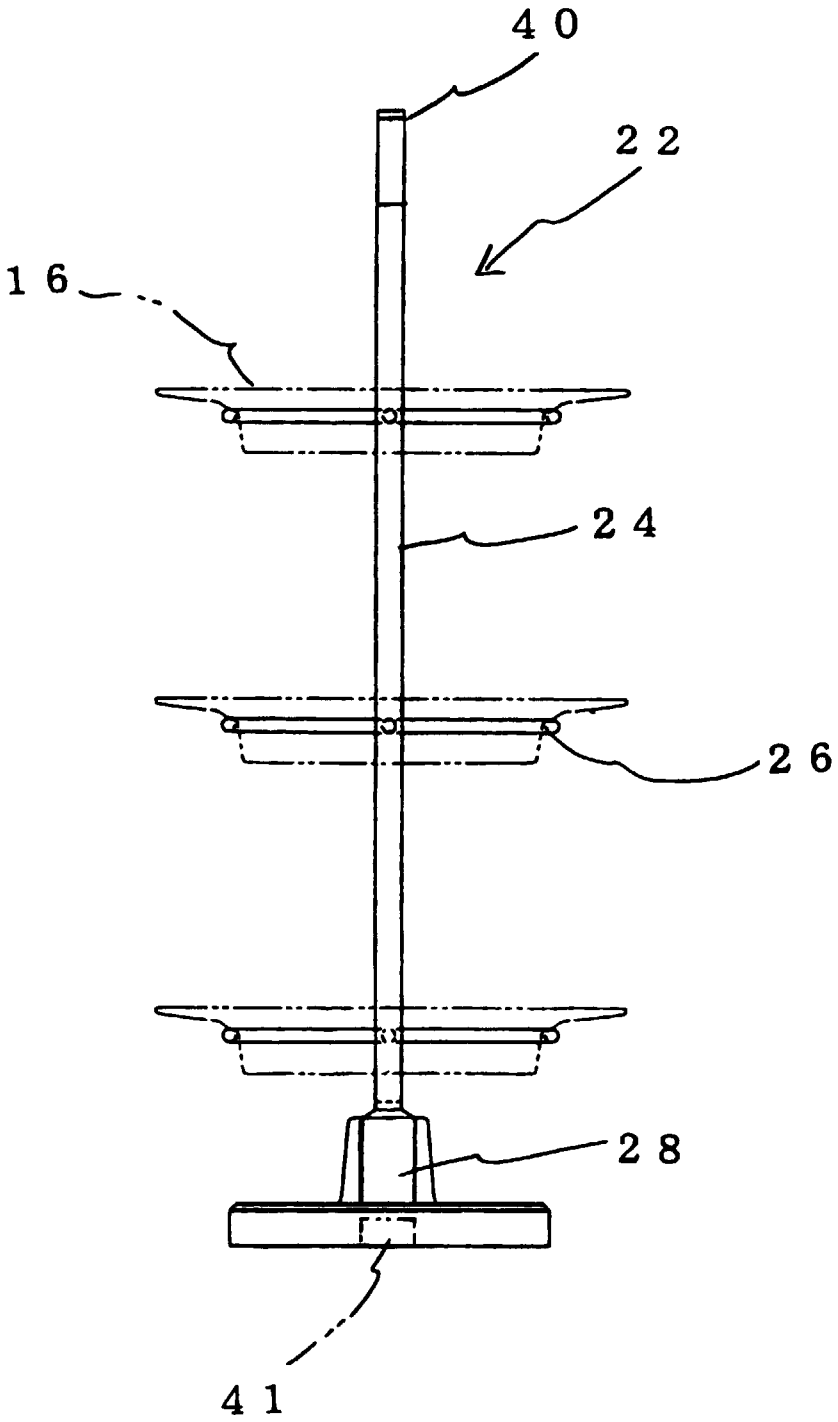


Fig. 4

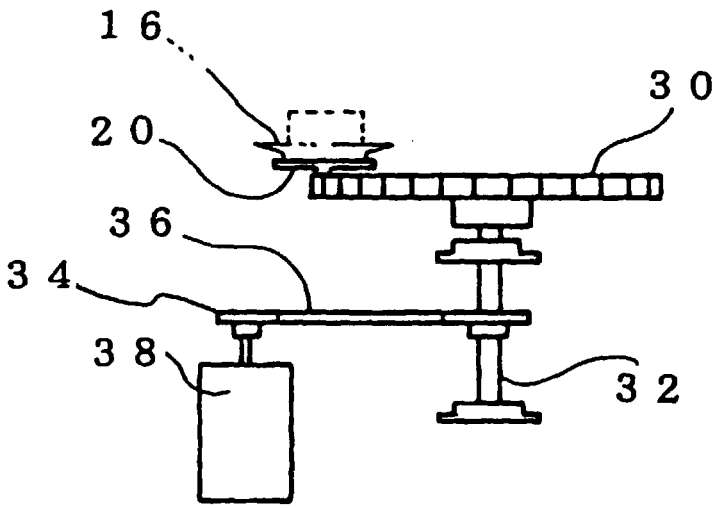


Fig. 5

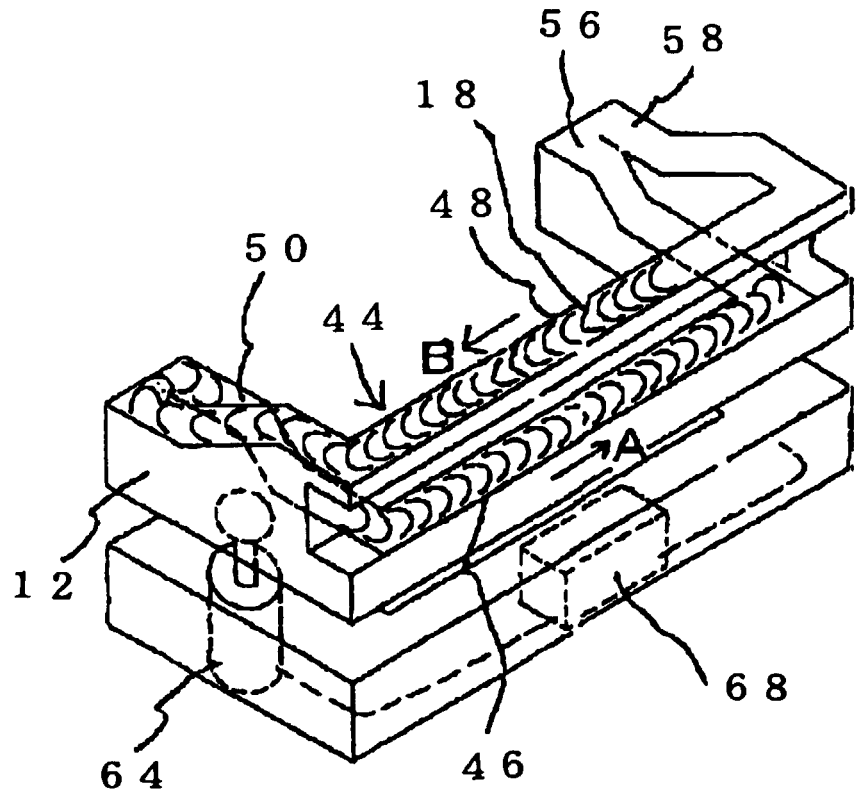


Fig. 6

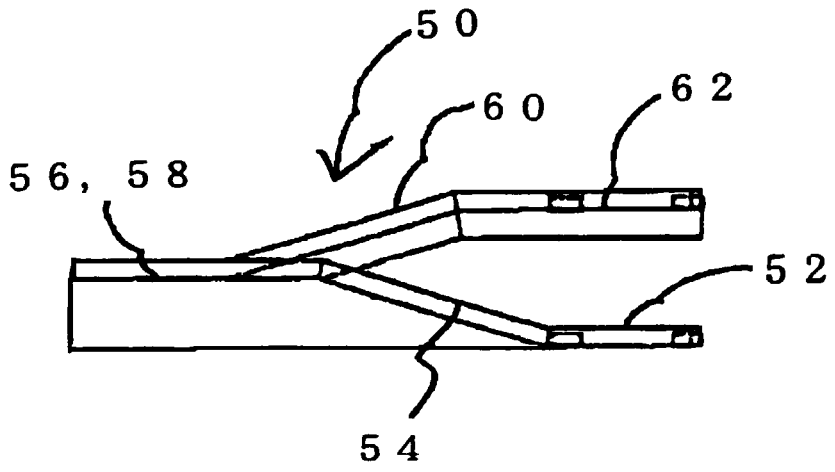


Fig. 7

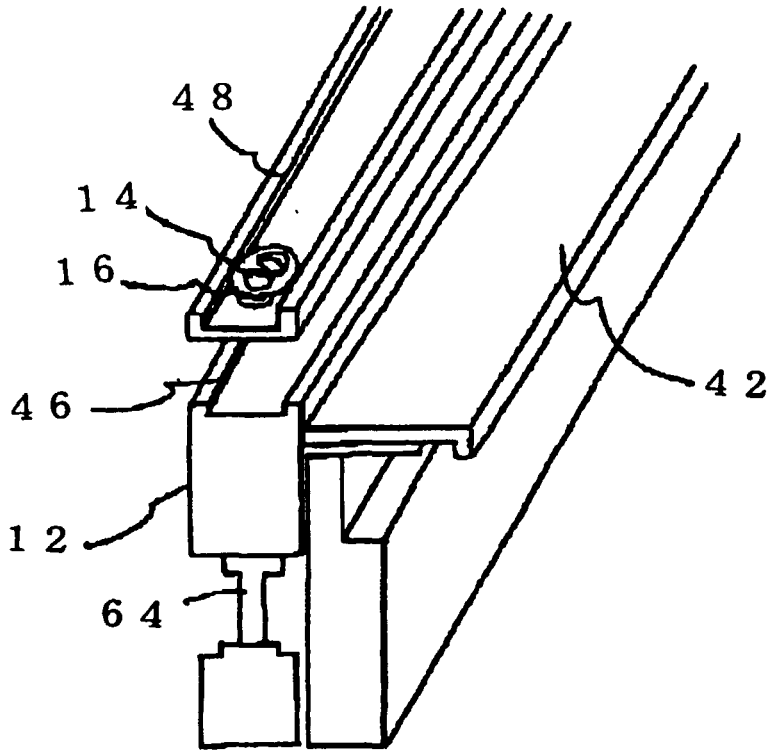


Fig. 8

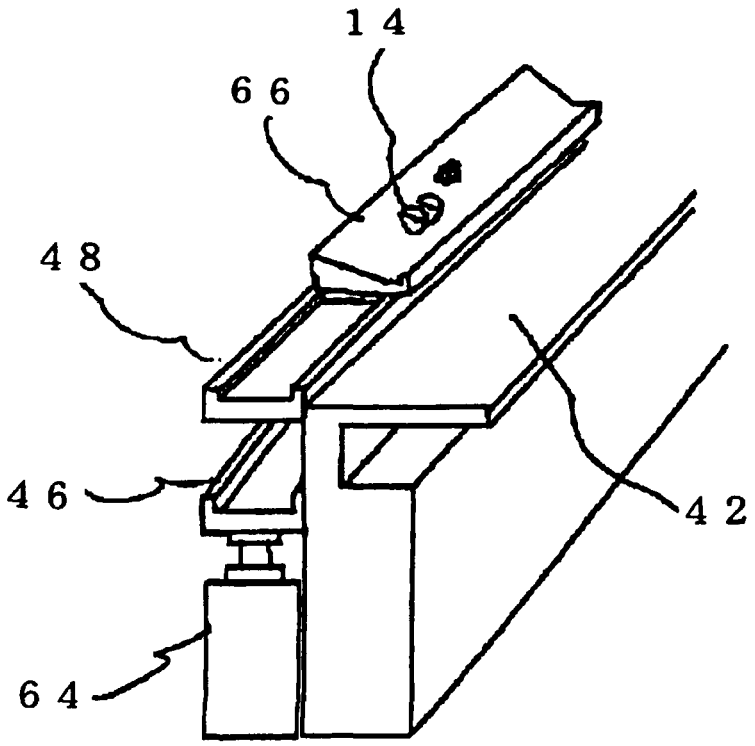


Fig. 9

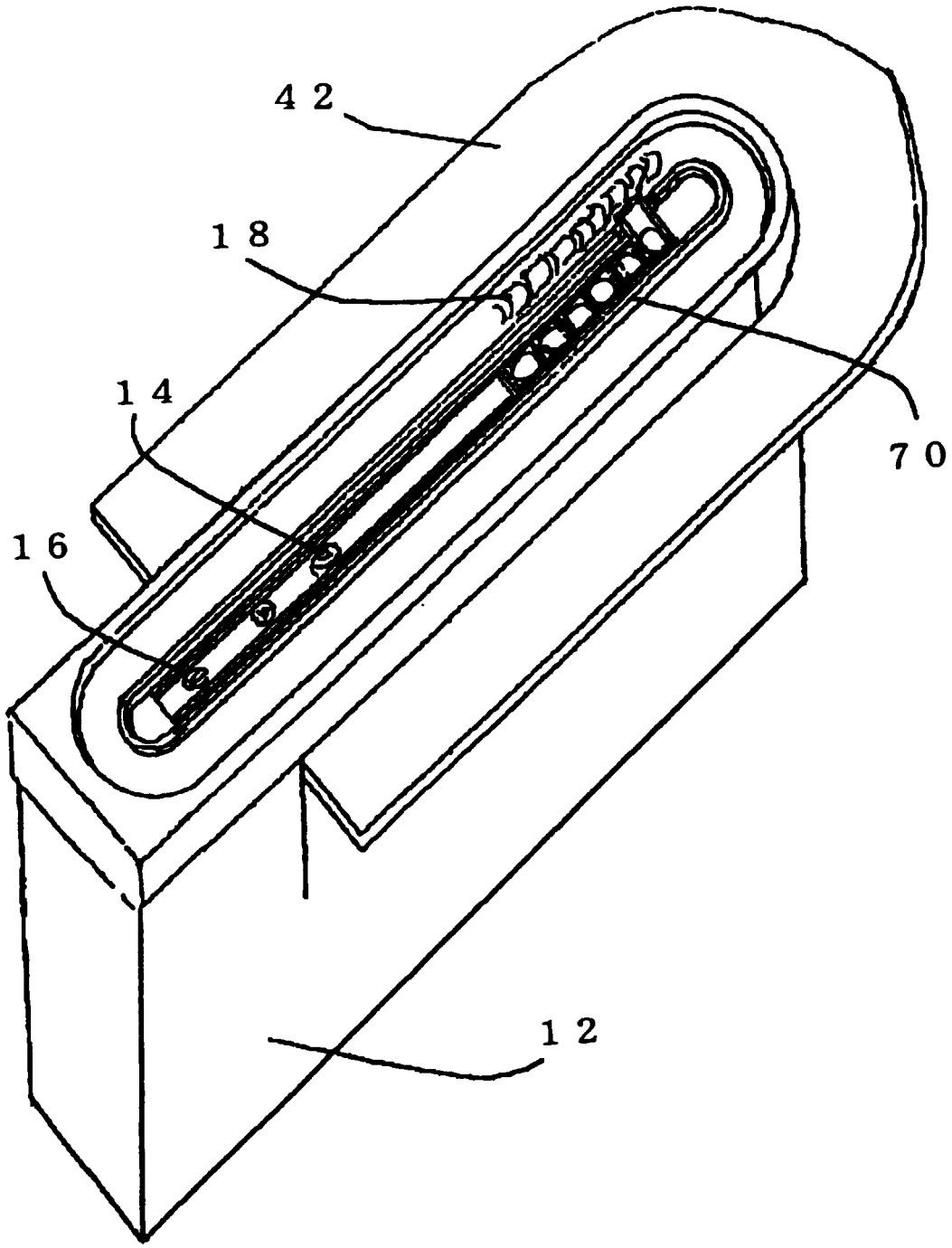


Fig. 10

