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(54) APPARATUS FOR THE SEMI-AUTOMATIC RECLOSING OF CONTAINERS OF LIQUIDS

VORRICHTUNG ZUM HALBAUTOMATISCHEN WIEDERVERSCHLUSS VON FLÜSSIGKEITSBEHÄLTERN

APPAREIL POUR LA REFERMETURE SEMI-AUTOMATIQUE DE RÉCIPIENTS DE LIQUIDES

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Description

FIELD OF THE INVENTION

[0001] The present invention concerns an apparatus according to the preamble of claim 1 for the semi-automatic re closing of containers of liquids, provided with lids or capsules, with protruding spouts, such as feeding bottles, feeders, drinking troughs or other containers for feeding animals. The present invention also concerns a corresponding method.

[0002] An apparatus according to the preamble of claim 1 is known from US 5,519,984.

BACKGROUND OF THE INVENTION

[0003] Machines used for washing containers of liquids are known, for example but not only, feeding bottles, feeders, drinking troughs or other used for feeding animals such as for example guinea pigs, laboratory rodents or others.

[0004] It is known that, before washing, the containers are closed by means of suitable lids or capsules, which are shaped with a protruding spout to allow the animal to take the liquid contained in the container, and which must be supplied, after washing, closed and refilled with new liquid.

[0005] It is known to provide machines for washing containers, disposed and grouped in suitable washing racks, provided with a plurality of containing cells, so as to keep the containers with a desired disposition during all the operating steps of the process.

[0006] Known washing machines are structured with one or more operating stations disposed in a line with respect to each other, including a station for loading the closed containers, typically housed in suitable racks, a station for removing the capsules from the containers or de-lidding station, as in the international applications PCT/EP2010/065158 and PCT/IB2011/001310 in the name of the Applicant, a washing station and a refilling station, such as for example in the international application WO-A-2010/125168 in the name of the Applicant, and a closing or reclosing station for the washed and filled containers, using said capsules, such as for example in the patent application for industrial invention in Italy UD2009A000137 or in the international application WO-A-2110/140043 in the name of the Applicant. The international application PCT/IB2011/000954 in the name of the Applicant teaches, for example, how to hold the lids or capsules during the removal or reclosing operations. The international application PCT/IB2010/140048 in the name of the Applicant teaches, for example, how to hold the removed lids, while the international application WO-A-2010/140042 in the name of the Applicant teaches, for example, how to handle the racks which contain the containers to be treated.

[0007] In some of the known machines, except for the washing station, in which the containers are closed in a washing chamber and subjected to predetermined automated washing and rinsing steps, the remaining stations may need manual interventions and attention from the operators, in particular to close or reclose the washed and filled containers with the lids.

[0008] Such manual operations entail an increase in overall intervention times, as well as the need to use different operators on the same machine, with consequent increase in management costs.

[0009] Moreover, manual intervention may not always be precise and repeatable and can entail the risk of accidents for the operators.

[0010] In other known machines, the operations discussed here have a high degree of automation, for example, with regard to the reclosing, but this can influence the complexity, and therefore the cost of such machines.

[0011] Again, documents US-A-5,519,984, WO-A-2007/053853 and EP-A-2.192.042 describe apparatuses for reclosing containers of liquids using suitable lids, which provide positioning elements which, however, are in no way configured in a manner suitable to cooperate with the lids with a spout, or cannula, protruding from the containers in question.

[0012] Purpose of the present invention is to obtain an apparatus for the semi-automatic reclosing of containers of liquids, such as feeding bottles, feeders, drinking troughs or other containers, to feed animals, which offers a compromise between automating some operations, so as to relieve the operator of the effort and repetitiveness of manual reclosing, and simplicity, and therefore low cost, of its structure and construction, and suitable for example for small or medium sized laboratories.

[0013] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0014] The present invention is set forth and characterized in the independent claims 1 and 11, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0015] In accordance with the above purpose, an apparatus according to the present invention can be used for the semi-automatic reclosing, using suitable lids, each provided with a spout or cannula, oblong and protruding, of containers of liquids.

[0016] The reclosing apparatus of the present invention comprises a support frame which comprises a work plane that has a reclosing zone equipped with a reclosing head able to move the lids toward the corresponding containers, with which reclosing zone at least one rack is associable, in which the containers are grouped, disposed in a desired number and according to a desired pattern, and a zone for pre-loading a plurality of lids.

[0017] According to one feature of the present invention, the apparatus comprises a positioning tray for the

lids.

[0018] The positioning tray is selectively mobile between a first loading position associated with the work plane, in correspondence with the pre-loading zone, in which it is set up with the lids, and a second position for reclosing, turned upside down or upended by about 180° degrees for example, around its own lying plane, with respect to the first loading position, in correspondence with the reclosing zone, in which it is releasably constrained to the reclosing head and is configured to direct, during use, in a manner suitable for the action of the reclosing head, the lids associated therewith, aligned toward the corresponding containers to be reclosed.

[0019] The positioning tray is formed by a support plane which has a first surface and a plurality of containing bodies which protrude from said first surface.

[0020] The containing bodies are provided with positioning seatings, each of which is mating in shape to at least part of the lids, reproducing in negative at least an elongated shape or bulk of the spouts of the corresponding lids, to obtain a stable constraint of each containing body and the corresponding lid coupled to it, in order to position in the first loading position, in an orderly manner and according to a pattern correlated to the grouping pattern of the containers in the rack, a number of lids coordinated with the number of containers provided in the rack in an upended position with the spouts facing downward, keeping the lids stably positioned with the corresponding spouts in the positioning seatings both in the first loading position, and in the second reclosing position, and also in the passage from the first loading position to the second reclosing position.

[0021] Thanks to the combination of manual movement of the lids, but simultaneous and ordered according to the desired pattern, and the pressure, simultaneous and automatic and always according to the same pattern, the present invention offers a compromise between a rapid and reliable manual positioning of the lids, and an automated closure by means of pressure on the lids, together with simplicity and therefore low costs, of its structure and construction, particularly suitable for small or medium sized laboratories.

[0022] According to one form of embodiment, the support plane has a second surface, opposite the first surface, and provided, in the first loading position, disposed on the work plane.

[0023] In some forms of embodiment, the reclosing head is positioned above the reclosing zone and at least part of the reclosing head is selectively movable, by means of guide movement means, in a movement of distancing and approach, along a desired vertical travel so as to move, on each occasion, the lids associated with the positioning tray located in the second reclosing position, into cooperation with the containers provided in the rack.

[0024] In a variant, the apparatus comprises a a cantilevered structure associated with the frame and which positions the reclosing head, maintaining it above the reclosing zone.

[0025] According to further variants, the apparatus comprises balancing means able to facilitate the movement at least of the mobile part of the reclosing head.

[0026] In some forms of embodiment, the reclosing head comprises attachment elements of the releasable type and able to cooperate with the positioning tray in order to maintain it suspended above the reclosing zone in the second reclosing position.

[0027] In a variant, the attachment elements comprise longitudinal bars with a development mating with the longitudinal development of the positioning tray, said longitudinal bars being distanced in coordination with the transverse size of the positioning tray and each having a longitudinal support seating to insert the positioning tray, slidingly like a slider, so that it is stably suspended to the reclosing head.

[0028] According to one form of embodiment, the reclosing head comprises a presser device of the mobile type provided with an attachment surface, normally facing toward the work plane, in order to constrain the positioning tray at the lower part in a releasable manner, and with actuation means acting linearly on the attachment surface in order to determine the action of pressure along a desired travel, so as to close the containers with the lids.

[0029] According to some variants, the attachment elements are disposed on the attachment surface of the presser device.

[0030] In variant embodiments, the attachment elements are configured, in the second reclosing position, to house the positioning tray with the corresponding second surface facing toward the attachment surface of the presser device and the first surface facing toward the work plane.

[0031] The present invention also concerns a method according to claim 11, for the semi-automatic reclosing, by means of suitable lids each provided with an oblong protruding spout, of containers of liquids, in a reclosing zone equipped with a reclosing head able to move the lids toward the corresponding containers, which provides to associate the lids with the corresponding containers grouped together in at least one rack in a desired number and according to a desired grouping pattern.

[0032] According to one feature of the present invention the method provides to position manually, in a determinate pre-loading zone and in an orderly manner, according to a pattern correlated with the desired grouping pattern of the containers in the rack, a number of lids coordinated with the number of the containers provided in the rack.

[0033] To this end the method provides to use a positioning tray for the lids, mobile between a first loading position, in correspondence to the pre-loading zone, in which it is set up with the lids, and a second reclosing position, turned upside down or upended, for example by about 180°, with respect to its own lying plane, with respect to the first loading position, in correspondence

with the reclosing zone, in which it is releasably constrained to the reclosing head and is configured to direct, during use, the lids associated to it in a manner suitable to the action of the reclosing head, aligned toward the corresponding containers to be reclosed.

[0034] The positioning tray is formed by a support plane which has a first surface and a plurality of containing bodies which protrude from the first surface.

[0035] The containing bodies are provided with positioning seatings, each of a shape mating with at least part of the lids, reproducing in negative at least an elongated shape or bulk of the spouts of the corresponding lids, in order to obtain a stable constraint between each containing body and the corresponding lid coupled to it, in order to position, in the first loading position and in an orderly manner, according to a pattern correlated to the grouping pattern of the containers in the rack, a number of lids coordinated with the number of containers provided in the rack in an upended position with the spouts facing downward, keeping the lids stably positioned with the corresponding spouts in the positioning seatings both in the first loading position, and in the second reclosing position and also in the passage from the first loading position to the second reclosing position.

[0036] The method also provides to simultaneously move the lids thus disposed to a reclosing zone, positioning them simultaneously in a configuration able to cooperate with the containers grouped together in the at least one rack, and to automatically determine, once the lids are positioned, a closing pressure simultaneously on the ordered lids, in order to associate them closed on the containers.

[0037] According to the method of the present invention, the step of simultaneously moving the lids to the reclosing zone provides to simultaneously upend them with respect to the position they assume in the pre-loading zone, so that they are positioned suitable to cooperate with the containers, selectively moving the positioning tray between the first loading position, in which it is set up with the lids, and the second reclosing position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0038] These and other characteristics of the present invention will become apparent from the following description of a preferential form of embodiment, given as a non-restrictive example with reference to the attached drawings wherein:

- figs. 1 and 2 are respectively front and side views of an apparatus for the semi-automatic reclosing of containers of liquids, in a first step of pre-loading the lids;
- fig. 3 is a plan view of the apparatus in fig. 1;
- fig. 4 is an enlarged detail of a part of the apparatus in fig. 1;
- fig 5 is an enlarged detail of another part of the apparatus in fig. 1;
- figs. 6 and 7 are respectively front and side views of the apparatus in fig. 1 in a second positioning step of the lids on a reclosing head;
- figs. 8 and 9 are respectively front and side views of the apparatus in fig. 1, in a third step of downward movement of the reclosing head;
- figs. 10 and 11 are respectively front and side views of the apparatus in fig. 1, in a fourth pressure step using the reclosing head;
- figs. 12 and 13 are respectively front and side views of the apparatus in fig. 1, in a fifth step of upward movement of the reclosing head.

[0039] To facilitate comprehension, the same reference numbers have been used, where possible, to identify identical common elements in the drawings. It is understood that elements and characteristics of one form of embodiment can conveniently be incorporated into other forms of embodiment without further clarifications.

DESCRIPTION OF ONE FORM OF EMBODIMENT

[0040] With reference to the attached drawings, an apparatus 10 according to the present invention is used for the semi-automatic reclosing, using suitable lids or capsules 12, of containers 14 of liquids, such as feeding bottles, feeders, drinking troughs or other containers to feed animals.

[0041] Generally, the containers 14, disposed in an orderly way in a rack 20, are supplied to the apparatus 10 already washed and filled with liquid to feed the animals, in other washing and filling stations not shown in the drawings. The containers 14 are first grouped in the rack 20, disposed one by one in suitable housings 20a (fig. 3) done in an orderly way according to a grouping pattern of rows and columns, in this case 3x6.

[0042] Typically, each lid 12 is formed by a spout or cannula 12a of an elongated shape, from which the animal receives the food from the container 14, which protrudes from an attachment portion 12b mating with the upper edge which delimits the aperture of the container 14 and to which it is constrained, advantageously so as to obtain a hydraulic as well as a mechanical seal, obtained simply thanks to mechanical coupling or, for example, by providing a suitable additional packing.

[0043] The apparatus 10 comprises a support frame 16 which positions a drainage tank 17 for the liquids (fig. 3), for example for the washing liquid possibly remaining on the containers 14 or other. Support feet 15 are provided to keep the frame 16 distanced from a generic support plane P, such as the floor.

[0044] The frame 16 comprises a work plane 18 on which the rack 20 is loaded. In this case, the work plane 18 is defined by longitudinal support guides 22, aligned in a working direction F (figs. 1 and 3) and opposite each other.

[0045] In correspondence to a first end 16a of the frame 16 a bearing shelf 24 is provided (shown for convenience

only in figs. 1 and 3) on which a receptacle 26 is placed, big enough to contain, loaded haphazardly, a large number of lids 12, previously washed, or a number such as to satisfy the reclosing of at least a complete group of containers 14 disposed in the rack 20.

[0046] Downstream of the bearing shelf 24, always in spatial association with the first end 16a of the frame 16, a pre-loading zone 30 is provided for the lids 12, before the subsequent semi-automatic reclosing (figs. 1 and 3).

[0047] The pre-loading zone 30 is temporarily associable to a positioning tray 28 for the lids 12, which can be placed resting on the longitudinal guides 22.

[0048] The positioning tray 28 is selectively mobile between a first loading position associated to the work plane 18, in correspondence to the pre-loading zone 30, in which it is set up with the lids 12, and a second reclosing position, upended with respect to the first loading position, in correspondence to the reclosing zone 34, in which it is releasably constrained to the reclosing head and is configured to direct, during use, in a manner suitable to the action of the reclosing head, the lids associated therewith aligned toward the corresponding containers to be reclosed.

[0049] To this purpose, the positioning tray 28 (fig. 5) comprises a plurality of containing bodies 31, of an elongated shape mating with the spouts 12a of the lids 12, in this case cylindrical or similar. The containing bodies 31 are disposed with a grouping pattern made in a mating manner, and coordinated in number, with the distribution pattern and position in rows and columns of the disposition of the housings 20a of the rack 20 as above.

[0050] Each of the containing bodies 31 is provided with a positioning seating 32 mating with the lids 12. The positioning seatings 32 are shaped in a correlated manner to the shape of the lids 12, in order to determine a sufficiently stable constraint thereof inside them, advantageously reproducing in negative at least part of the typical shape, or bulk, of the lids 12, with the elongated spout 12a and attachment portion 12b, as defined above. Advantageously, the shape of the positioning seatings 32 is, therefore, with an elongated segment 32a, mating with the oblong shape of the spouts 12a and a flared segment 32b mating with the attachment portion 12b. The shape of the flared segment 32b is also advantageous because it represents a lead-in surface for the insertion of the lids 12, which is thus intuitive, faster and simplified.

[0051] The positioning tray 28 is disposed in correspondence to the pre-loading zone 30, so as to have the positioning seatings 32 facing upward, so that the operator can easily place a corresponding lid 12 in each positioning seating 32. In this case, the lids 12 are disposed upended in the positioning seatings 32, that is, with the spouts 12a facing downward and the attachment portion 12b to the container 14 facing upward.

[0052] In the form of embodiment shown, the positioning tray 28 is formed by a support plane 29, in this case rectangular in shape and suitable to contain a rectangular distribution of rows and columns, for example 3x6, but in other embodiments it may also be square.

[0053] The support plane 29 has a first surface 35 from which in this case the containing bodies 31 protrude, and a second surface 37, opposite the first surface 35 and, when the positioning tray 28 is in correspondence to the pre-loading zone 30, disposed on the work plane 18.

[0054] In this case, the support plane 29 has a pair of first lateral edges 29a, which, during use in the pre-loading zone 30, extend transversely between the two longitudinal guides 22, and a pair of second lateral edges 29b, able to be stably positioned on the longitudinal guides 22.

[0055] In correspondence to a second end 16b of the frame 16, opposite the first end 16a, the apparatus 10 has a reclosing zone 34, in which the rack 20 is disposed with the corresponding containers 14 already filled, suitably housed and distributed in rows and columns in the corresponding housings 20a.

[0056] In particular, the rack 20 is also located stably on the longitudinal guides 22, in the same way as the positioning tray 28 in the pre-loading zone 30.

[0057] In correspondence to the reclosing zone 34 a cantilevered structure 36 (figs. 1-3) is provided, which supports a reclosing head 38, keeping it suspended during use above the rack 20, which can be placed here on each occasion.

[0058] The reclosing head 38 comprises an external casing 41 (shown by a line of dashes in the drawings), of a box-like shape, in which a mobile presser device 39 is positioned, able to automatically determine the closing of the lids 12 on the containers 14 once these have been placed manually in a reciprocal coordinated position.

[0059] The presser device 39 of the reclosing head 38, once supplied with a desired number of lids 12 positioned in a manner mating with the disposition of the containers 14 below, housed in the rack 20, is able to move downward, with a single movement, the number of lids 12 and to press each of the lids 12 against the upper edge of the associated containers 14, so as to carry out the reclosing operation under pressure upon them.

[0060] In this case, the cantilevered structure 36 is formed by vertical supporting uprights 40, distanced from each other in a manner correlated to the transverse bulk of the reclosing head 38, so as to contain it in the internal space defined between them, and associated on one side of the frame 16. From the supporting uprights 40 horizontal cantilevered portions 42 develop which extend in a position above the reclosing zone 34 and which support and allow the positioning of the reclosing head 38.

[0061] In some forms of embodiment, the presser device 39 comprises a lower support wall 45 which supports and positions suitable pressure and movement means.

[0062] In particular, mounted on the lower support wall 45, sliding means 52 such as a pinion or toothed wheel are provided, cooperating with longitudinal guide means 54 such as a rack.

[0063] The kinematic cooperation between the sliding means 52 and the guide means 54 allows the alternate vertical movement of the presser device 39 of the reclos-

ing head 38.

[0064] In particular, the guide means 54 extend vertically for a length correlated to the vertical travel S which needs to be completed by the presser device 39, thus defining an upper and a lower end-of-travel, in particular the latter correlated to the height of the containers 14 to be closed.

[0065] In this way, at the lower end-of-travel, the lids 12 are in contact with the containers 14 to be reclosed, and ready for the necessary closing pressure.

[0066] A handle 58, associated to the lower support wall 45, allows the operator to raise and lower the presser device 39 as needed.

[0067] Moreover, advantageously, the lifting/lowering travel S of the presser device 39 of the reclosing head 38 can be assisted for the operator by a system, advantageously integrated into the cantilevered structure 36, using balancing means or auxiliary movement assistance means, such as counterweights with return pulleys, as generically indicated by the reference number 70 in the attached drawings, of the fluid-dynamic, pneumatic or spring type or other elastic means, which facilitate the ergonomicity of the lifting and promote the lowering.

[0068] Moreover, a clamping/release mechanism 61 is provided, for example a linear member which uncouples the sliding means 52 from the guide means 54, or a rotating clamping member which prevents the rotation of the sliding means 52 (fig. 4), which can be driven externally by means of a first button 63 provided on the front side of the frame 16, by means of which the clamping/release of the vertical travel S of the presser device 39 of the reclosing head 38 is determined.