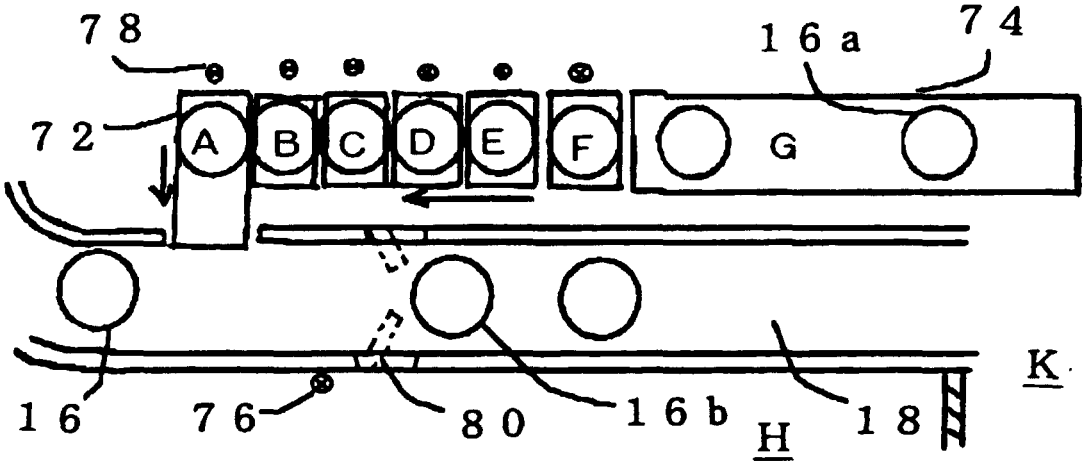


Fig. 11

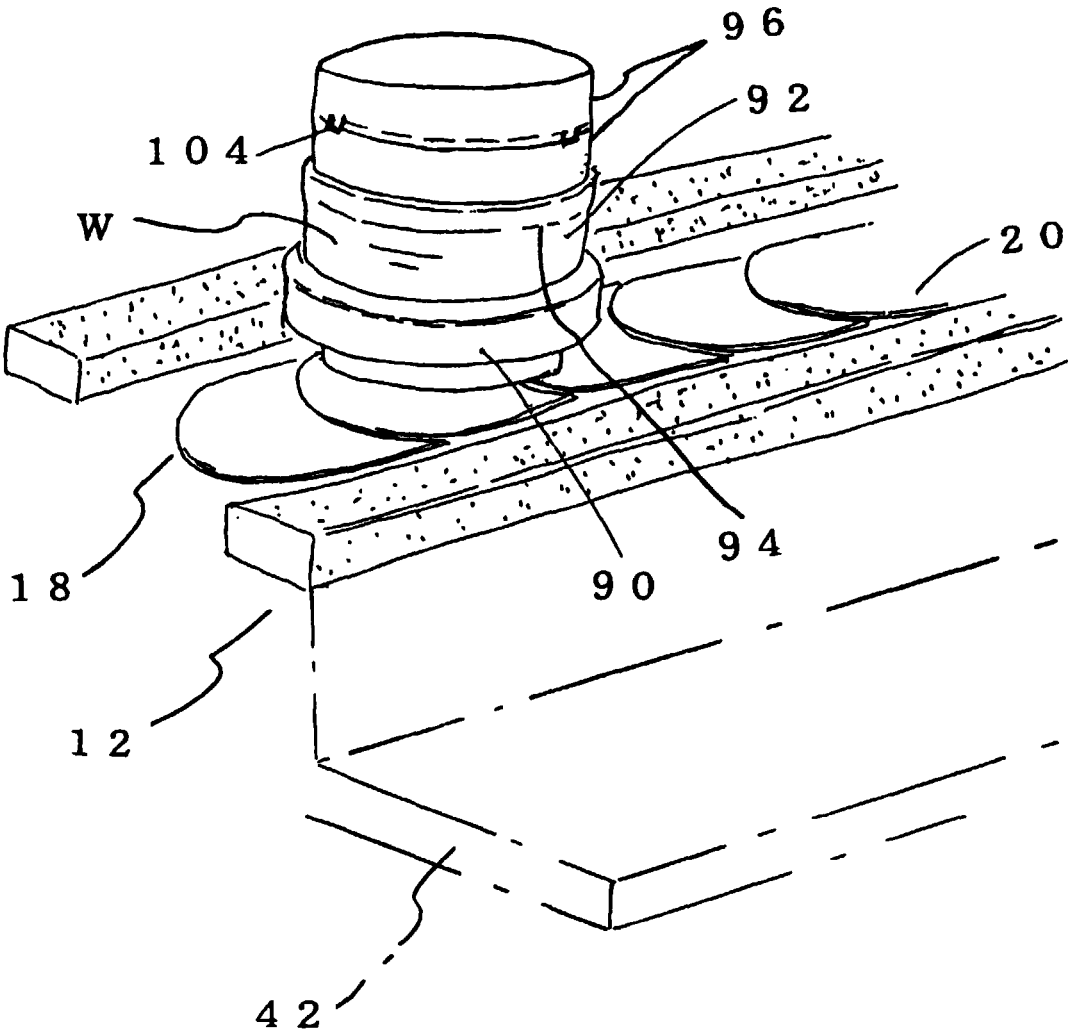


Fig. 12

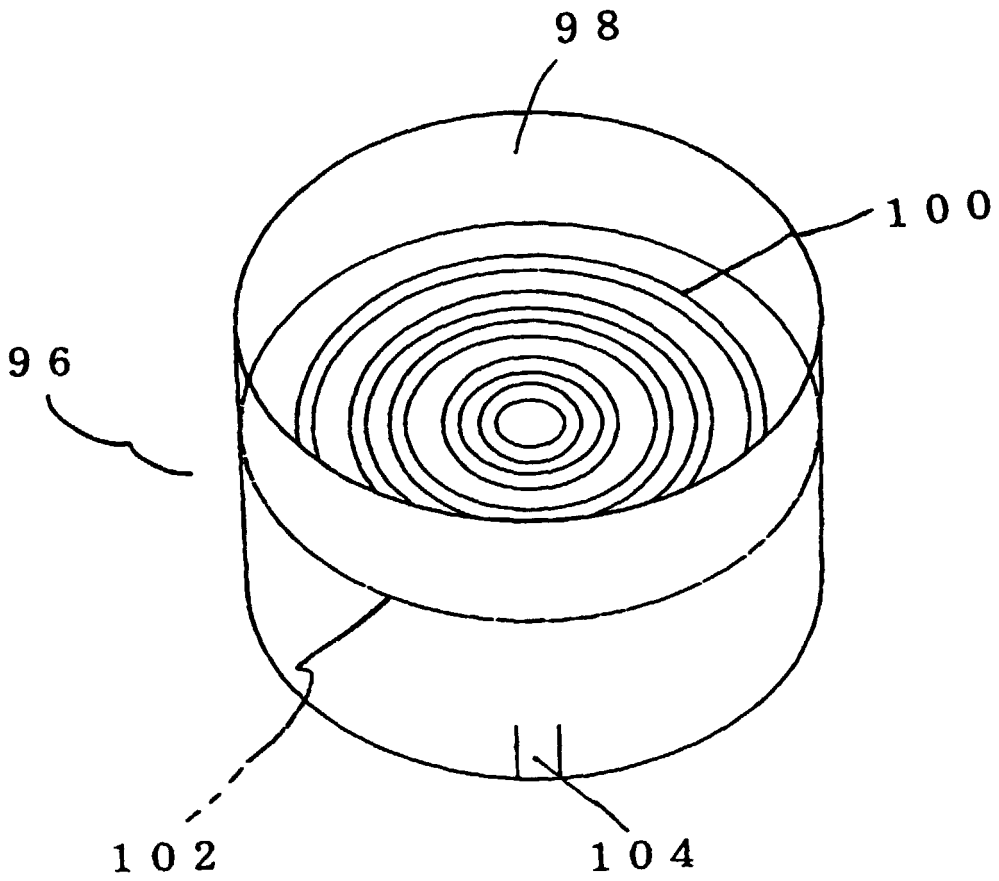


Fig. 13

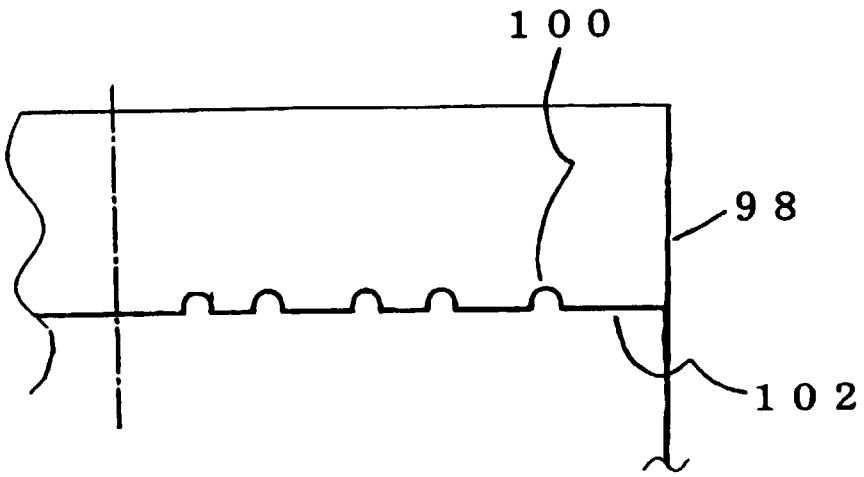


Fig. 14

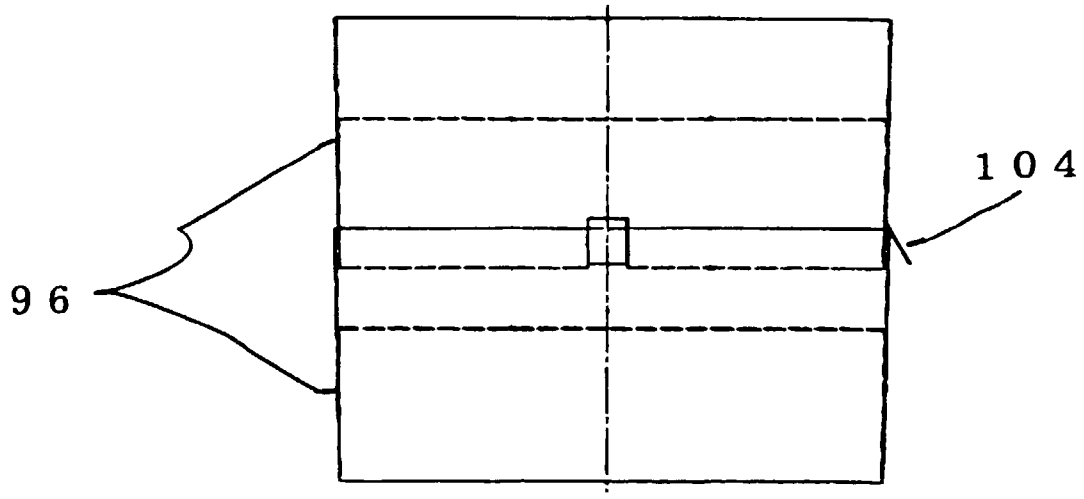


Fig. 15

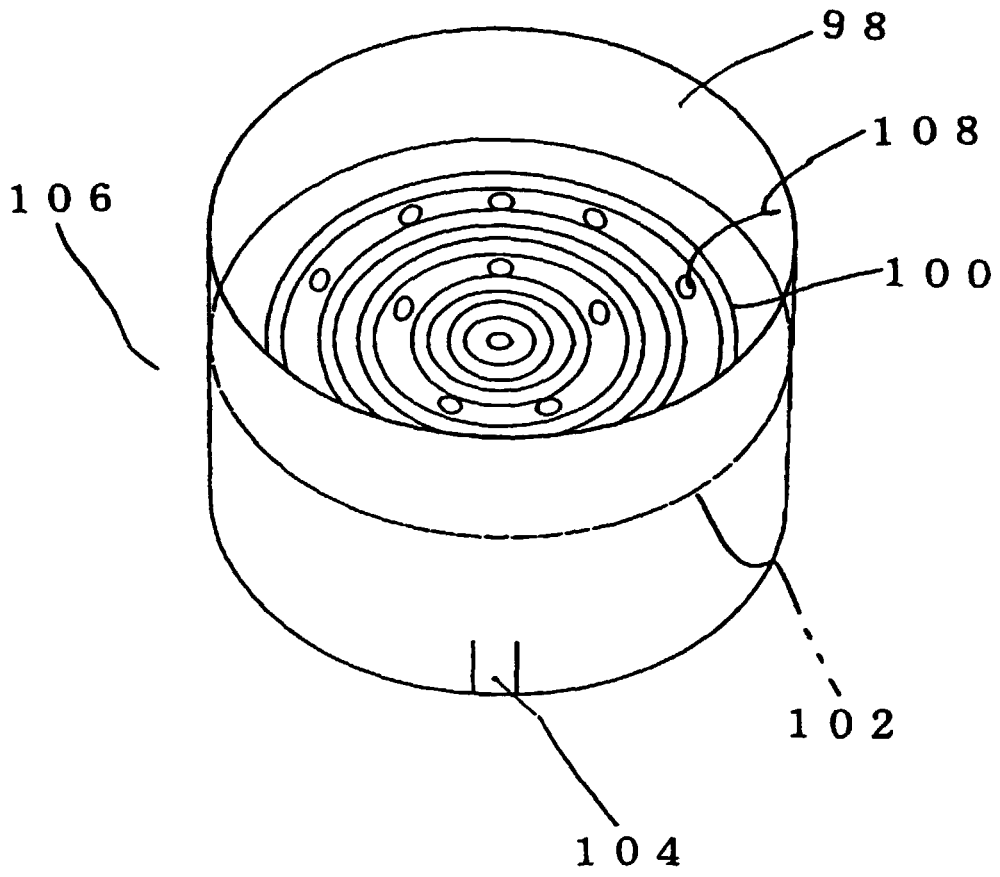


Fig. 16

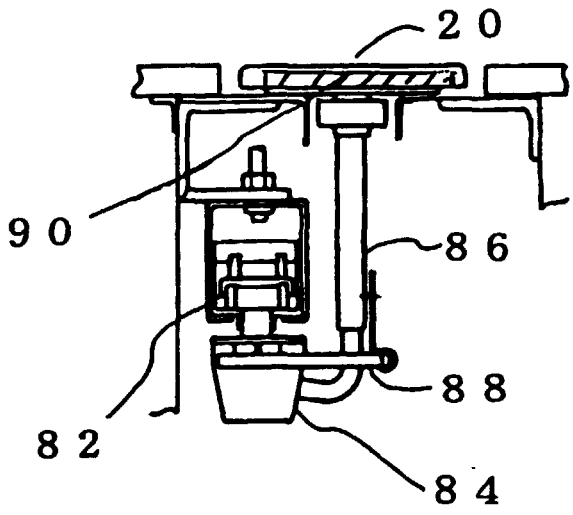


Fig. 17

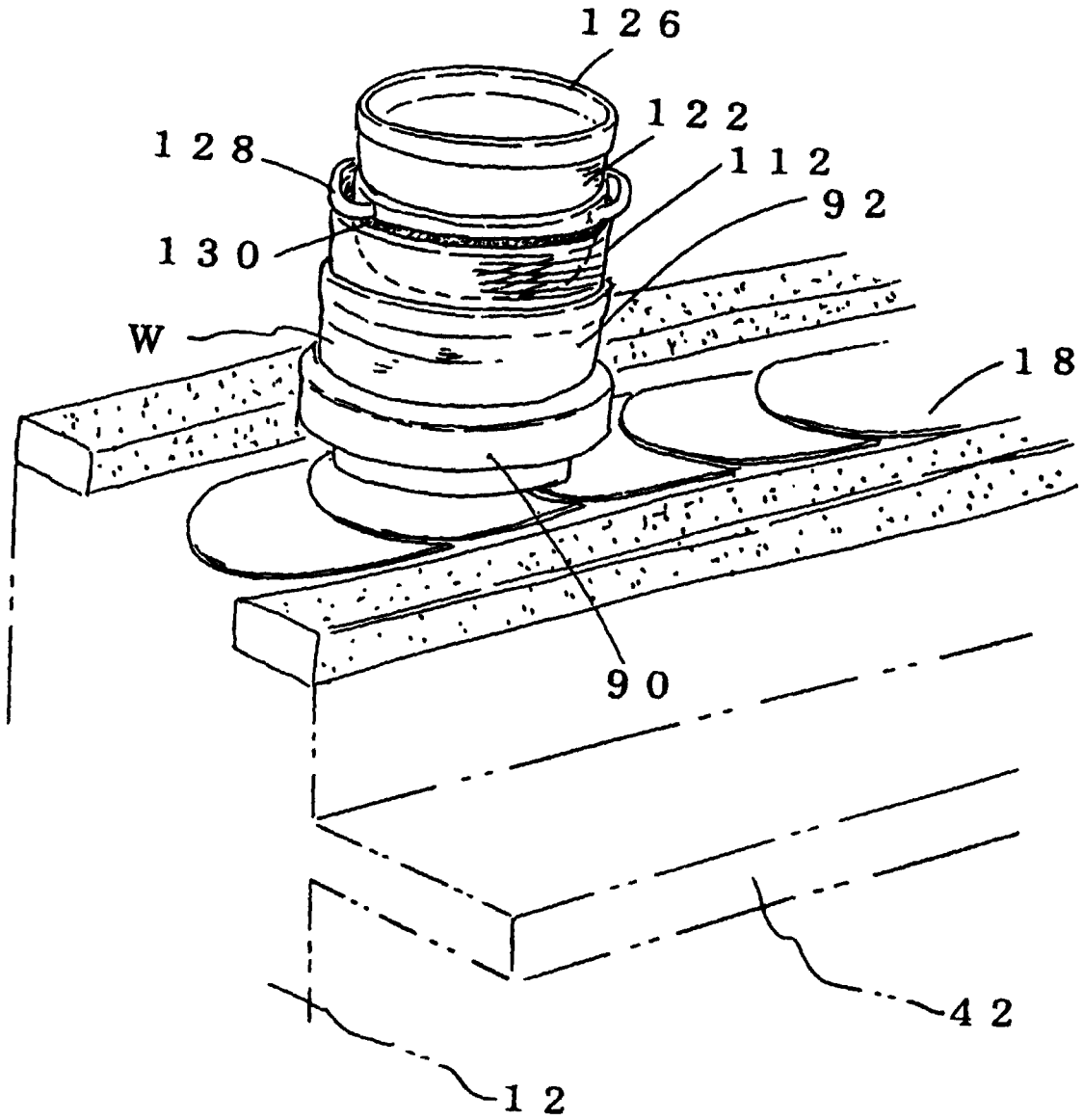