[0069] Furthermore, an attachment surface 44 (fig. 4) is provided under the lower support wall 45, facing toward the work plane 18 when in use, to which the positioning tray 28 is associated on each occasion.

[0070] Moreover, the presser device 39 comprises a linear actuator 62, attached suspended to an upper support wall 47, for example a fluid-dynamic linear actuator of the stem-cylinder type (fig. 4) which acts vertically on the attachment surface 44 along a determinate travel C of pressure (figs. 10 and 11). This vertical action is able only to determine the closing pressure of the lids 12 on the containers 14. The linear actuator 62 can be driven by means of simultaneous pressure of two second buttons 64, also provided on the front side of the frame 16 near the reclosing zone 34, in order to determine the action of automatic pressure of the presser device 39 of the reclosing head 38, so as to obtain the desired constraint of the lids 12 on the containers 14. For the physical passage of the linear actuator 62 connected to the attachment surface 44 during the travel C, a window 45a is provided made through the lower support wall 45.

[0071] In some forms of embodiment, along the peripheral edges the attachment surface 44 of the presser device 39 has longitudinal attachment elements 46, disposed transverse to the working direction F and distanced from each other along the working direction F by a desired length correlated to the transverse sizes of the positioning tray 28, in this case to the distance between the first lateral edges 29a.

[0072] The attachment elements 46 have an extension, or affect a length, correlated to the longitudinal sizes of the positioning tray 28, in this case to the length of the first lateral edges 29a, and moreover they are distanced from each other in coordination to the transverse size of the positioning tray 28, so as to be able to accommodate and position it suspended stably.

[0073] In this case, each attachment element 46 has an L- or C-shaped cross section, that is, formed by at least a first longitudinal bar portion 48, disposed and constrained along a corresponding edge of the attachment surface 44 of the reclosing head 38, and a second support portion 50, transverse to the first longitudinal bar portion 48 and facing toward the inside of the attachment surface 44, substantially parallel to it, so as to define stable and reliable support portions in which to position the positioning tray 28 slidingly like a slider (fig. 5).

[0074] The positioning tray 28 can thus be inserted and positioned sliding stably along the attachment elements 46 of the reclosing head 38, and is suspended to the reclosing head 38, in particular to the attachment surface 44 of the external casing of the reclosing head 38.

[0075] In order to insert it, the positioning tray 28 is turned upside down, or upended, in the case in point by about 180° with respect to its own lying plane, with respect to the configuration which it assumes in the first loading position in the pre-loading zone 30, in a second reclosing position, so that the positioning seatings 32 are facing downward and that the containment bodies 31 do not interfere with the insertion movement.

[0076] It is in fact desirable that the lids 11 associated to the positioning tray 28, suitably placed and held in the positioning seatings 32, are facing toward the work plane 18 below, ready to cooperate with corresponding containers 14 below disposed in the suitably positioned rack 20.

[0077] In particular, in order to achieve this the positioning tray 28 is inserted like a slider along the attachment elements 46, as we said, in an upended position with respect to the position assumed in the first loading position in correspondence to the pre-loading zone 30, so that its second surface 37 (fig. 6) faces toward the attachment surface 44 of the reclosing head 38 and the first surface 35 faces toward the work plane 18, so that the positioning seatings 32, with the lids 12 held therein, face toward the work plane 18.

[0078] The lids 12 will thus be positioned with the spouts 12a facing upward and the attachment portions 12b facing downward in order to each be constrained to the edge which delimits the aperture of an associated lower container 14, thus obtaining the final closed configuration of the containers 14, traditional and easily transportable, without any leakage of liquid.

[0079] In particular the rack 20 is made in such a way as to house the containers 14, as we said, according to

the desired pattern, so that it can be positioned in the reclosing zone 34 so that the same containers 14 are aligned to the lids 12 above, once these have been simultaneously disposed in an orderly way on the reclosing head 38 thanks to the positioning tray 28.

[0080] To perform the reclosing operation, the reclosing head 38 is configured to carry out at least two operations, that is, an alternate manual vertical movement to bring the lids 12 into contact with the containers 14, and an automatic pressure of the lids 12 against the containers 14 so as to constrain them.

[0081] In particular, the vertical movement upward of the lids 12 by means of the reclosing head 38 is carried out manually along a travel S (fig. 8) and determines the movement of the presser device 39 to which the positioning tray 28 is associated toward the reclosing zone 34 in which the rack 20 is located with the containers 14 disposed according to the desired pattern, that is, facing downward, until the lids 12 join in contact with the upper edges of the containers 14.

[0082] The subsequent pressure automatically exerted by the presser device 39, thanks to the linear actuator 62 which acts on the attachment surface 44 to which the positioning tray 28 is associated, determines the closing of the containers 14 with the corresponding lids 12.

[0083] With reference to figs. 1, 2, 6-13, the functioning of the apparatus 10 is now described.

[0084] In a first step, the positioning tray 28 can normally be inserted in the reclosing head 38, along the attachment elements 46 of the presser device 39, with the positioning seatings 32 facing downward and which do not contain any lids 12. The positioning tray 28 is then manually removed by the operator and positioned in the pre-loading zone 30 with the positioning seatings 32 facing upward (figs. 1 and 2). Then, the operator inserts the lids 12, already present in the receptacle 26, into the positioning seatings 32, generally occupying them completely.

[0085] Subsequently, in a second step as shown in figs. 6 arid 7, the operator manually withdraws the positioning tray 28 thus set up, upends it and inserts it slidingly like a slider into the reclosing head 38, so that the lids 12 face suitably downward. In this way, thanks to the sole positioning tray 28, the lids 12 are moved simultaneously, while still maintaining the desired positioning pattern correlated to the positioning pattern of the containers 14 in the rack 20, from the pre-loading zone 30 to the reclosing zone 34, the containers 14 being upended from the position, suitable for loading, with the spout 12a facing downward, to the position, suitable for closing, with the spout 12b facing upward.

[0086] The operator also places, or has already placed the rack 20 in a coordinated manner with the containers 14 already filled and suitably distributed according to the desired pattern, under the reclosing head 38, so that the containers 14 are adequately aligned with the lids 12 above.

[0087] Then, in a third step, as shown in figs. 8 and 9, the operator presses the first button 63, driving the clamping/release mechanism 61, in order to release the upward movement of the presser device 39, and manually lowers the latter to the lower-end-of travel defined by the guide means 54, simultaneously translating the lids 12 into the position in which they are in contact with the containers 14. In fig. 8 it can easily be seen how the sliding means 52, with respect to fig. 6, translate upward along the guide means 54, while the presser device 39 is consequently moved downward.

[0088] A further pressure on the first button 63 deactivates the clamping/release mechanism 61, clamping the presser device 39 of the reclosing head 38 at the desired height, so that the lids 12 are in substantial contact with the upper ends of the containers 14.

[0089] Subsequently, in a fourth step (figs. 10 and 11) the operator drives the linear actuator 62, by means of simultaneous pressure of the two second buttons 64, in order to automatically determine the simultaneous closing pressure of the lids 12 on the containers 14 by the presser device 39. As can be seen in the drawings, the linear actuator 62, passing through the window 45a, presses and moves, with respect to the lower wall 45, by the desired vertical downward travel C, the attachment surface 44 which is solid to the positioning tray 28 below, thus constraining the lids 12 and containers 14.

[0090] Finally, in a fifth step, another pressure on the button 63 releases the vertical movement of the presser device 39 of the reclosing head 38, which can be lifted again to begin another reclosing operation (figs. 12 and 13).

Claims

1. Apparatus for the semi-automatic reclosing, by means of suitable lids (12) each provided with a protruding spout (12a) of an oblong shape, of containers (14) of liquids, comprising a support frame (16) which comprises a work plane (18) that has a reclosing zone (34) equipped with a reclosing head (38) able to move the lids (12) toward the corresponding containers (14), with which reclosing zone (34) at least one rack (20) is associable, in which said containers (14) are grouped, disposed in a desired number and according to a desired pattern, and a zone (30) for pre-loading a plurality of lids (12), **characterized in that** it comprises a positioning tray (28) for the lids (12), the positioning tray (28) being selectively mobile between a first loading position associated with the work plane (18), in correspondence with the pre-loading zone (30), in which it is set up with the lids (12), and a second reclosing position, upended with respect to the first loading position, in correspondence with the reclosing zone (34), in which it is releasably constrained to the reclosing head (38) and is configured to direct, during use, in a manner suitable for the action of the reclosing head (38), the lids

(12) associated therewith, aligned toward the corresponding containers (14) to be reclosed, said positioning tray (28) being formed by a support plane (29) which has a first surface (35) and a plurality of containing bodies (31) which protrude from said first surface (35), said containing bodies (31) being provided with positioning seatings (32), each of the positioning seatings (32) being of a shape mating with at least part of the lids (12), reproducing in negative at least an elongated shape or bulk of the spouts (12a) of the corresponding lids (12), in order to obtain a stable constraint between each containing body (31) and the corresponding lid (12) coupled therewith, in order to position, in the first loading position and in an orderly manner, according to a pattern correlated to the grouping pattern of the containers (14) in the rack (20), a number of lids (12) coordinated with the number of containers (14) provided in the rack (20), in an upended position with the spouts (12a) facing downward, keeping the lids (12) stably positioned with the corresponding spouts (12a) in the positioning seatings (32) both in the first loading position, and in the second reclosing position, and also in the passage from the first loading position to the second reclosing position.

2. Apparatus as in claim 1, **characterized in that** the support plane (29) has a second surface (37), opposite the first surface (35), and provided, in the first loading position, disposed on the work plane (18).

3. Apparatus as in claim 1 or 2, **characterized in that** the reclosing head (38) is positioned above the reclosing zone (34) and at least part (39) of the reclosing head (38) is selectively movable, by means of guide movement means (52, 54), in a movement of distancing and approach, along a desired vertical travel (S) so as to move, on each occasion, the lids (12) associated with the positioning tray (28) located in the second reclosing position, into cooperation with the containers (14) provided in the rack (20).

4. Apparatus as in claim 3, **characterized in that** it comprises a cantilevered structure (36) associated with the frame (16) and which positions the reclosing head (38), maintaining it above the reclosing zone (34).

5. Apparatus as in claim 3 or 4, **characterized in that** it comprises balancing means (70) able to facilitate the movement of the at least part (39) of the reclosing head (38).

6. Apparatus as in any claim hereinbefore, **characterized in that** the reclosing head (38) comprises attachment elements (46) of the releasable type and able to cooperate with the positioning tray (28) in order to maintain it suspended above the reclosing zone (34) in the second reclosing position.

7. Apparatus as in claim 6, **characterized in that** the attachment elements (46) comprise longitudinal bars (48) with a development mating with the longitudinal development of the positioning tray (28), which are distanced in coordination with the transverse size of the positioning tray (28) and each have a longitudinal support seating (50) to insert the positioning tray (28), slidingly like a slider, so that it is stably suspended to the reclosing head (38).

8. Apparatus as in any claim hereinbefore, **characterized in that** the reclosing head (38) comprises a presser device (39) of the mobile type provided with an attachment surface (44), normally facing toward the work plane (18), in order to constrain said positioning tray (28) at the lower part in a releasable manner, and with actuation means (62) acting linearly on said attachment surface (44) in order to determine the action of pressure along a desired travel (C), so as to close the containers (14) with said lids (12).

9. Apparatus as in claim 7 and 8, **characterized in that** the attachment elements (46) are disposed on the attachment surface (44) of the presser device (39).

10. Apparatus as in claims 9 and 2, **characterized in that** in the second reclosing position, the attachment elements (46) are configured to house the positioning tray (28) with the corresponding second surface (37) facing toward the attachment surface (44) of the presser device (39) and the first surface (35) facing toward the work plane (18).

11. Method for the semiautomatic reclosing, by means of suitable lids (12) each provided with an oblong protruding spout (12a), of containers (14) of liquids, in a reclosing zone (34) equipped with a reclosing head (38) able to move the lids (12) toward the corresponding containers (14), which provides to associate the lids (12) with the corresponding containers (14) grouped together in at least one rack (20) in a desired number and according to a desired grouping pattern, **characterized in that** it provides:

- to position manually, in a determinate pre-loading zone (30) and in an orderly manner, according to a pattern correlated with the desired grouping pattern of the containers (14) in the rack (20), a number of lids (12) coordinated with the number of the containers (14) provided in the rack (20), using a positioning tray (28) for the lids (12) which is mobile between a first loading position, in correspondence to the pre-loading zone (30), in which it is set up with the lids (12), and a second reclosing position, upended with respect to the first loading position, in cor-

respondence with the reclosing zone (34), in which it is releasably constrained to the reclosing head (38) and is configured to direct, during use, the lids (12) associated thereto, in a manner suitable to the action of the reclosing head (38), aligned toward the corresponding containers (14) to be reclosed, said positioning tray (28) being formed by a support plane (29) which has a first surface (35) and a plurality of containing bodies (31) which protrude from said first surface (35), said containing bodies (31) being provided with positioning seatings (32), each of the positioning seatings (32) being of a shape mating with at least part of the lids (12), reproducing in negative at least an elongated shape or bulk of the spouts (12a) of the corresponding lids (12), in order to obtain a stable constraint between each containing body (31) and the corresponding lid (12) coupled thereto, in order to position, in the first loading position and in an orderly manner, according to a pattern correlated to the grouping pattern of the containers (14) in the rack (20), a number of lids (12) coordinated with the number of containers (14) provided in the rack (20), in an upended position with the spouts (12a) facing downward, keeping the lids (12) stably positioned with the corresponding spouts (12a) in the positioning seatings (32) both in the first loading position, and in the second reclosing position, and also in the passage from the first loading position to the second reclosing position,

- to simultaneously move the lids (12) thus disposed to a reclosing zone (34), positioning them simultaneously in a configuration able to cooperate with the containers (14) grouped together in the at least one rack (20), and
- to automatically determine, once the lids (12) are positioned, a closing pressure simultaneously on the ordered lids (12), in order to associate them closed on the containers (14),

wherein the step of moving the lids (12) simultaneously to the reclosing zone (34) provides to simultaneously upend them with respect to the position they assume in the pre-loading zone (30), so that they are positioned suitable to cooperate with the containers (14), selectively moving the positioning tray (28) between the first loading position, in which it is set up with the lids (12), and the second reclosing position.

Patentansprüche

1. Vorrichtung zum halbautomatischen Wiederverschließen von Behältern (14) für Flüssigkeiten mittels passender Deckel (12), die jeweils mit einer vorstehenden Ausgussröhre (12a) mit einer länglichen Form versehen sind, die aufweist: einen Halterahmen (16), der eine Arbeitsebene (18) aufweist, die eine Wiederverschließzone (34) hat, die mit einem Wiederverschließkopf (38) ausgestattet ist, der fähig ist, die Deckel (12) in Richtung der entsprechenden Behälter (14) zu bewegen, wobei mit der Wiederverschließzone (34) wenigstens ein Gestell (20) verbindbar ist, in dem die Behälter (14) gruppiert sind, die in einer gewünschten Anzahl und gemäß einem gewünschten Muster angeordnet sind, und eine Zone (30) zum Vorab-Bestücken mehrerer Deckel (12), **dadurch gekennzeichnet, dass** sie aufweist: eine Positionierungsablage (28) für die Deckel (12), wobei die Positionierungsablage (28) selektiv beweglich ist zwischen einer ersten Bestückungsposition, die zu der Arbeitsebene (18), die der Vorab-Bestückungszone (30) entspricht, gehört, in der sie mit den Deckeln (12) eingerichtet wird, und einer zweiten Wiederverschließposition, die in Bezug auf die erste Bestückungsposition gekippt ist, die der Wiederverschließzone (34) entspricht, in der sie lösbar auf den Wiederverschließkopf (38) beschränkt ist, und aufgebaut ist, um die zu ihr gehörenden Deckel (12) während der Verwendung auf eine Weise, die für die Tätigkeit des Wiederverschließkopfs (38) geeignet ist, in Richtung der entsprechenden Behälter (14), die wiederverschlossen werden sollen, ausgerichtet zu führen, wobei die Positionierungsablage (28) durch eine Halteebene (29) ausgebildet ist, die eine erste Oberfläche (35) und mehrere Aufnahmekörper (31) hat, die von der ersten Oberfläche (35) vorstehen, wobei die Aufnahmekörper (31) mit Positionierungsauflagern (32) versehen sind, wobei jedes der Positionierungsauflager (32) eine Form hat, die zu wenigstens einem Teil der Deckel (12) passt, wobei wenigstens eine längliche Form oder ein Großteil der Ausgussröhren (12a) der entsprechenden Deckel (12) als Negativ reproduziert wird, um eine stabile Beschränkung zwischen jedem Aufnahmekörper (31) und dem damit gekoppelten entsprechenden Deckel (12) zu erhalten, um in der ersten Bestückungsposition und in einer ordentlichen Weise gemäß einem Muster, das mit dem Gruppierungsmuster der Behälter (14) in dem Gestell (20) korreliert ist, eine Anzahl von Deckeln (12), die mit der Anzahl von in dem Gestell (20) bereitgestellten Behältern (14) koordiniert ist, in einer gekippten Position mit den nach unten gewandten Ausgussröhren (12a) zu positionieren, wobei die Deckel (12) sowohl in der ersten Bestückungsposition als auch in der zweiten Wiederverschließposition und auch in dem Übergang von der ersten Bestückungsposition zu der zweiten Bestückungsposition stabil mit den entsprechenden Ausgussröhren (12a) in den Positionierungsauflagern (32) gehalten werden.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Halteebene (29) eine zweite

Oberfläche (37) entgegengesetzt zu der ersten Oberfläche (35) hat und in der ersten Bestückungsposition auf der Arbeitsebene (18) angeordnet bereitgestellt ist.

3. Vorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der Wiederverschließkopf (38) oberhalb der Wiederverschließzone (34) positioniert ist und wenigstens ein Teil (39) des Wiederverschließkopfs (38) mittels Führungsbewegungseinrichtungen (52, 54) in einer Bewegung zur Beabstandung und Näherung entlang eines gewünschten vertikalen Hubs (S) selektiv beweglich ist, um die Deckel (12), die zu der Positionierungsablage (28) gehören, die sich in der zweiten Wiederverschließposition befindet, bei jeder Gelegenheit zusammenwirkend mit den in dem Gestell (20) bereitgestellten Behältern (14) zu bewegen.

4. Vorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** sie eine Auslegerstruktur (36) aufweist, die zu dem Rahmen (16) gehört und die den Wiederverschließkopf (38) positioniert, wobei sie ihn oberhalb der Wiederverschließzone (34) hält.

5. Vorrichtung nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** sie eine Ausgleicheinrichtung (70) aufweist, die fähig ist, die Bewegung des wenigstens einen Teils (39) des Wiederverschließkopfs (38) zu erleichtern.

6. Vorrichtung nach jedem vorangehenden Anspruch, **dadurch gekennzeichnet, dass** der Wiederverschließkopf (38) Befestigungselemente (46) lösbarer Art aufweist, die fähig sind, mit der Positionierungsablage (28) zusammen zu wirken, um sie in der zweiten Wiederverschließposition oberhalb der Wiederverschließzone (34) hängend zu halten.