Fig. 18

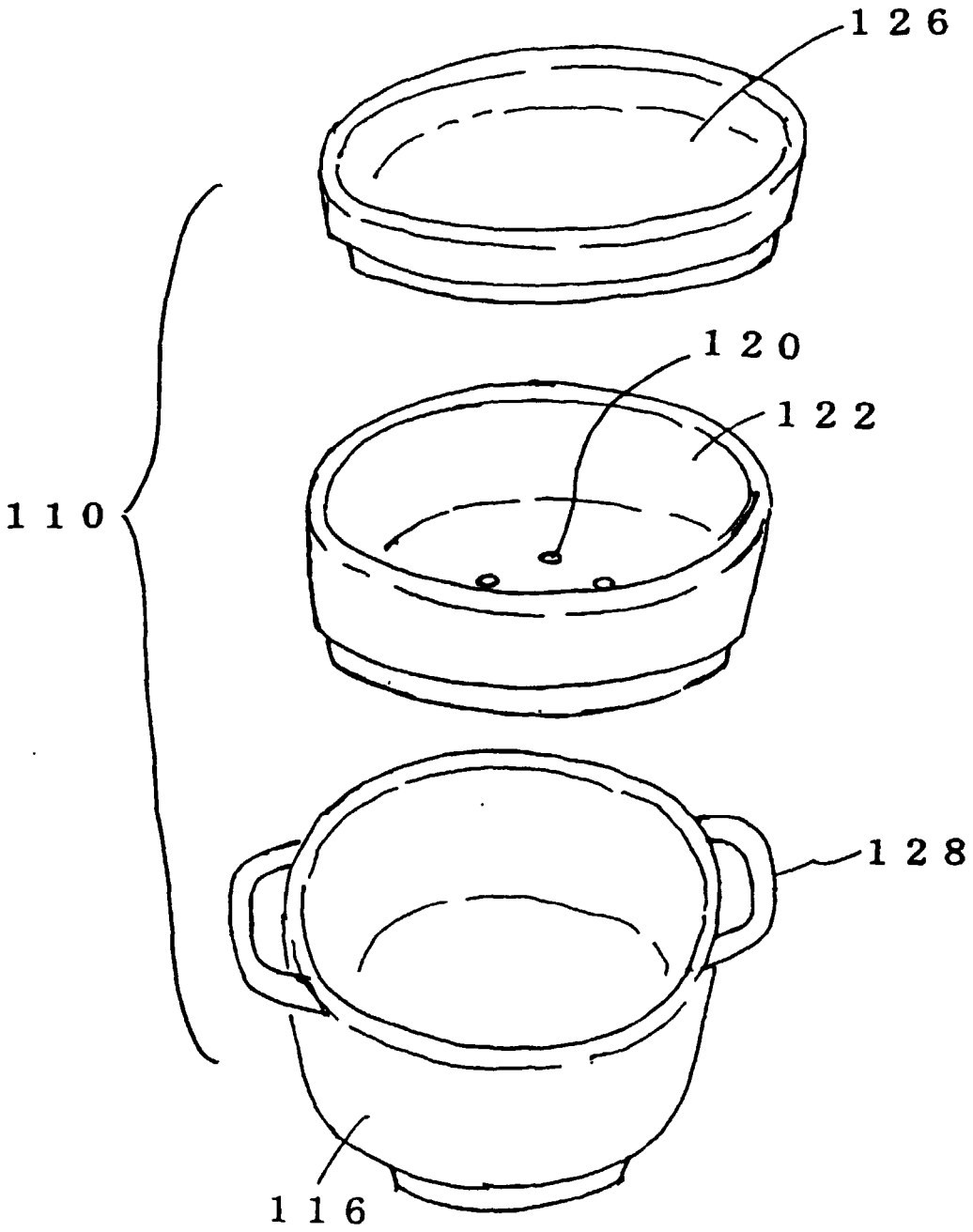


Fig. 19

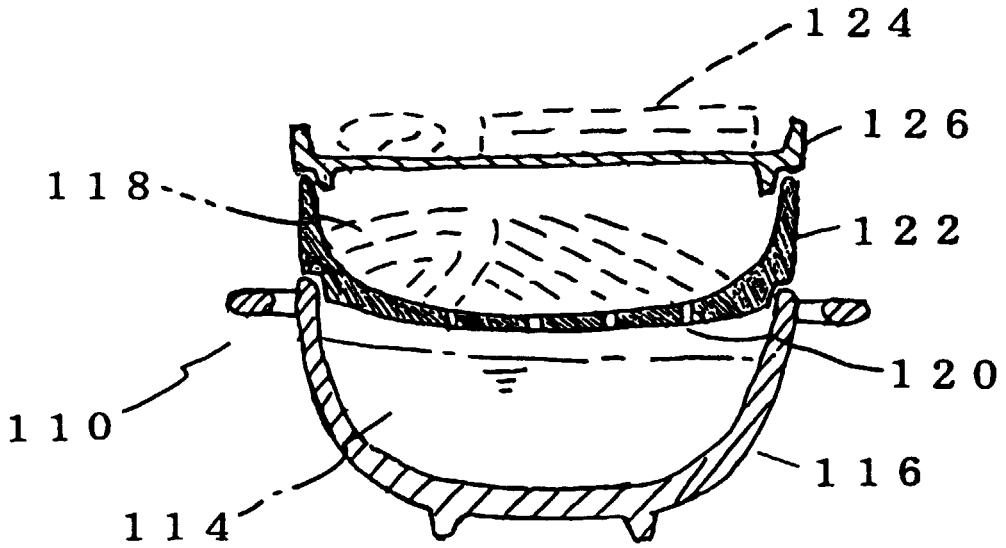


Fig. 20

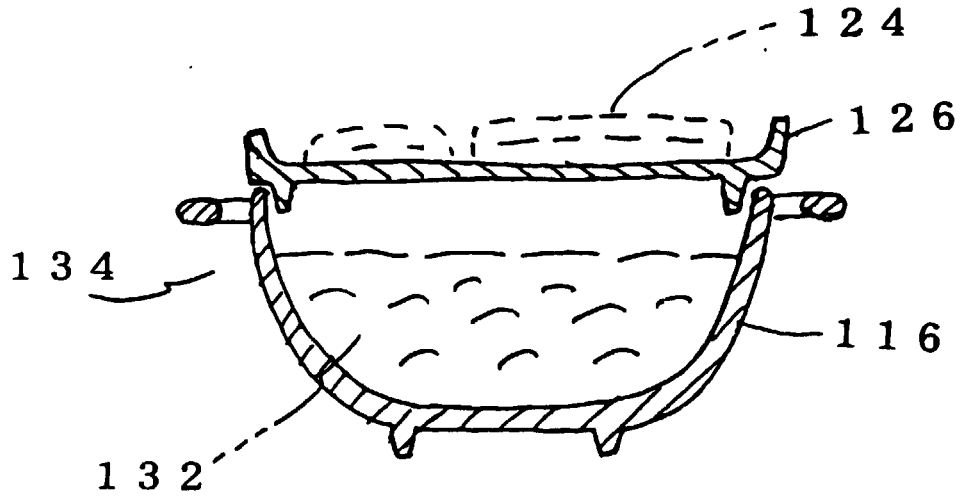


Fig. 21

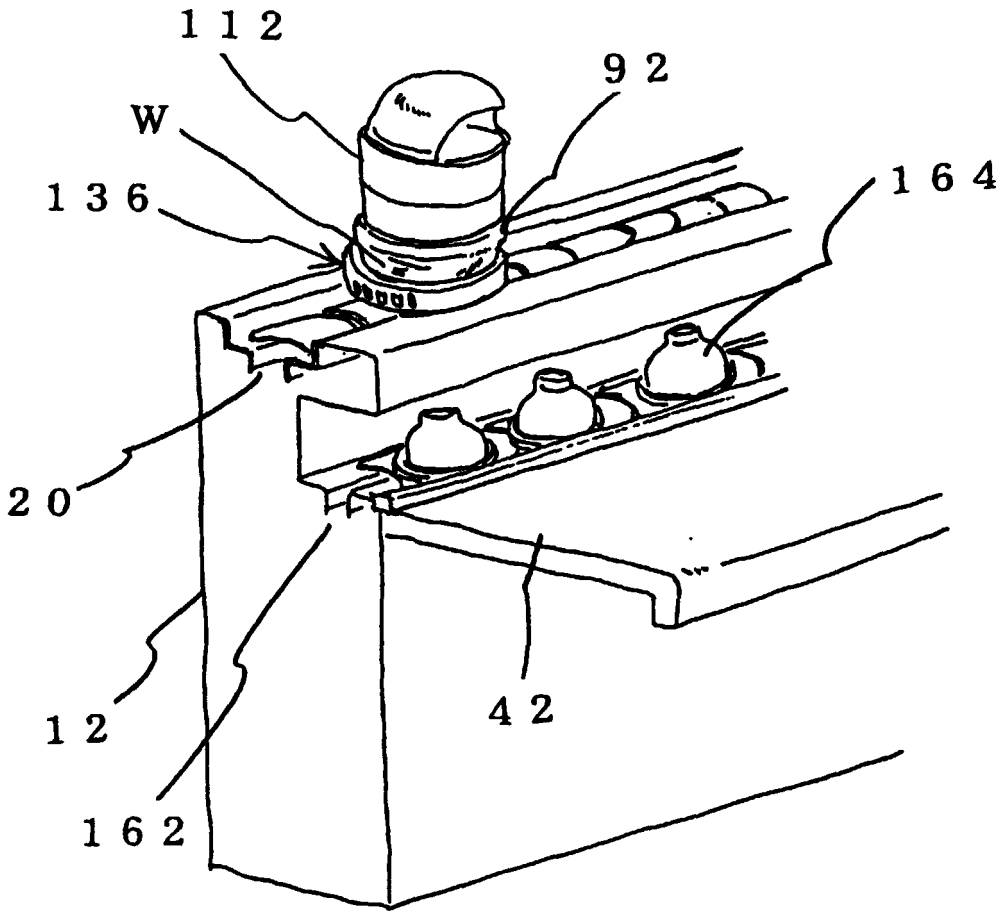


Fig. 22

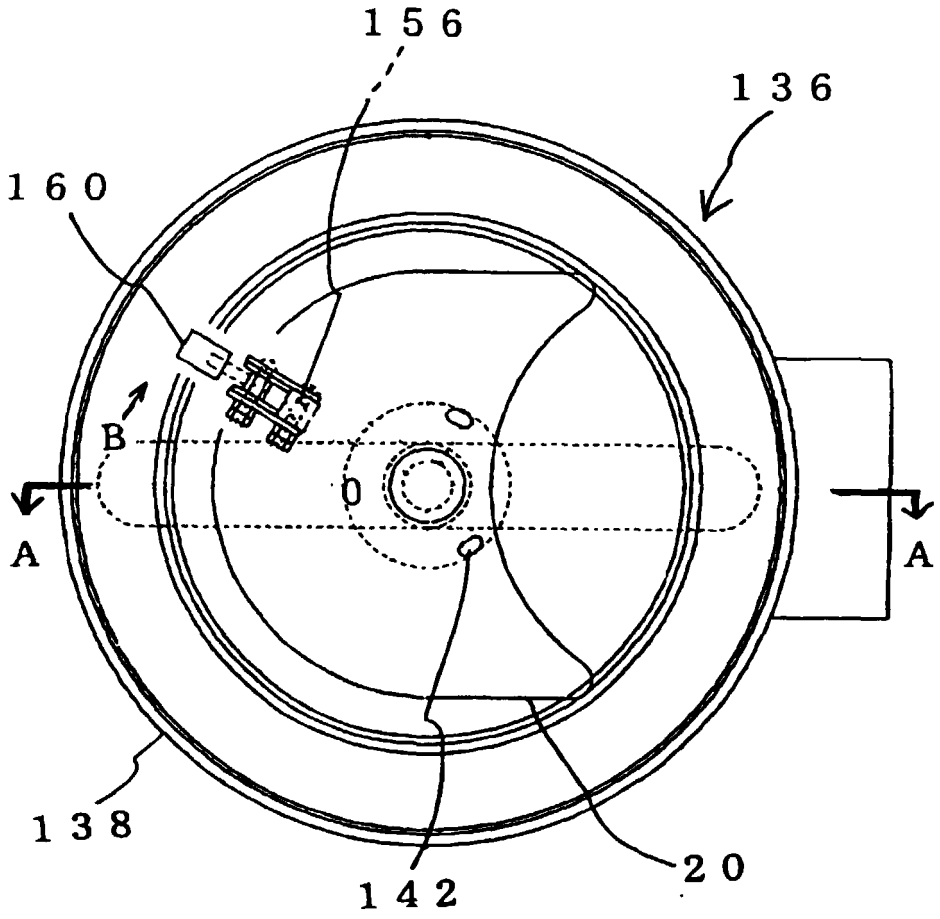


Fig. 23

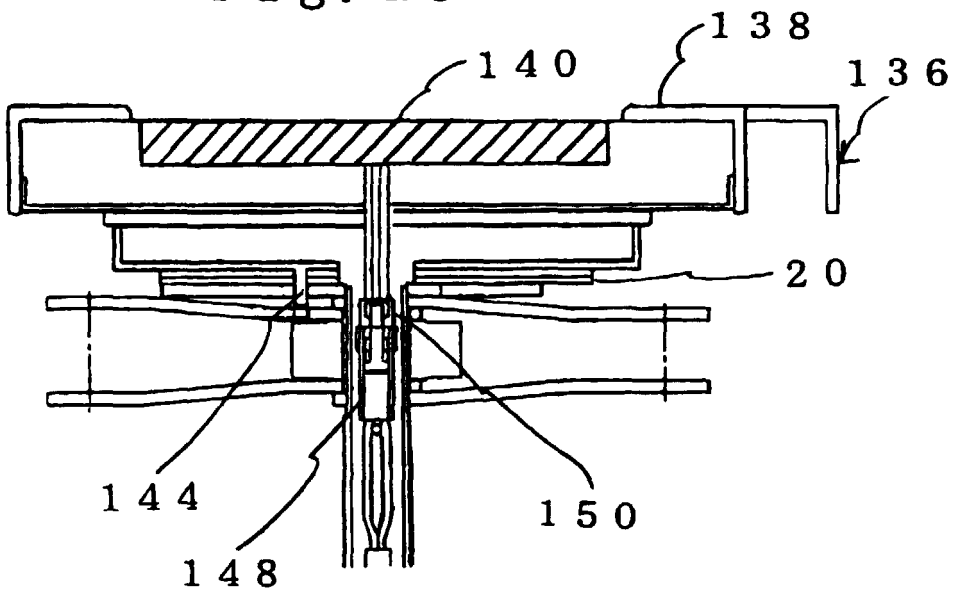


Fig. 24

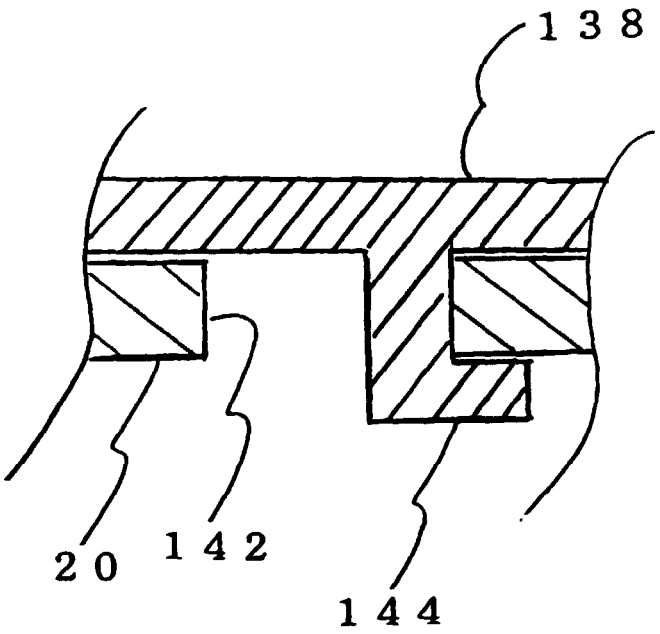