7. Vorrichtung nach Anspruch 6, **dadurch gekennzeichnet, dass** die Befestigungselemente (46) Längsstangen (48) mit einer Ausprägung haben, die zu der Längsausprägung der Positionierungsablage (28) passt, die koordiniert mit der Querabmessung der Positionierungsablage (28) beabstandet sind und jeweils ein Längshalteauflager (50) haben, um die Positionierungsablage (28) einzusetzen, das wie ein Gleitstück gleitet, so dass sie stabil zu dem Wiederverschließkopf (38) herunter hängt.

8. Vorrichtung nach jedem vorangehenden Anspruch, **dadurch gekennzeichnet, dass** der Wiederverschließkopf (38) eine Druckvorrichtung (39) mobiler Art aufweist, die mit einer Befestigungsoberfläche (44) versehen ist, die normalerweise in Richtung der Arbeitsebene (18) gewandt ist, um die Positionierungsablage (28) in einer lösbaren Weise an dem unteren Teil zu beschränken, und mit Betätigungseinrichtungen (62), die linear auf die Befestigungsoberfläche (44) wirken, um die Wirkung von Druck entlang eines gewünschten Hubs (C) zu bestimmen, um die Behälter (14) mit den Deckeln (12) zu schließen.

9. Vorrichtung nach Anspruch 7 und 8, **dadurch gekennzeichnet, dass** die Befestigungselemente (46) auf der Befestigungsoberfläche (44) der Druckvorrichtung (39) angeordnet sind.

10. Vorrichtung nach den Ansprüchen 9 und 2, **dadurch gekennzeichnet, dass** die Befestigungselemente (46) in der zweiten Wiederverschließposition aufgebaut sind, um die Positionierungsablage (28) mit der entsprechenden zweiten Oberfläche (37), die in Richtung der Befestigungsoberfläche (44) der Druckvorrichtung (39) nach unten gewandt ist, und der ersten Oberfläche 35), die in Richtung der Arbeitsebene (18) gewandt ist, aufzunehmen.

11. Verfahren zum halbautomatischen Wiederverschließen von Behältern (14) für Flüssigkeiten mittels passender Deckel (12), die jeweils mit einer länglichen vorstehenden Ausgussröhre (12a) versehen sind, in einer Wiederverschließzone (34), die mit einem Wiederverschließkopf (38) ausgestattet ist, der fähig ist, die Deckel (12) in Richtung der entsprechenden Behälter (14) zu bewegen, der dafür sorgt, dass die Deckel (12) mit den entsprechenden Behältern (14) verbunden werden, die in wenigstens einem Gestell (20) in einer gewünschten Anzahl und gemäß einem gewünschten Gruppierungsuster angeordnet sind, **dadurch gekennzeichnet, dass** es bereitstellt:

- in einer bestimmten Vorab-Bestückungszone (30) manuelles Positionieren einer Anzahl von Deckeln (12), die mit der Anzahl von in dem Gestell (20) bereitgestellten Behältern (14) koordiniert ist, in einer ordentlichen Weise gemäß einem Muster, das mit dem Gruppierungsmuster der Behälter (14) in dem Gestell (20) korreliert ist, unter Verwendung einer Positionierungsablage (28), die selektiv beweglich ist zwischen einer ersten Bestückungsposition, die der Vorab-Bestückungszone (30) entspricht, in der sie mit den Deckeln (12) eingerichtet wird, und einer zweiten Wiederverschließposition, die in Bezug auf die erste Bestückungsposition gekippt ist, die der Wiederverschließzone (34) entspricht, in der sie lösbar auf den Wiederverschließkopf (38) beschränkt ist, und aufgebaut ist, um die zu ihr gehörenden Deckel (12) während der Verwendung auf eine Weise, die für die Tätigkeit des Wiederverschließkopfs (38) geeignet ist, in Richtung der entsprechenden Behälter (14), die wiederverschlossen werden sollen, ausgerichtet zu führen, wobei die Positionierungsablage

(28) durch eine Halteebene (29) ausgebildet ist, die eine erste Oberfläche (35) und mehrere Aufnahmekörper (31) hat, die von der ersten Oberfläche (35) vorstehen, wobei die Aufnahmekörper (31) mit Positionierungsauflagern (32) versehen sind, wobei jedes der Positionierungsauflager (32) eine Form hat, die zu wenigstens einem Teil der Deckel (12) passt, wobei wenigstens eine längliche Form oder ein Großteil der Ausgussröhren (12a) der entsprechenden Deckel (12) als Negativ reproduziert wird, um eine stabile Beschränkung zwischen jedem Aufnahmekörper (31) und dem damit gekoppelten entsprechenden Deckel (12) zu erhalten, um in der ersten Bestückungsposition und in einer ordentlichen Weise gemäß einem Muster, das mit dem Gruppierungsmuster der Behälter (14) in dem Gestell (20) korreliert ist, eine Anzahl von Deckeln (12), die mit der Anzahl von in dem Gestell (20) bereitgestellten Behältern (14) koordiniert ist, in einer gekippten Position mit den nach unten gewandten Ausgussröhren (12a) zu positionieren, wobei die Deckel (12) sowohl in der ersten Bestückungsposition als auch in der zweiten Wiederverschließposition und auch in dem Übergang von der ersten Bestückungsposition zu der zweiten Bestückungsposition stabil mit den entsprechenden Ausgussröhren (12a) in den Positionierungsauflagern (32) gehalten werden,

- gleichzeitiges Bewegen der auf diese Weise angeordneten Deckel (12) zu einer Wiederverschließzone (34), wobei sie gleichzeitig in einem Aufbau positioniert werden, der fähig ist, mit den in dem wenigstens einen Gestell (20) gruppierten Behältern (14) zusammen zu wirken, und
- wenn die Deckel (12) einmal positioniert sind, automatisches Bestimmen eines gleichzeitigen Schließdrucks auf die geordneten Deckel (12), um sie geschlossen mit den Behältern (14) zu verbinden,

wobei der Schritt des gleichzeitigen Bewegens der Deckel (12) zu der Wiederverschließzone (34) dafür sorgt, dass sie gleichzeitig in Bezug auf die Position, die sie in der Vorab-Bestückungszone (30) einnehmen, gekippt werden, so dass sie geeignet positioniert sind, um mit den Behältern (14) zusammen zu wirken, wobei die Positionierungsablage (28) selektiv zwischen der ersten Bestückungsposition, in der sie mit den Deckeln (12) eingerichtet wird, und der zweiten Wiederverschließposition bewegt wird.

Revendications

1. Appareil pour la refermeture semi-automatique, au moyen de couvercles appropriés (12), chacun pourvu d'un bec protubérant (12a) de forme oblongue, de conteneurs (14) de liquides, comprenant un cadre support (16) qui comprend un plan de travail (18) qui comporte une zone de refermeture (34) équipée d'une tête de refermeture (38) capable de déplacer les couvercles (12) vers les conteneurs correspondants (14), zone de refermeture (34) avec laquelle au moins un panier (20) peut être associé, dans lequel lesdits conteneurs (14) sont regroupés, disposés en un nombre souhaité et suivant un agencement souhaité, et une zone (30) pour le pré-chargement d'une pluralité de couvercles (12), **caractérisé en ce qu'**il comprend un plateau de positionnement (28) pour les couvercles (12), le plateau de positionnement (28) étant sélectivement mobile entre une première position de chargement associée avec le plan de travail (18), en correspondance avec la zone de pré-chargement (30), dans laquelle il est garni avec les couvercles (12), et une seconde position de refermeture, inversée par rapport à la première position de chargement, en correspondance avec la zone de refermeture (34), dans laquelle il est contraint de manière réversible vers la tête de refermeture (38) et configuré pour diriger, durant l'utilisation, d'une manière appropriée pour l'action de la tête de refermeture (38), les couvercles (18) associés avec celle-ci, alignés vers les conteneurs correspondants (14) à refermer, ledit plateau de positionnement (28) étant formé par un plan de support (29) qui a une première surface (35) et une pluralité de corps contenants (31) qui font saillie depuis ladite première surface (35), lesdits corps contenants (31) étant pourvus de logements de positionnement (32), chacun des logements de positionnement (32) étant d'une forme correspondant à au moins une partie des couvercles (12), reproduisant en négatif au moins une forme allongée ou évasée des becs (12a) des couvercles correspondants (12), afin d'obtenir une contrainte stable entre chaque corps contenant (31) et le couvercle correspondant (12) avec lui, afin de positionner, dans la première position de chargement et d'une manière ordonnée, suivant un agencement corrélé avec l'agencement de regroupement des conteneurs (14) dans le panier (20), un nombre de couvercles (12) coordonné avec le nombre de conteneurs (14) prévus dans le panier (20), dans une position inversée avec les becs (12a) tournés vers le bas, en maintenant les couvercles (12) positionnés de manière stable avec les becs correspondants (12a) dans les logements de positionnement (32) à la fois dans la première position de chargement et dans la seconde position de refermeture, et également lors du passage de la première position de chargement à la seconde position de refermeture.

2. Appareil selon la revendication 1, **caractérisé en ce que** le plan de support (29) a une seconde surface

(37), opposée à la première surface (35), et prévue, dans la première position de chargement, disposée sur le plan de travail (18).

3. Appareil selon la revendication 1 ou 2, **caractérisé en ce que** la tête de refermeture (38) est positionnée au-dessus de la zone de refermeture (34) et au moins une partie (39) de la tête de refermeture (38) est déplaçable sélectivement, à l'aide de moyens de déplacement de guidage (52, 54), suivant un mouvement d'éloignement et de rapprochement, le long d'une trajectoire verticale souhaitée (S) de façon à déplacer, à chaque occasion, les couvercles (12) associés au plateau de positionnement (28) situé dans la seconde position de refermeture, en coopération avec les conteneurs (14) prévus dans le panier (20).