Fig. 25

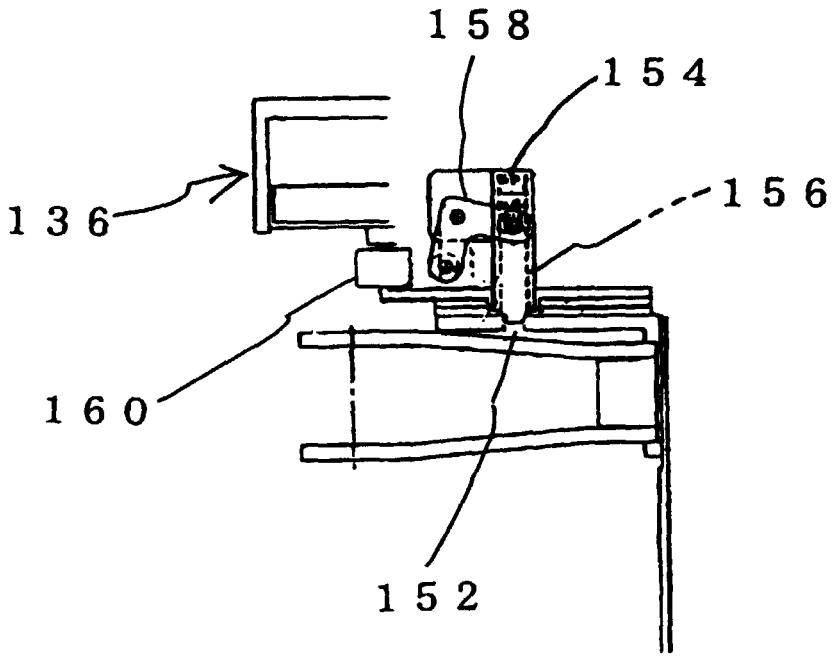


Fig. 26

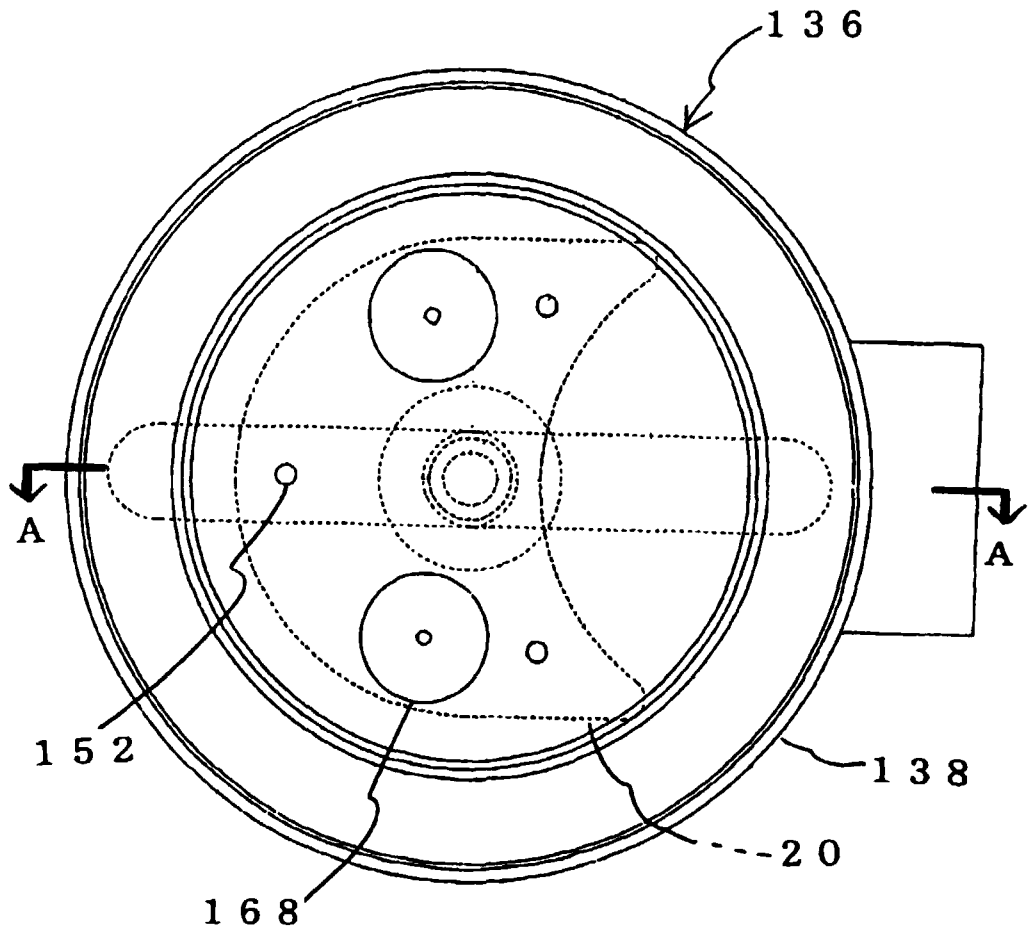


Fig. 27

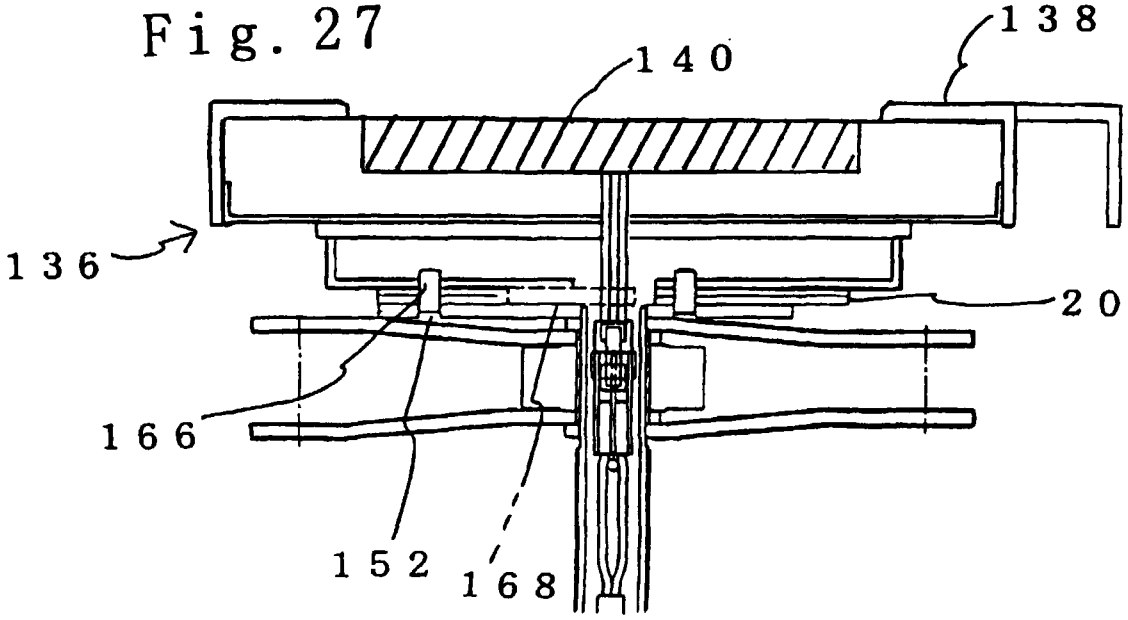


Fig. 28

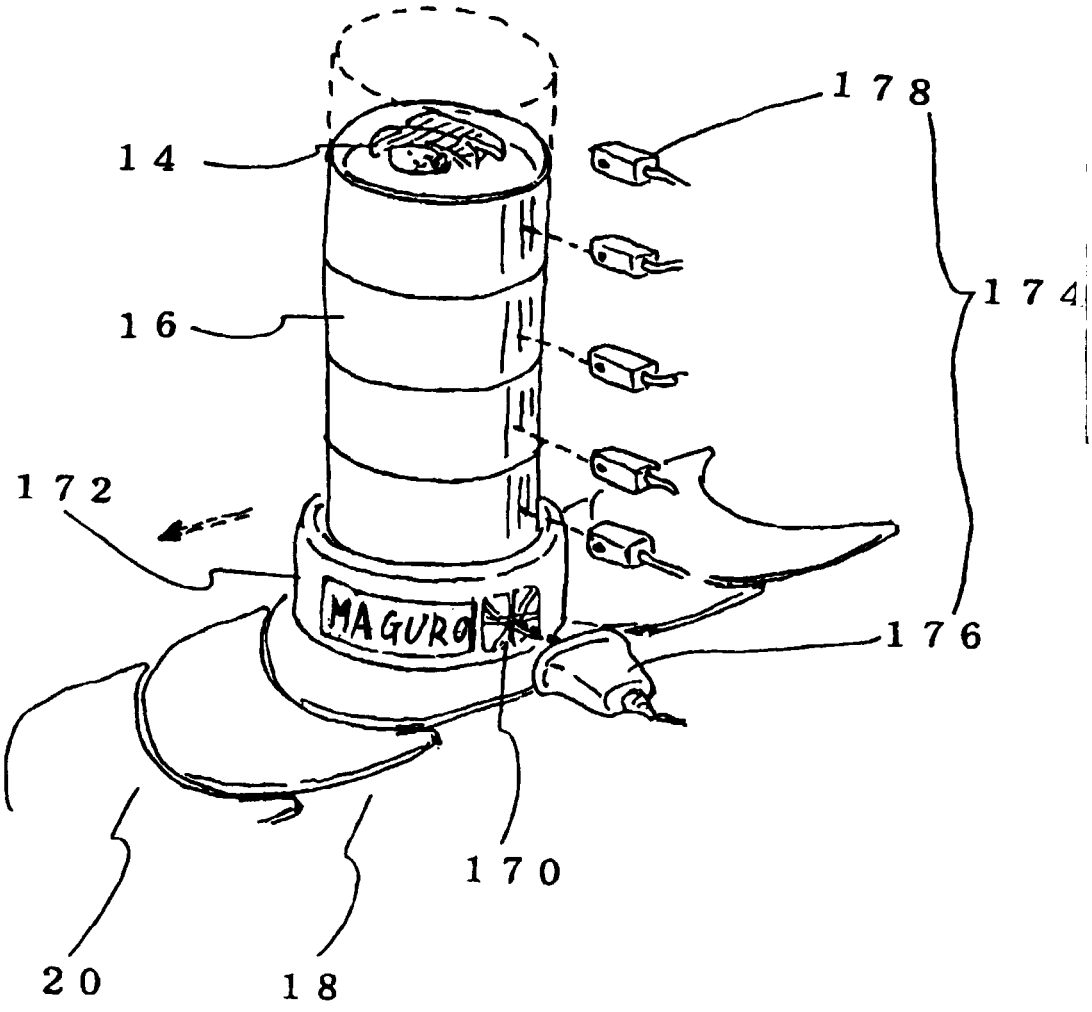


Fig. 29

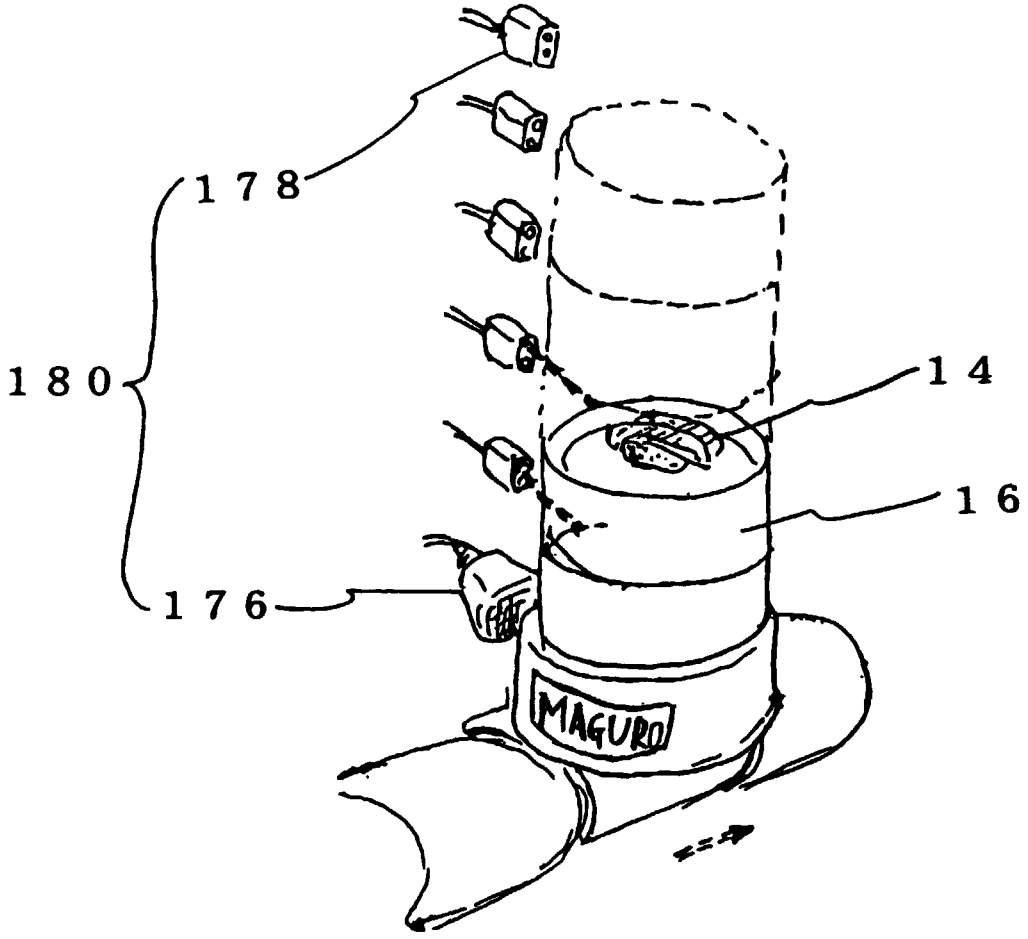


Fig. 30

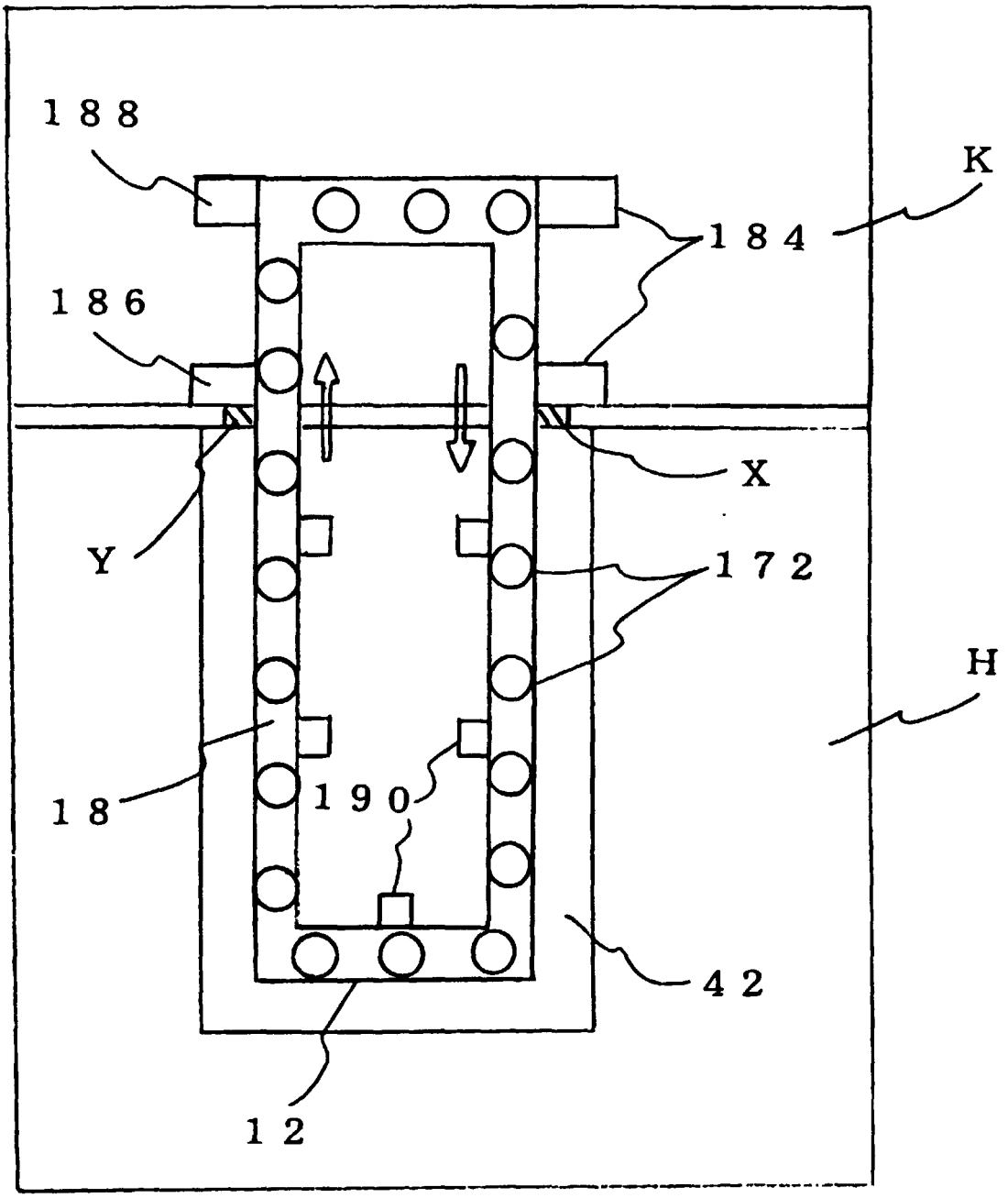


Fig. 31

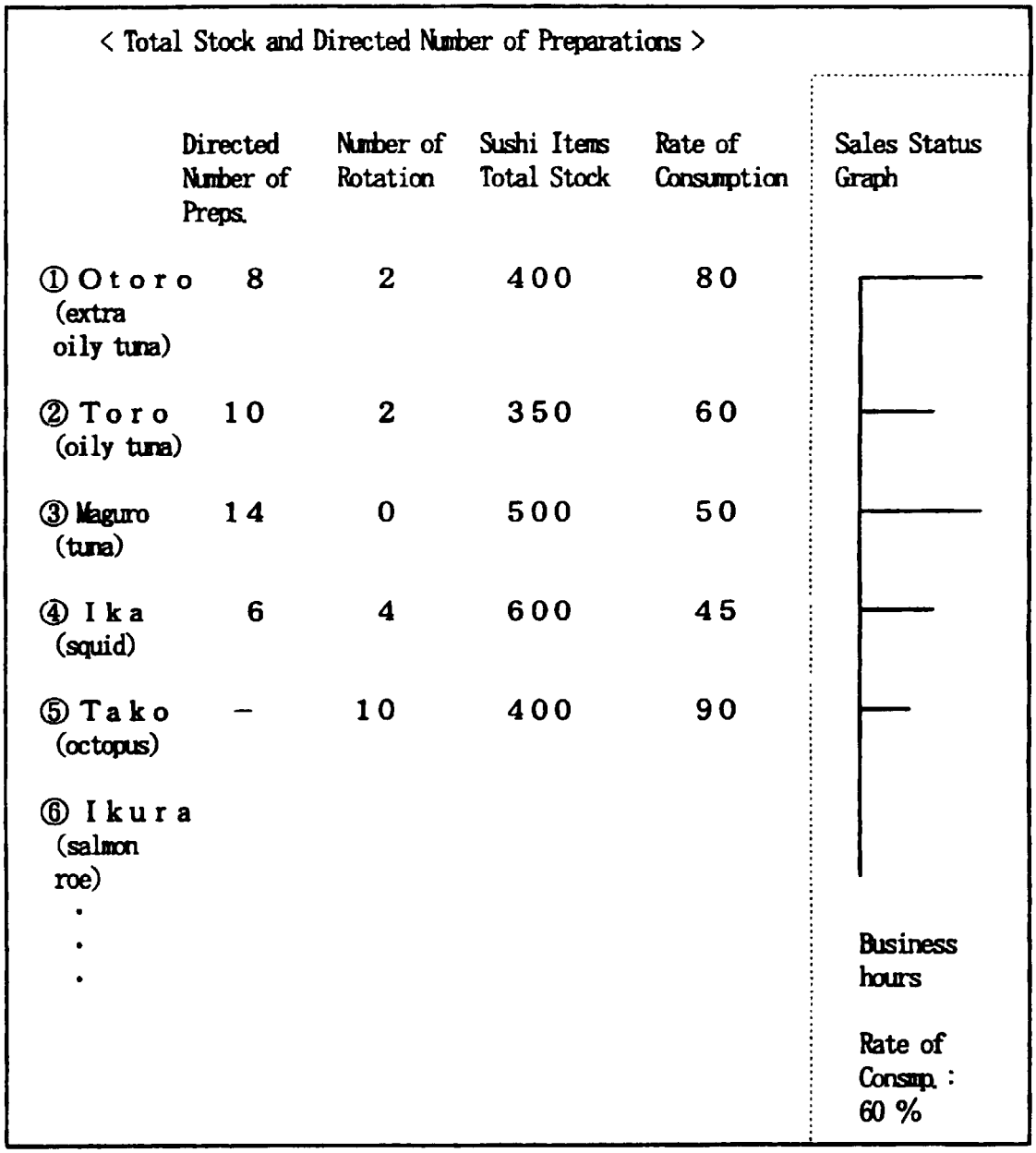

< Total Stock and Directed Number of Preparations >
Directed Number of Preps.
Number of Rotation
Sushi Items Total Stock
Rate of Consumption
Sales Status Graph
① Otoro (extra oily tuna) 8 2 400 80
② Toro (oily tuna) 10 2 350 60
③ Maguro (tuna) 14 0 500 50
④ Ika (squid) 6 4 600 45
⑤ Tako (octopus) – 10 400 90
⑥ Ikura (salmon roe)
Business hours
Rate of Consmp. : 60 %