4. Appareil selon la revendication 3, **caractérisé en ce qu'**il comprend une structure en porte-à-faux (36) associée avec le cadre (16) et qui positionne la tête de refermeture (38), en la maintenant au-dessus de la zone de refermeture (34).

5. Appareil selon la revendication 3 ou 4, **caractérisé en ce qu'**il comprend des moyens d'équilibrage (70) aptes à faciliter le mouvement de la partie (39) de la tête de refermeture (38).

6. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la tête de refermeture (38) comprend des éléments de fixation (46) du type amovible et aptes à coopérer avec le plateau de positionnement (28) afin de le maintenir suspendu au-dessus de la zone de refermeture (34) dans la seconde position de refermeture.

7. Appareil selon la revendication 6, **caractérisé en ce que** les éléments de fixation (46) comprennent des barres longitudinales (48) ayant un développement correspondant avec le développement longitudinal de plateau de positionnement (28), lesquelles sont éloignées en coordination avec la dimension transversale du plateau de positionnement (28) et ont chacune un logement de support longitudinal (50) pour insérer le plateau de positionnement (28), de manière coulissante comme un coulisseau, de sorte qu'il soit suspendu de manière stable à la tête de refermeture (38).

8. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la tête (38) comprend un dispositif de pressage (39) du type mobile pourvu d'une surface de fixation (44), tournée normalement vers le plan de travail (18) afin de contraindre d'une manière réversible ledit plateau de positionnement (28) au niveau inférieur, et de moyens d'actionnement (62) agissant linéairement sur ladite surface de fixation (44) afin de déterminer l'action de la pression le long d'une trajectoire souhaitée (C), de façon à fermer les conteneurs (14) avec lesdits couvercles (12).

9. Appareil selon la revendication 7 ou 8, **caractérisé en ce que** les éléments de fixation (46) sont disposés sur la surface de fixation (44) du dispositif de pressage (39).

10. Appareil selon les revendications 9 et 2, **caractérisé en ce que** dans la seconde position de refermeture, les éléments de fixation (46) sont configurés pour loger le plateau de positionnement (28) avec la seconde surface correspondante (37) tournée vers la surface de fixation (44) du dispositif de pressage (39) et la première surface (35) tournée vers le plan de travail (18).

11. Procédé de refermeture semi-automatique, au moyen de couvercles appropriés (12), chacun étant pourvu d'un bec protubérant oblong (12a), de conteneurs (14) de liquides, dans une zone de refermeture (34) équipée d'une tête de refermeture (38) capable de déplacer les couvercles (12) vers les conteneurs correspondants (14), ce qui permet d'associer les couvercles (12) avec les conteneurs correspondants (14) regroupés ensemble dans au moins un panier (20) en un nombre souhaité et suivant un agencement de groupement souhaité, caractérisé en qu'il prévoit :

- de positionner manuellement, dans une zone de pré-chargement déterminée (30) et d'une manière ordonnée suivant un agencement corrélé avec l'agencement de groupement souhaité des conteneurs (14) dans le panier (20), un nombre de couvercles (12) coordonné avec le nombre de conteneurs (14) prévus dans le panier (20), en utilisant un plateau de positionnement (28) pour les couvercles (12) qui est mobile entre une première position de chargement, en correspondance avec la zone de pré-chargement (30), dans laquelle il est garni avec les couvercles (12), et une seconde position de refermeture, inversée par rapport à la première position de chargement, en correspondance avec la zone de refermeture (34), dans laquelle il est contraint de manière réversible contre la tête de refermeture (38) et est configuré pour diriger, durant l'utilisation, les couvercles (12) associés à elle, d'une manière appropriée à l'action de la tête de refermeture (38), alignée vers les conteneurs correspondants (14) à refermer, ledit plateau de repositionnement (28) étant formé par un plan de support (29) qui a une première surface (35) et une pluralité de corps contenants (31) qui font saillie depuis ladite première surface (35), lesdits corps contenants (31) étant pour-

vus de logements de positionnement (32), chacun des logements de positionnement (32) étant d'une forme correspondant avec au moins une partie des couvercles (12), reproduisant en négatif au moins une forme allongée ou évasée des becs (12a) des couvercles correspondants (12), afin d'obtenir une contrainte stable entre chaque corps contenant (31) et le couvercle correspondant (12) couplé à lui, afin de positionner, dans la première position de chargement et d'une manière ordonnée suivant un agencement corrélé avec l'agencement de groupement des conteneurs (14) dans le panier (20), un nombre de couvercles (12) coordonné avec le nombre le conteneurs (14) prévus dans le panier (20), dans une position inversée avec les becs (12a) tournés vers le bas, maintenant les couvercles (12) positionnés de manière stable avec les becs (12a) correspondants dans les logements de positionnement (32) à la fois dans la première position de chargement et dans la seconde position de refermeture, et également lors du passage de la première position de chargement à la seconde position de refermeture,

- de déplacer simultanément les couvercles (12) ainsi disposés vers une zone de refermeture (34), en les positionnant simultanément dans une configuration apte à coopérer avec les conteneurs (14) regroupés ensemble dans le ou les panier(s) (20), et
- de déterminer automatiquement, une fois que les couvercles (12) sont positionnés, une pression de fermeture simultanément sur les couvercles (12) ordonnés, afin de les associer fermés avec les conteneurs (14),

dans lequel l'étape de déplacement des couvercles (12) simultanément vers la zone de refermeture (34) prévoit de les inverser simultanément par rapport à la position dans laquelle ils sont dans la zone de pré-chargement (30), de sorte qu'ils soient positionnés de manière appropriée pour coopérer avec les conteneurs (14), en déplaçant sélectivement le plateau de positionnement (28) entre la première position de chargement, dans laquelle il est garni avec les plateaux (12), et la seconde position de refermeture.

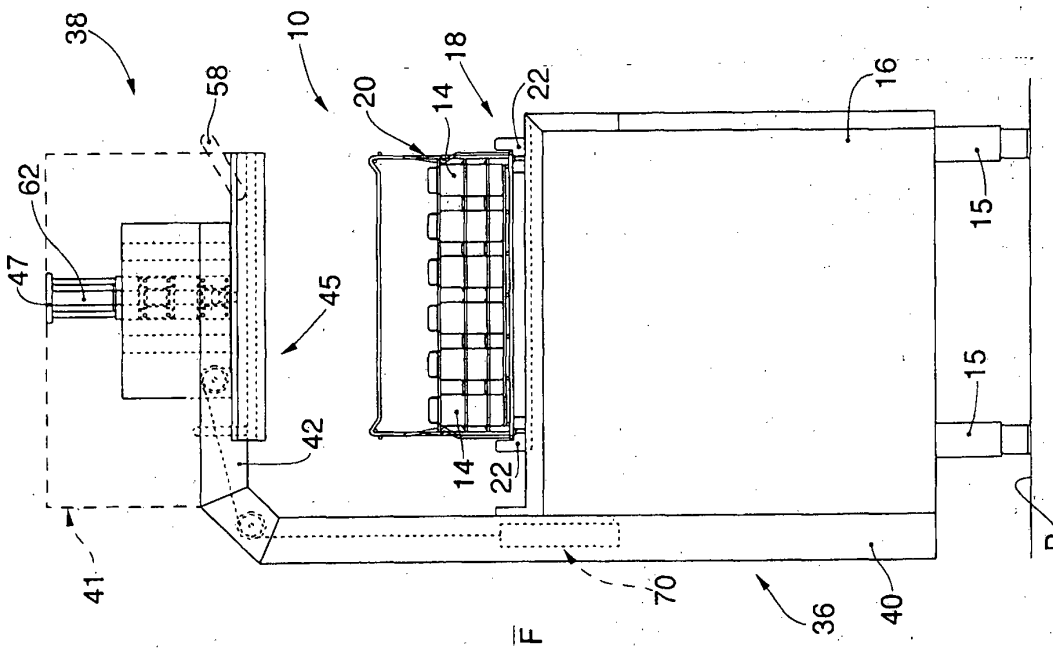
38
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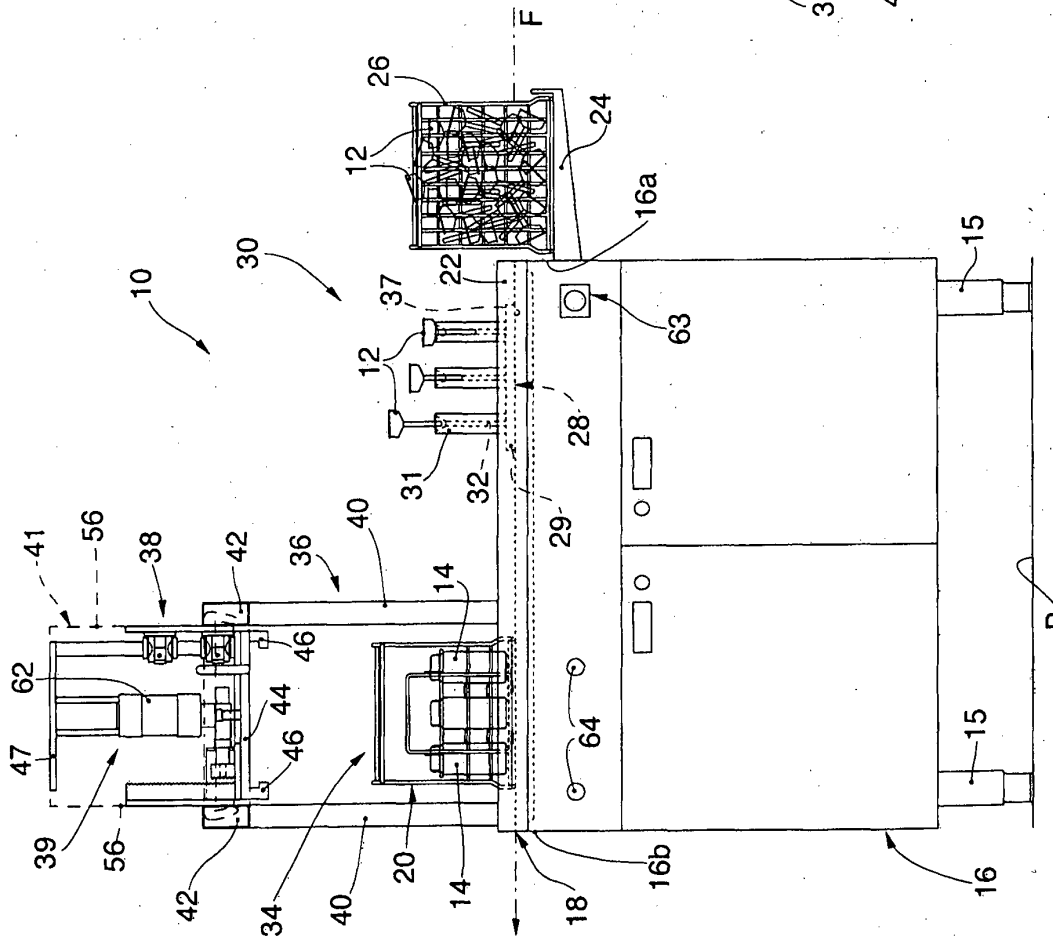
fig.2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16a
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fig.1

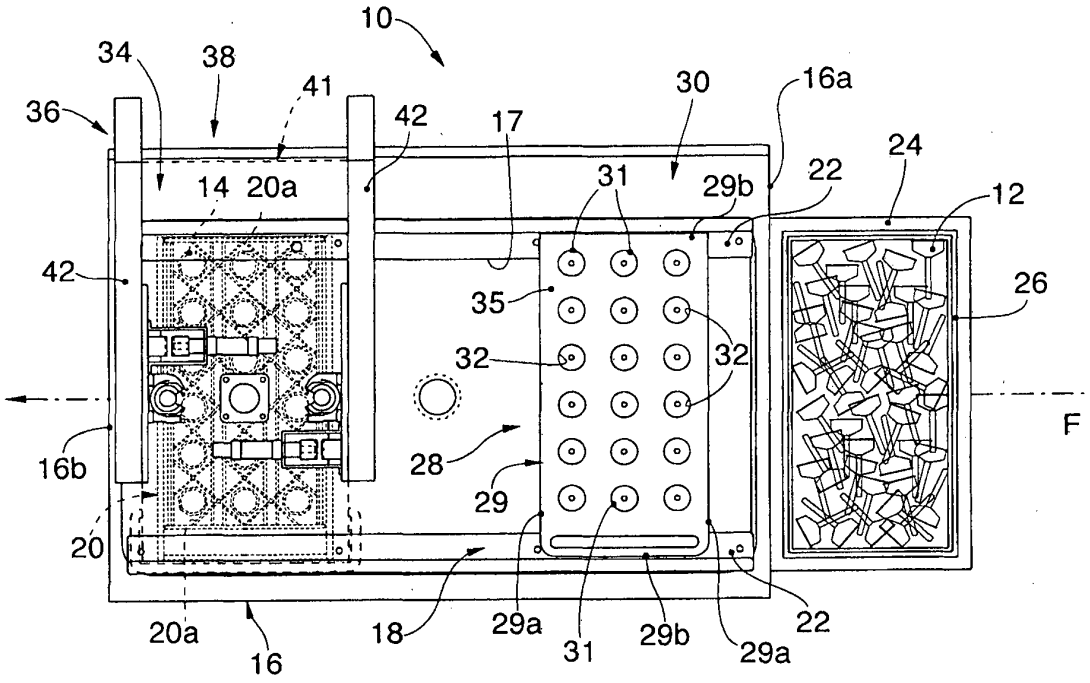


fig.3

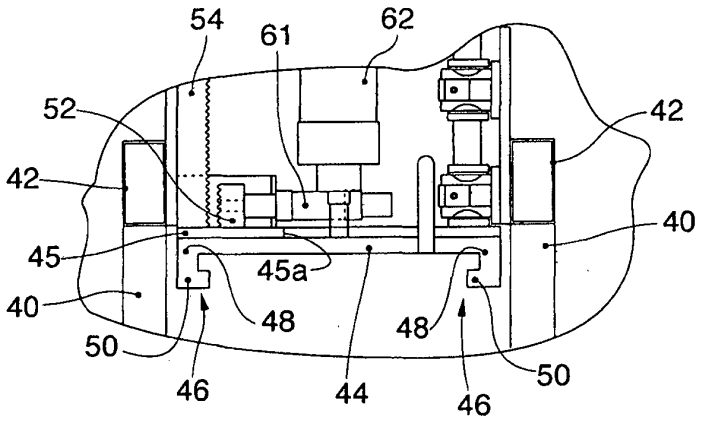


fig.4

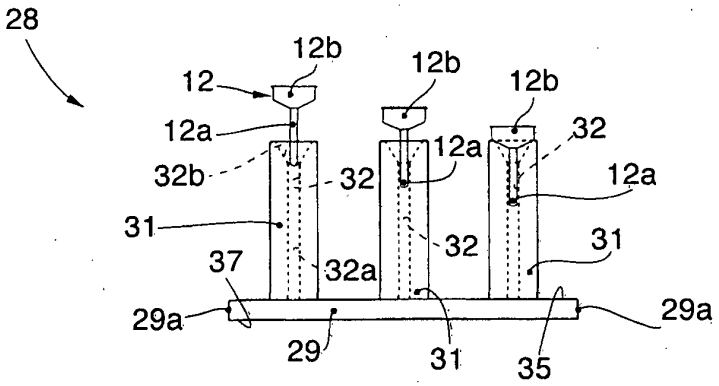
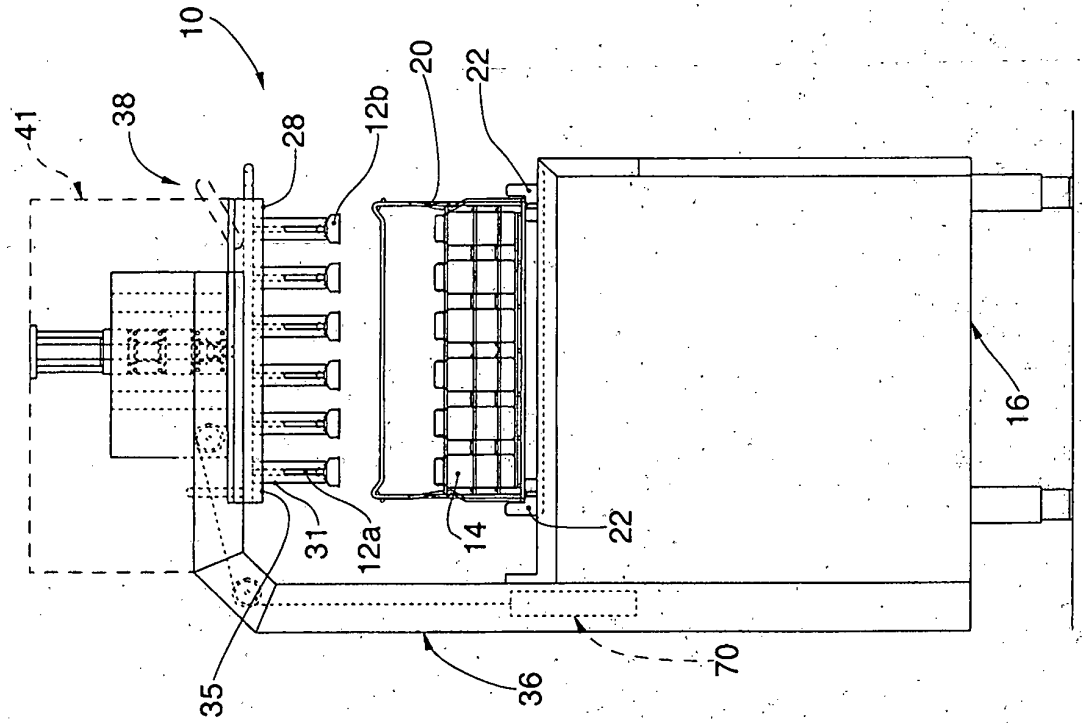


fig.5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12b
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12a
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fig.7

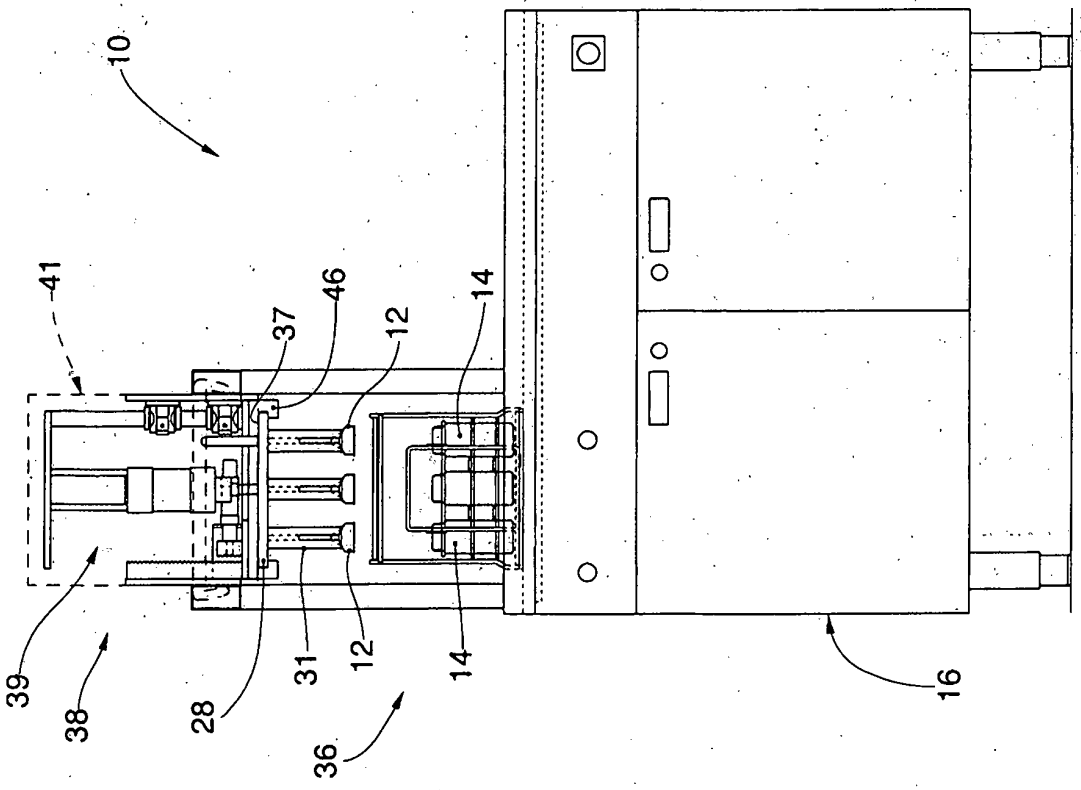
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fig.6