Fig. 32

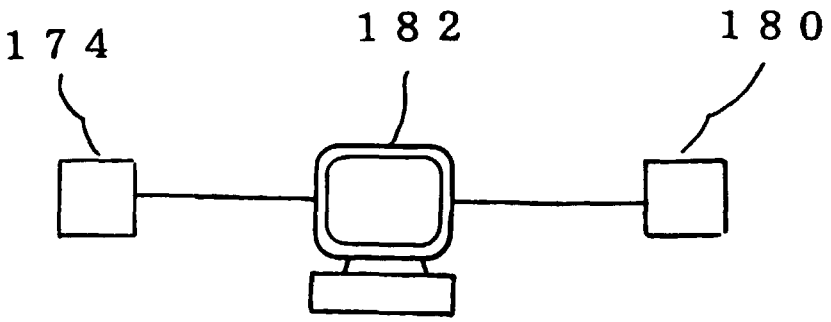


Fig. 33

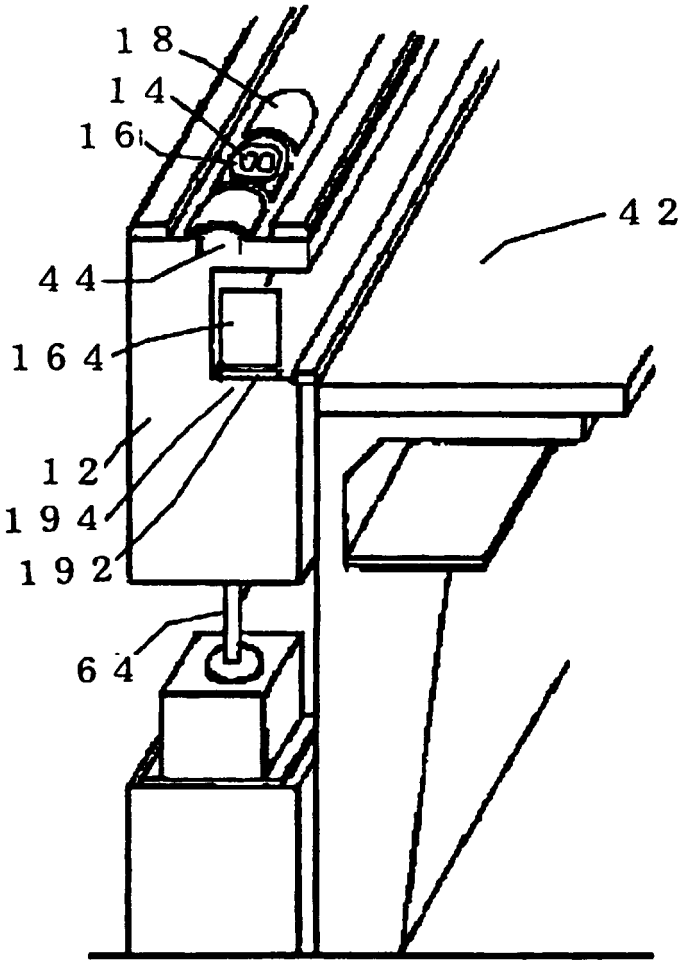


Fig. 34

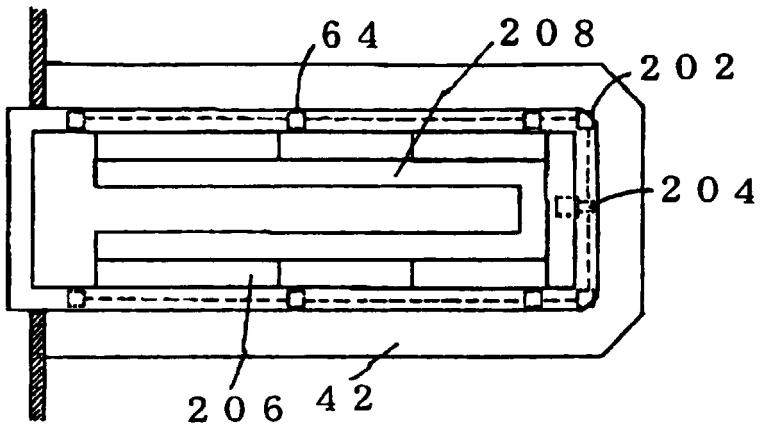


Fig. 35

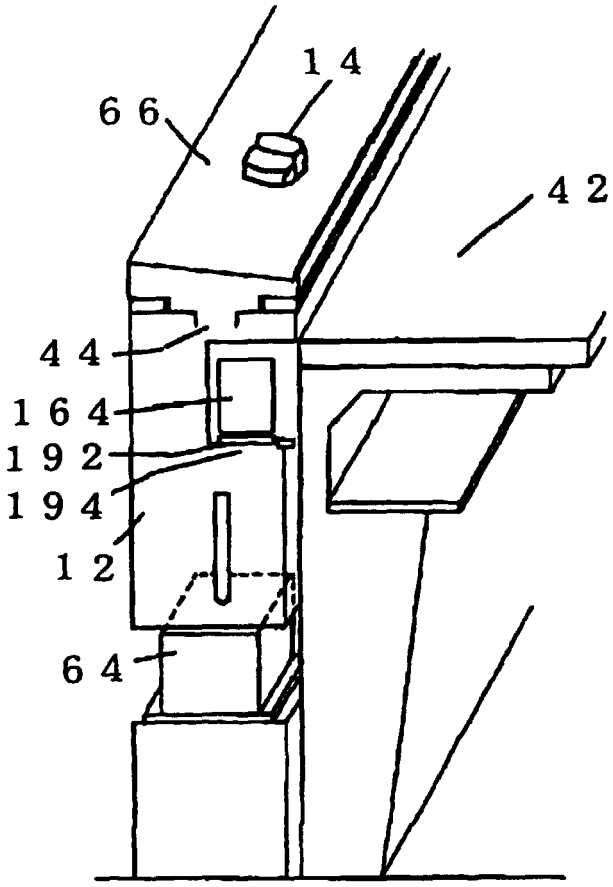


Fig. 36

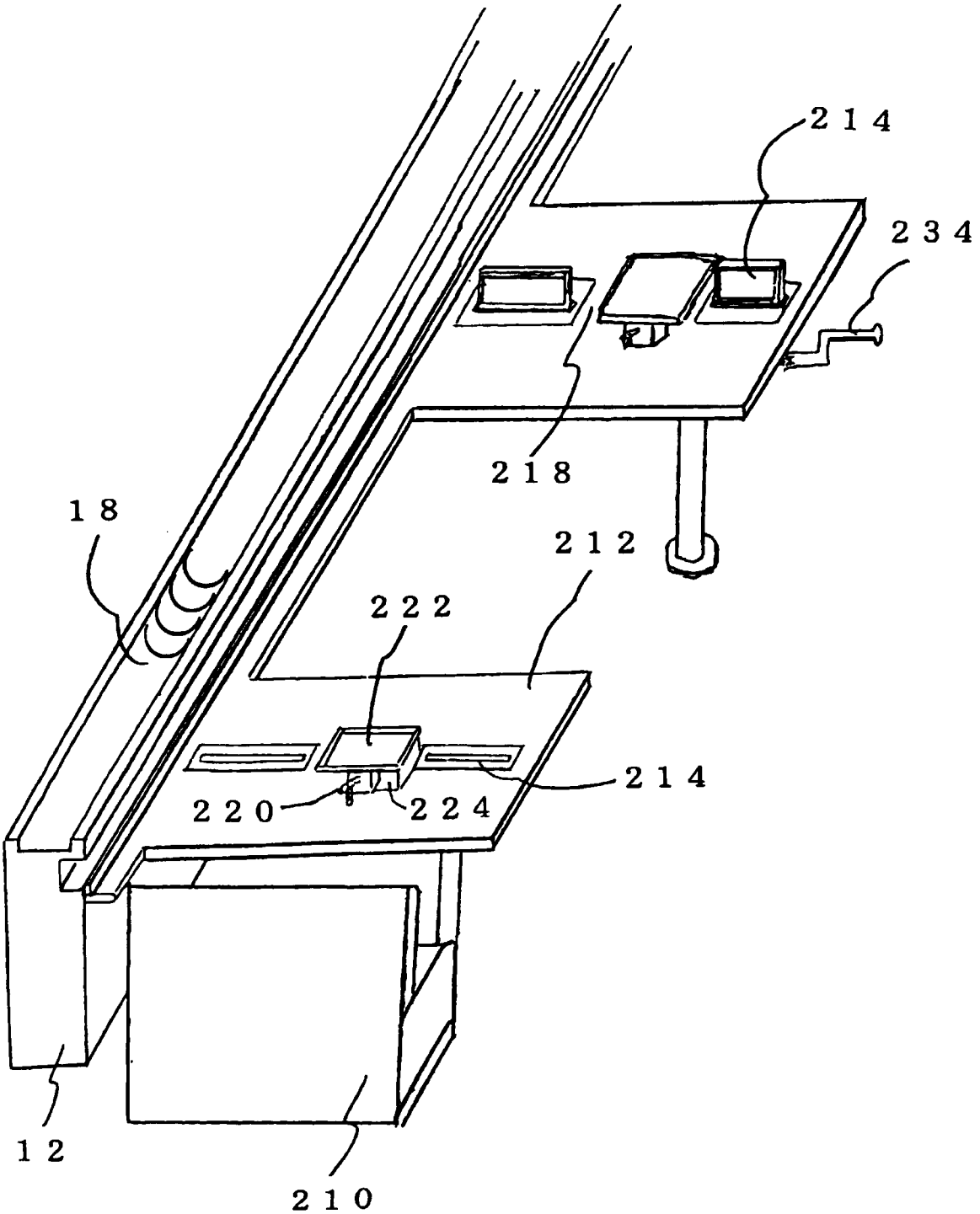


Fig. 37

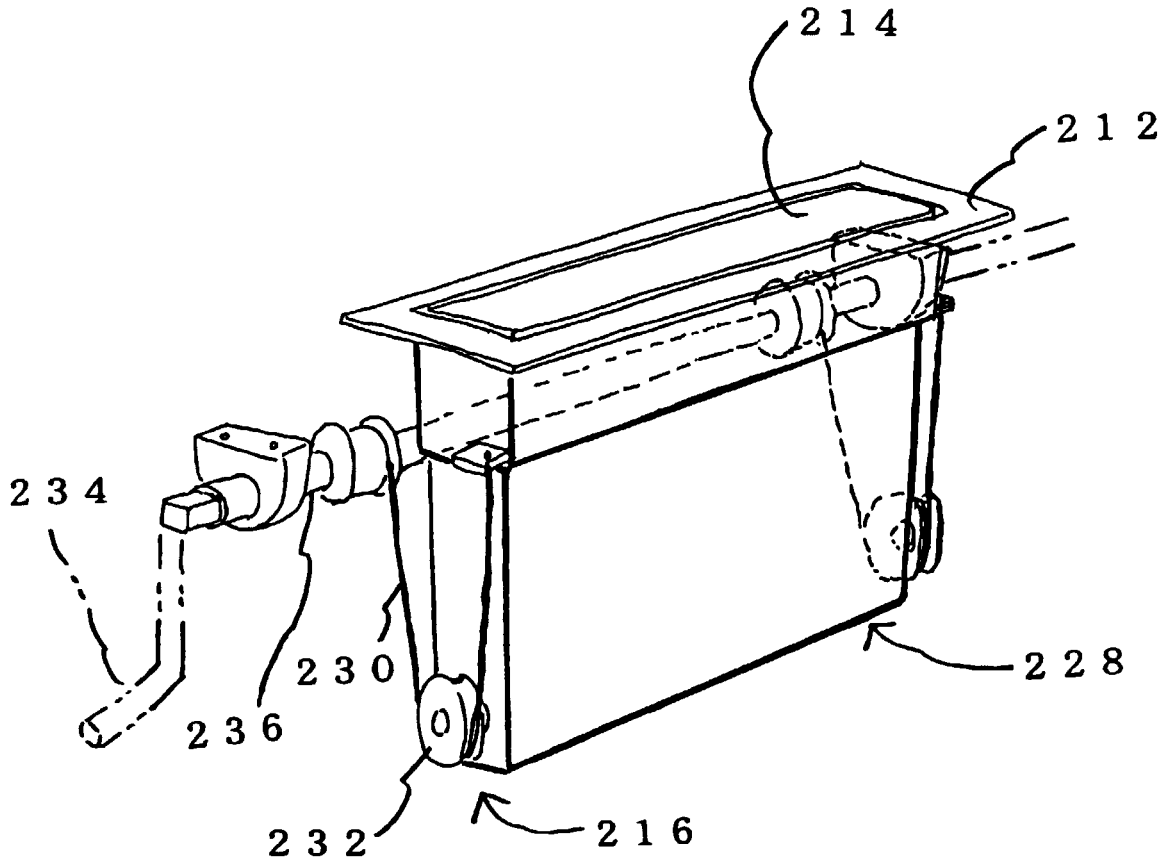


Fig. 38

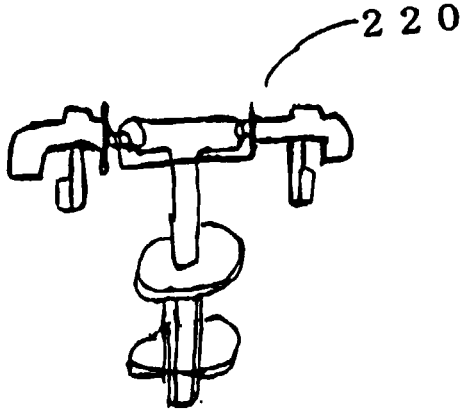


Fig. 39

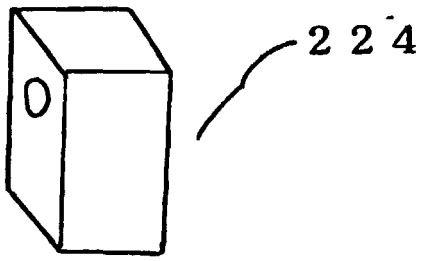


Fig. 40

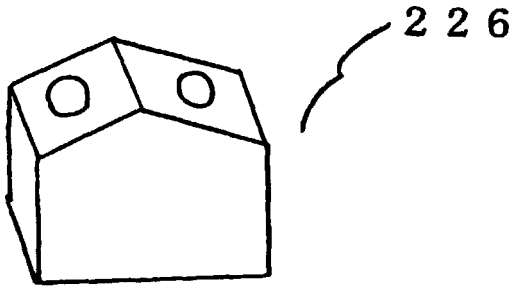


Fig. 41

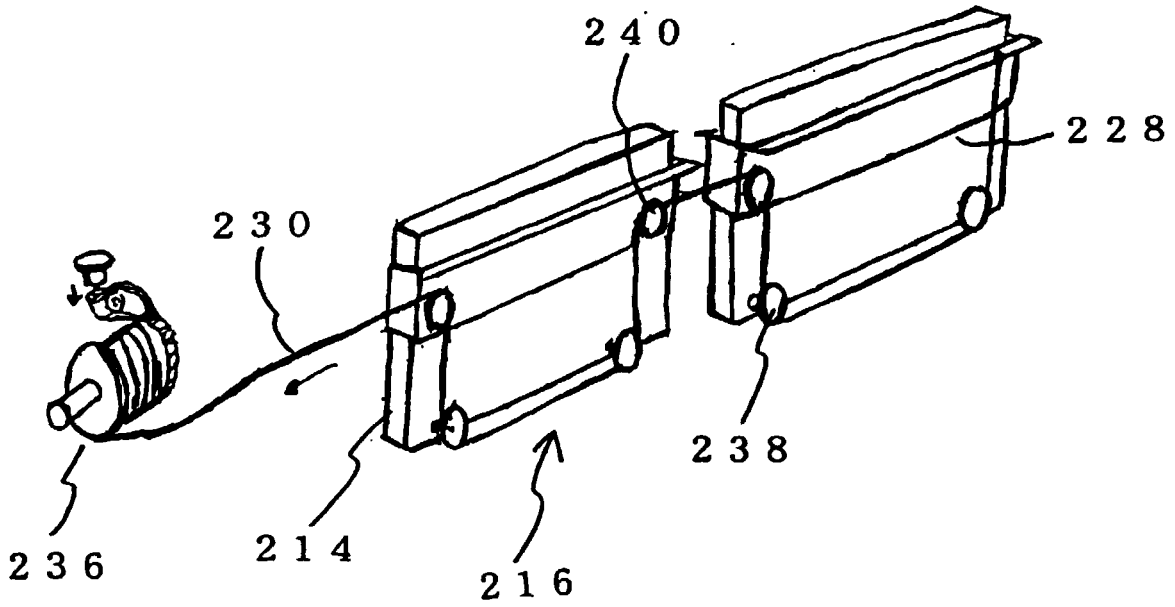


Fig. 42

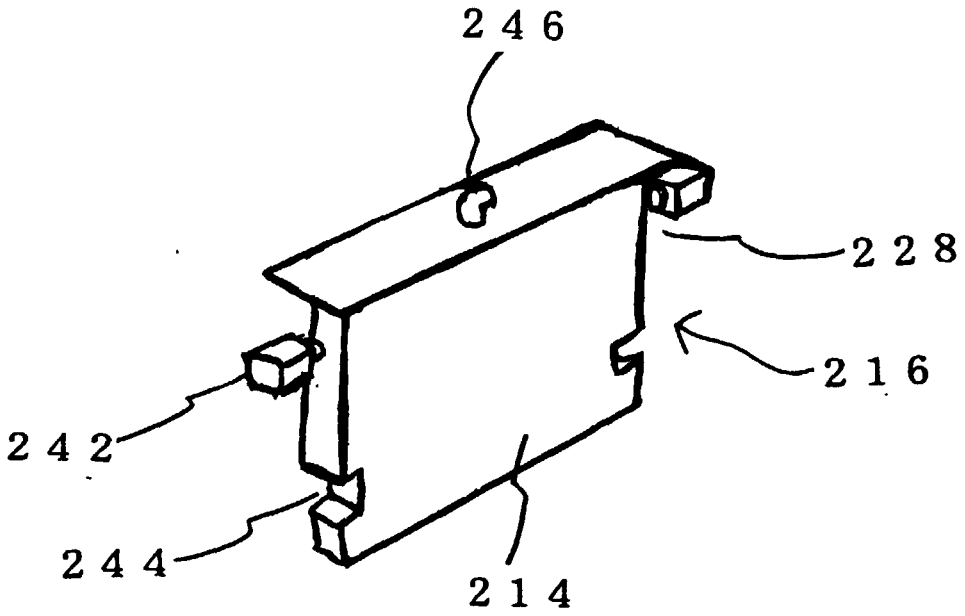


Fig. 43

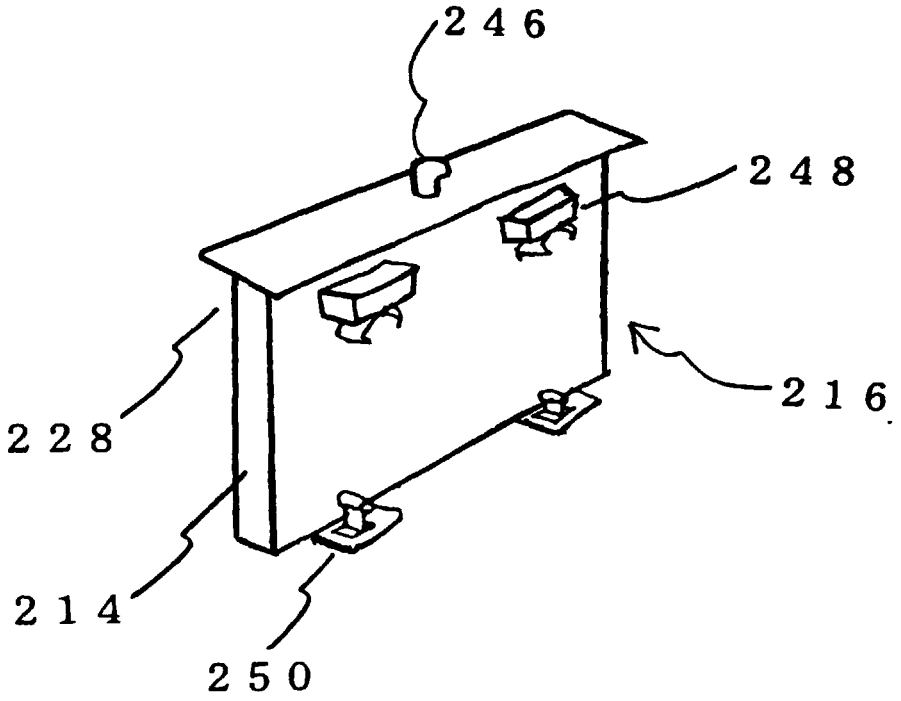


Fig. 44

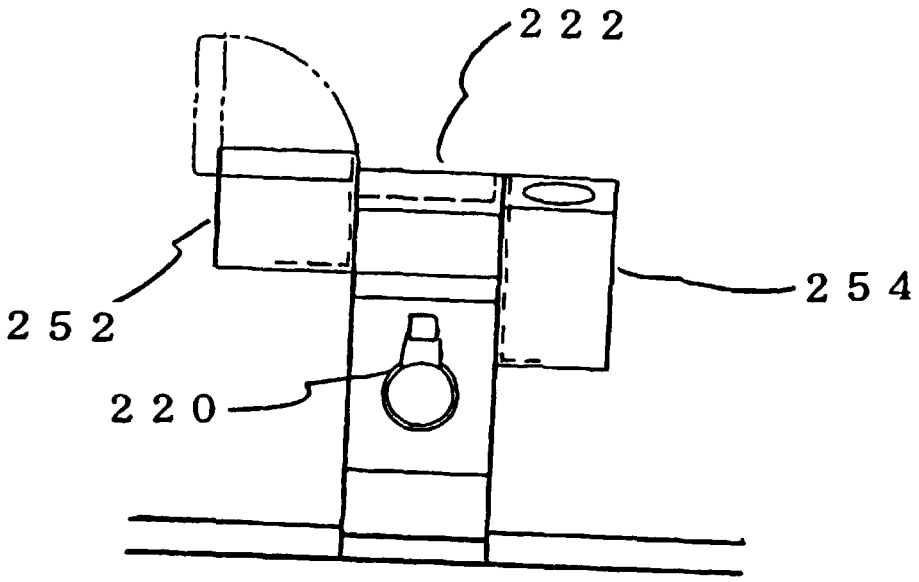


Fig. 45

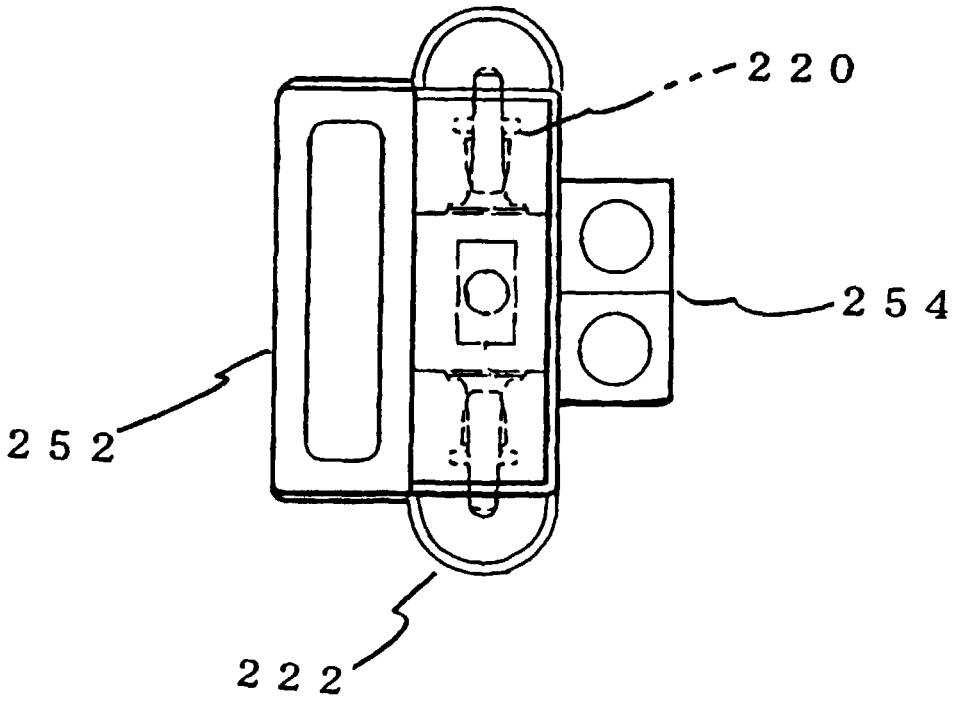


Fig. 46

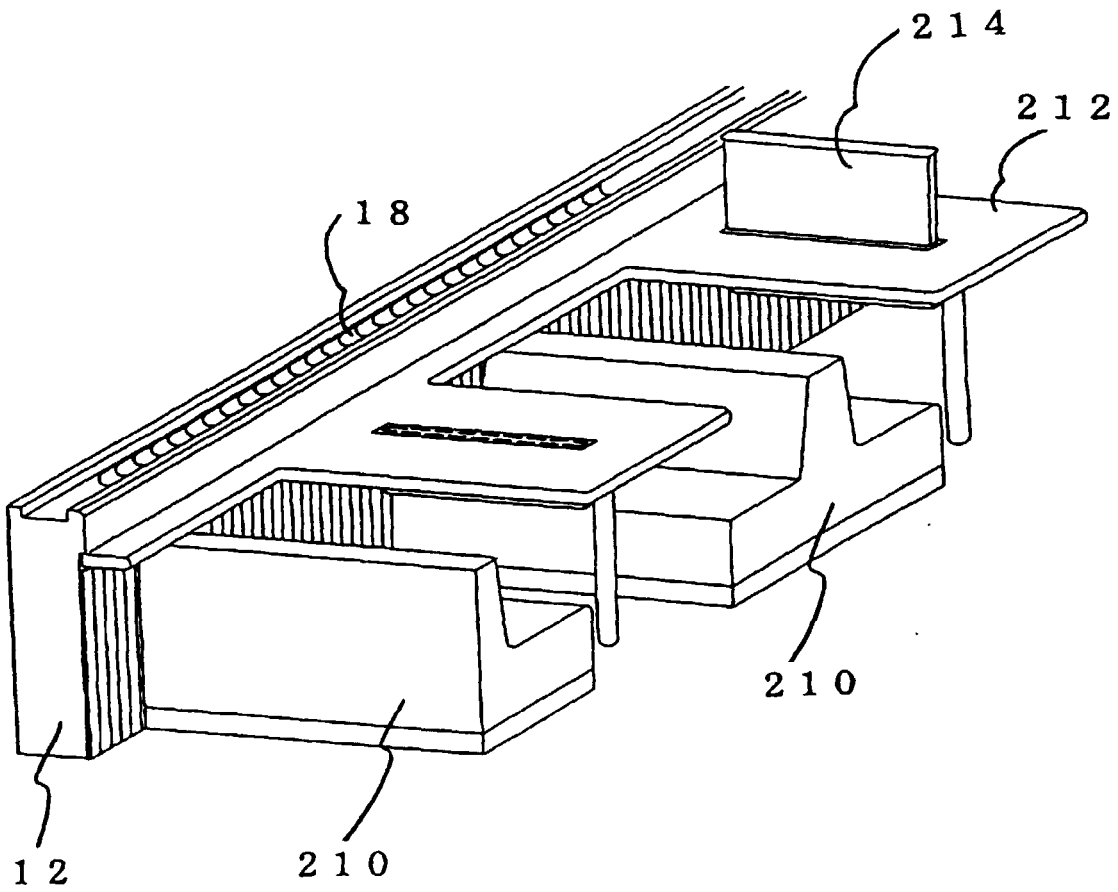


Fig. 47

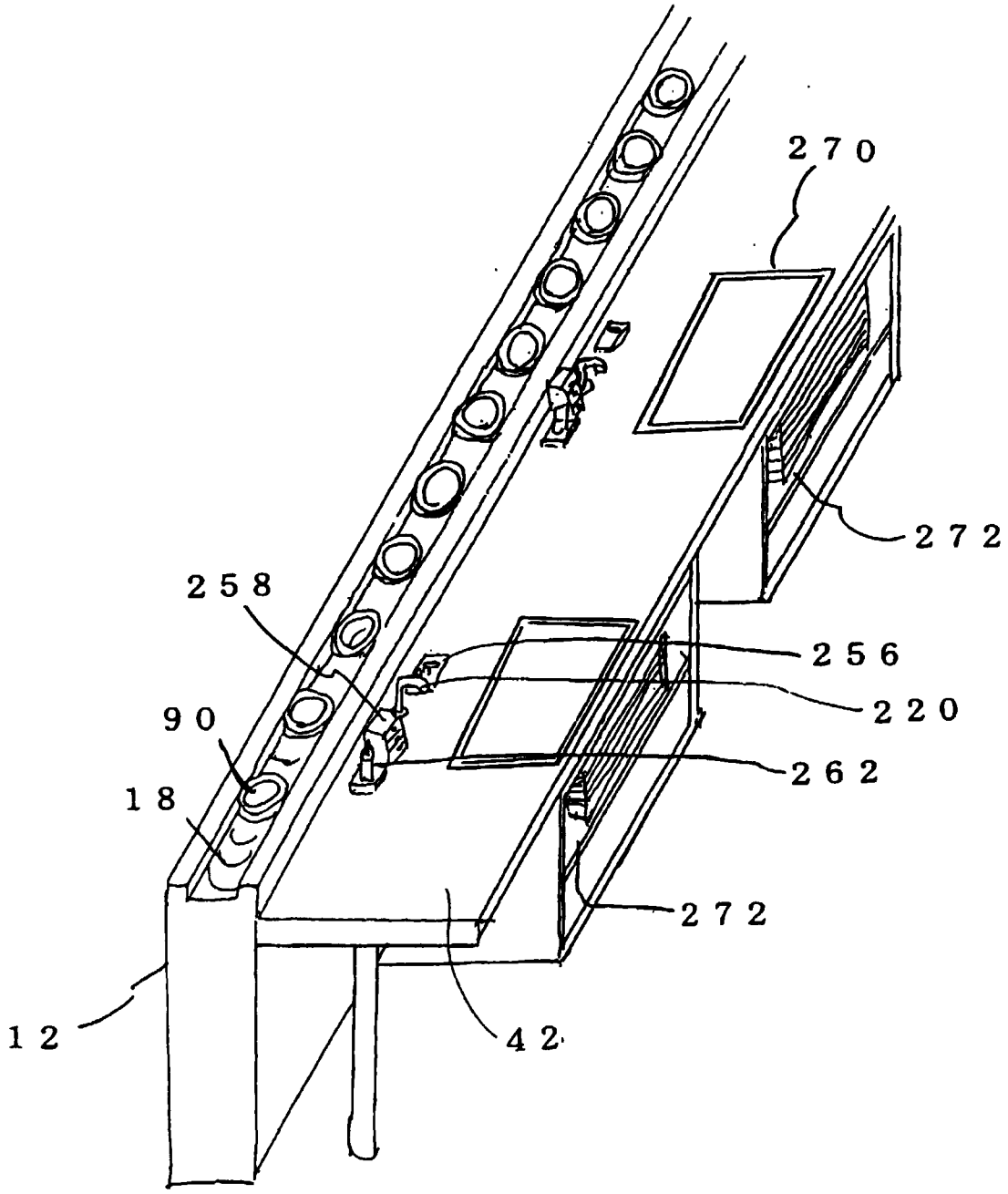


Fig. 48

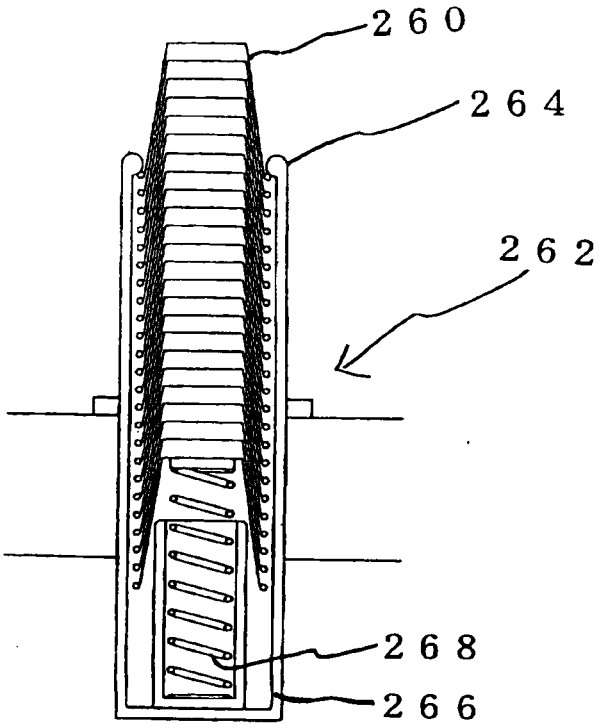


Fig. 49

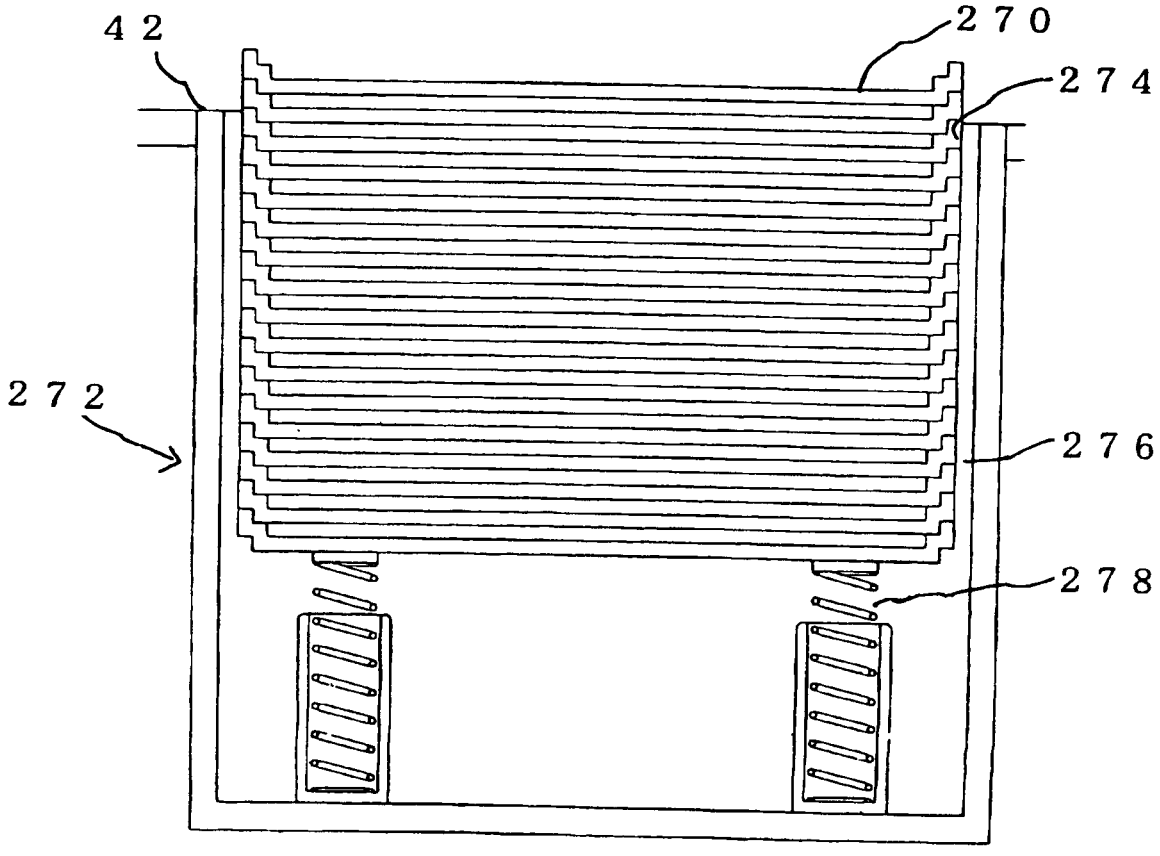


Fig. 50

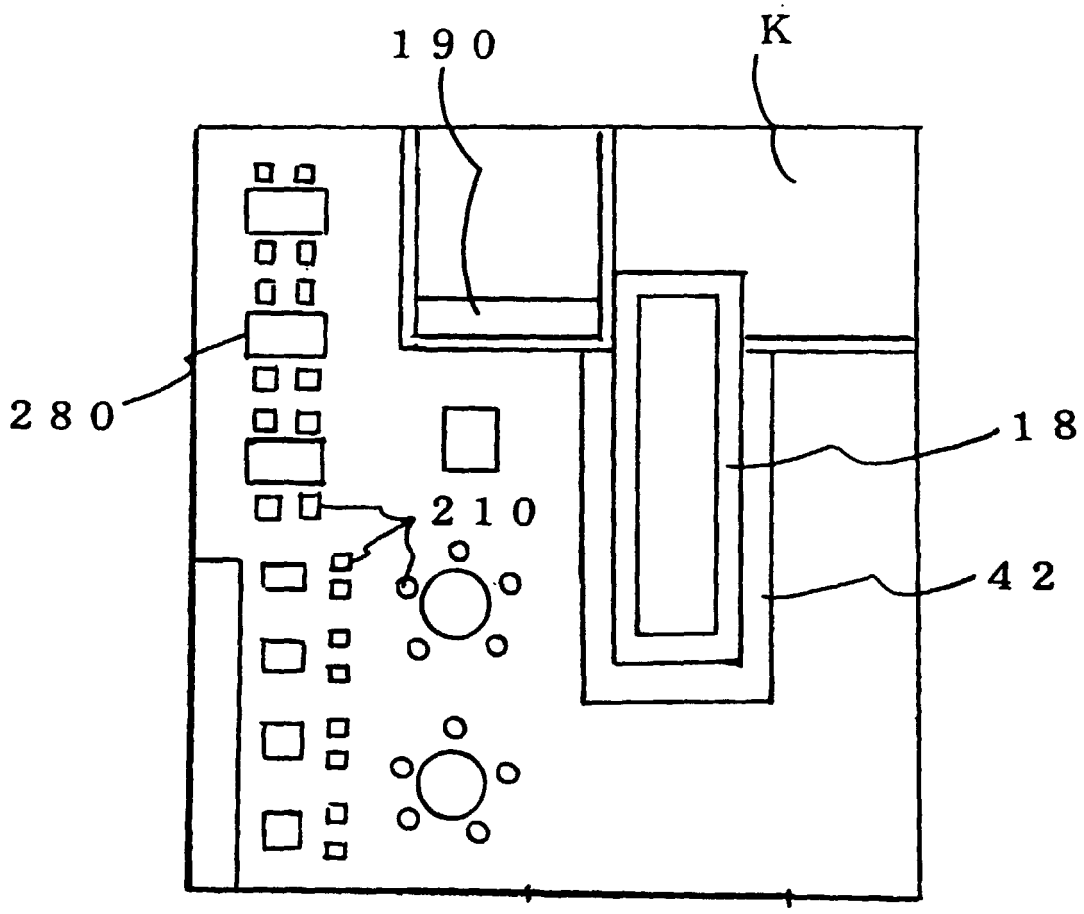


Fig. 51

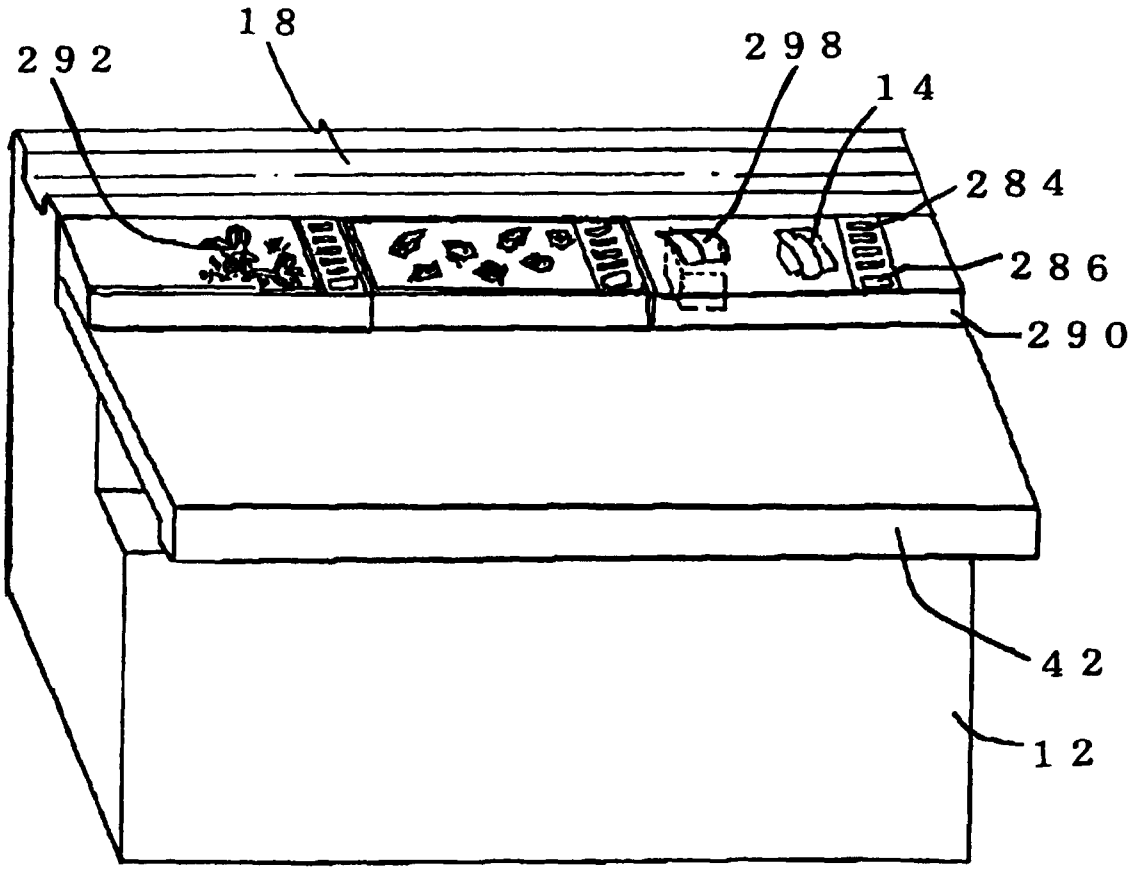


Fig. 52

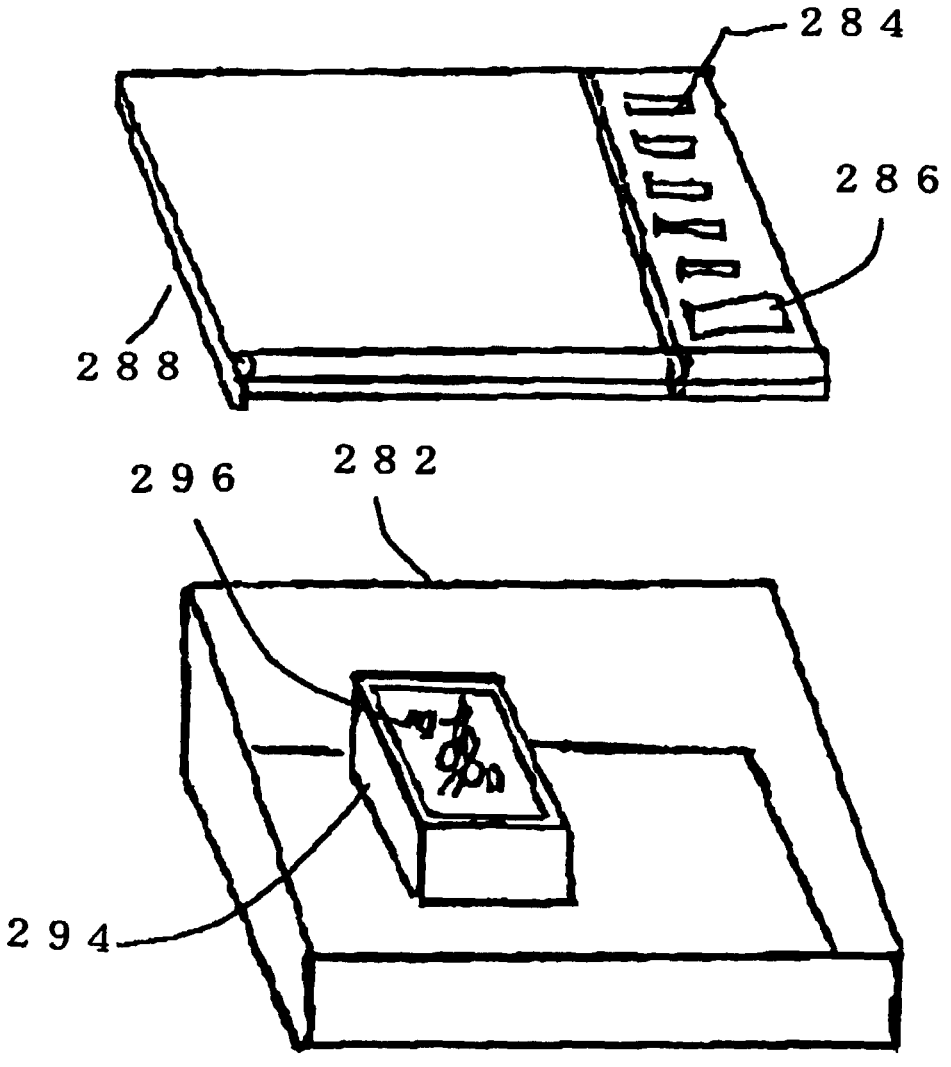
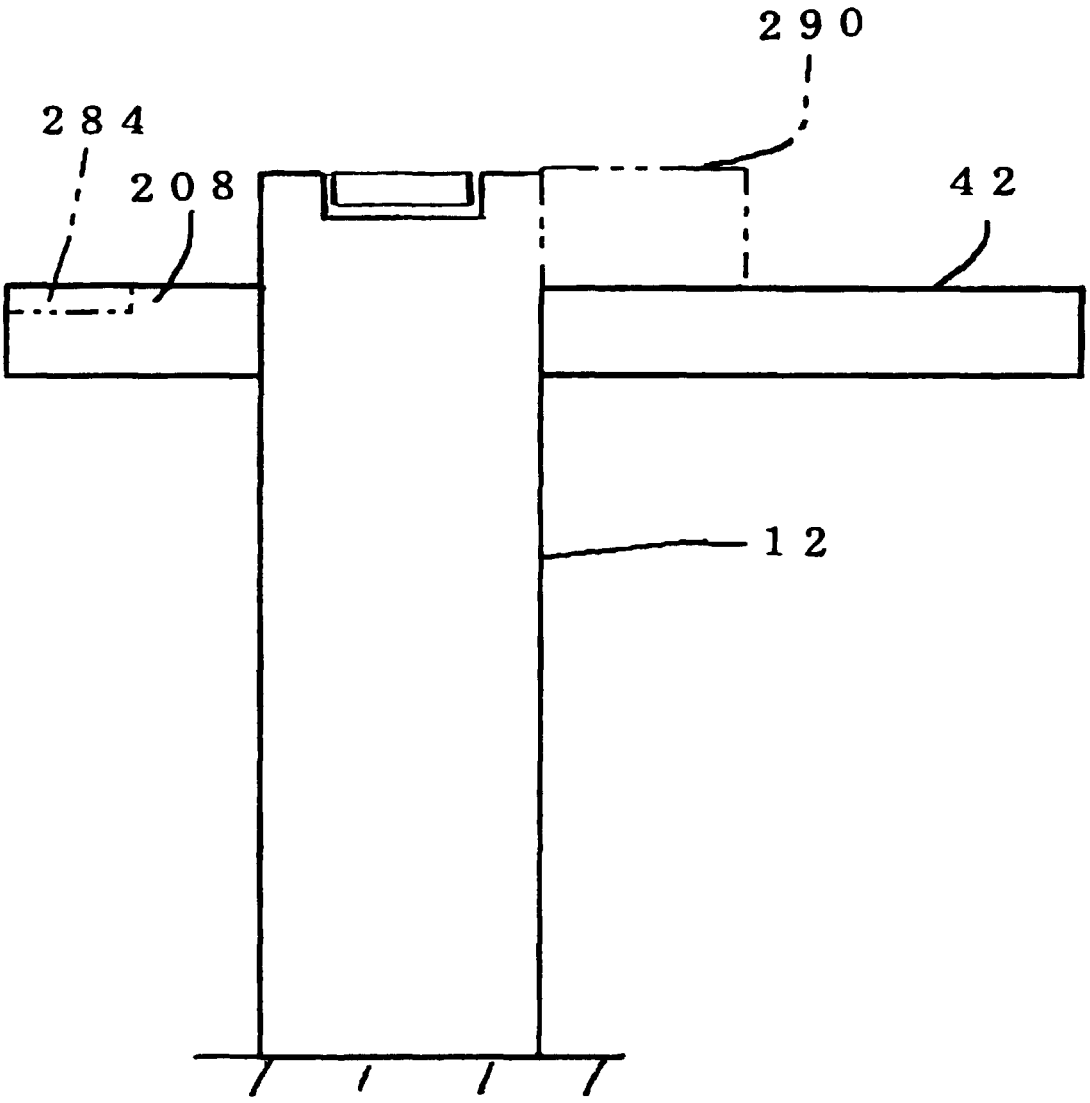


Fig. 53



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP98/04595

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[6] A47G23/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl[6] A47G23/08, A47G19/00-19/06, A47J27/04, A47J39/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1926-1996 Toroku Jitsuyo Shinan Koho 1994-1998
Kokai Jitsuyo Shinan Koho 1971-1998 Jitsuyo Shinan Toroku Koho 1996-1998

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 36935/1988 (Laid-open No. 141684/1989) (K.K. Ishino Seisakusho), 28 September, 1989 (28. 09. 89), Full text ; Figs. 1 to 4 (Family: none)	1, 16
Y	JP, 56-102212, A (Isamu Waki), 15 August, 1981 (15. 08. 81), Full text ; Figs. 1 to 11 (Family: none)	1, 16
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application	2, 17
A	No. 72893/1981 (Laid-open No. 184676/1982) (K.K. Ishino Seisakusho), 24 November, 1982 (24. 11. 82), Full text ; Figs. 1, 2 (Family: none)	11-13, 26-28
Y	JP, 5-245033, A (K.K. Ishino Seisakusho), 24 September, 1993 (24. 09. 93), Full text ; Figs. 1 to 4 (Family: none)	2, 17

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 December, 1998 (18. 12. 98)	6 January, 1999 (06. 01. 99)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP98/04595

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 194387/1987 (Laid-open No. 97777/1989) (Nippon Cresent Co., Ltd.), 29 June, 1989 (29. 06. 89), Full text ; Figs. 1 to 4 (Family: none)	3, 18
Y A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 181401/1987 (Laid-open No. 85325/1989) (Ueno Mfg. Co., Ltd.), 6 June, 1989 (06. 06. 89), Full text ; Figs. 1 to 4 (Family: none)	3, 18, 14, 29 11-13, 26-28
X Y	JP, 8-280495, A (Nippon Cresent Co., Ltd.), 29 October, 1996 (29. 10. 96), Full text ; Figs. 1 to 8 (Family: none)	9, 24 4-8, 19-23
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 210/1986 (Laid-open No. 112545/1987) (Taniguchi Kogyo K.K.), 17 July, 1987 (17. 07. 87), Full text ; Figs. 1, 2 (Family: none)	4-8, 19-23
Y	JP, 3016738, U (Osamu Ota), 26 July, 1995 (26. 07. 95), Full text ; Figs. 1, 2 (Family: none)	4, 5, 19, 20
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 10093/1982 (Laid-open No. 114179/1983) (Koichi Nishimura), 4 August, 1983 (04. 08. 83), Full text ; Figs. 1 to 4 (Family: none)	6-8, 21-23
A	JP, 8-238157, A (Nippon Cresent Co., Ltd.), 17 September, 1996 (17. 09. 96), Full text ; Figs. 1 to 13 (Family: none)	10, 25
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 21720/1986 (Laid-open No. 133699/1987) (Takara Co., Ltd.), 22 August, 1987 (22. 08. 87), Full text ; Figs. 1 to 6 (Family: none)	14, 29
A	JP, 8-238160, A (Nippon Cresent Co., Ltd.), 17 September, 1996 (17. 09. 96), Full text ; Figs. 1 to 5 (Family: none)	15, 30

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