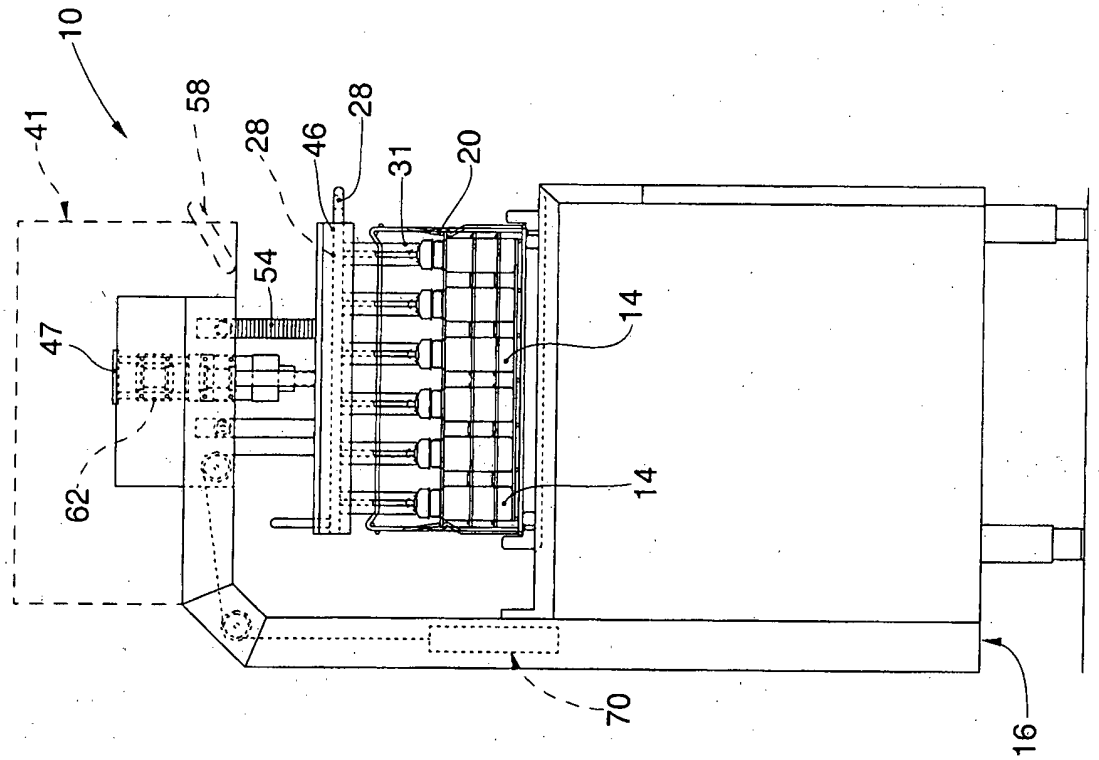
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fig.9

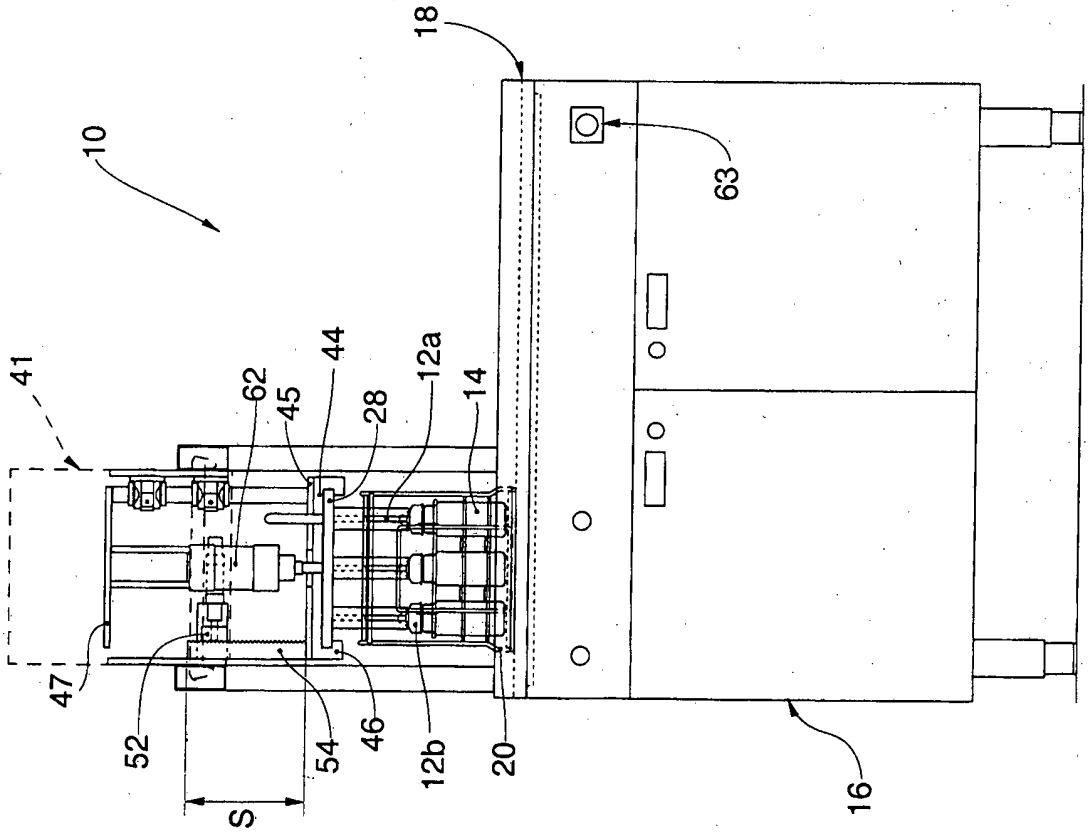
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fig.8

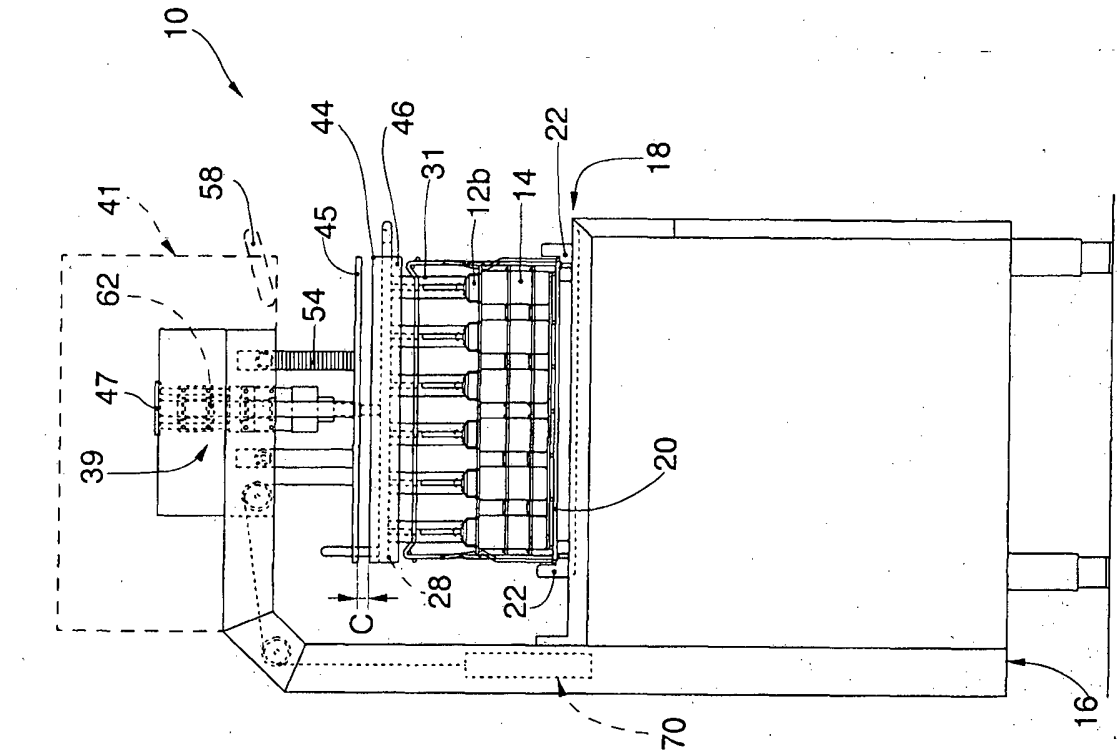
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fig.11

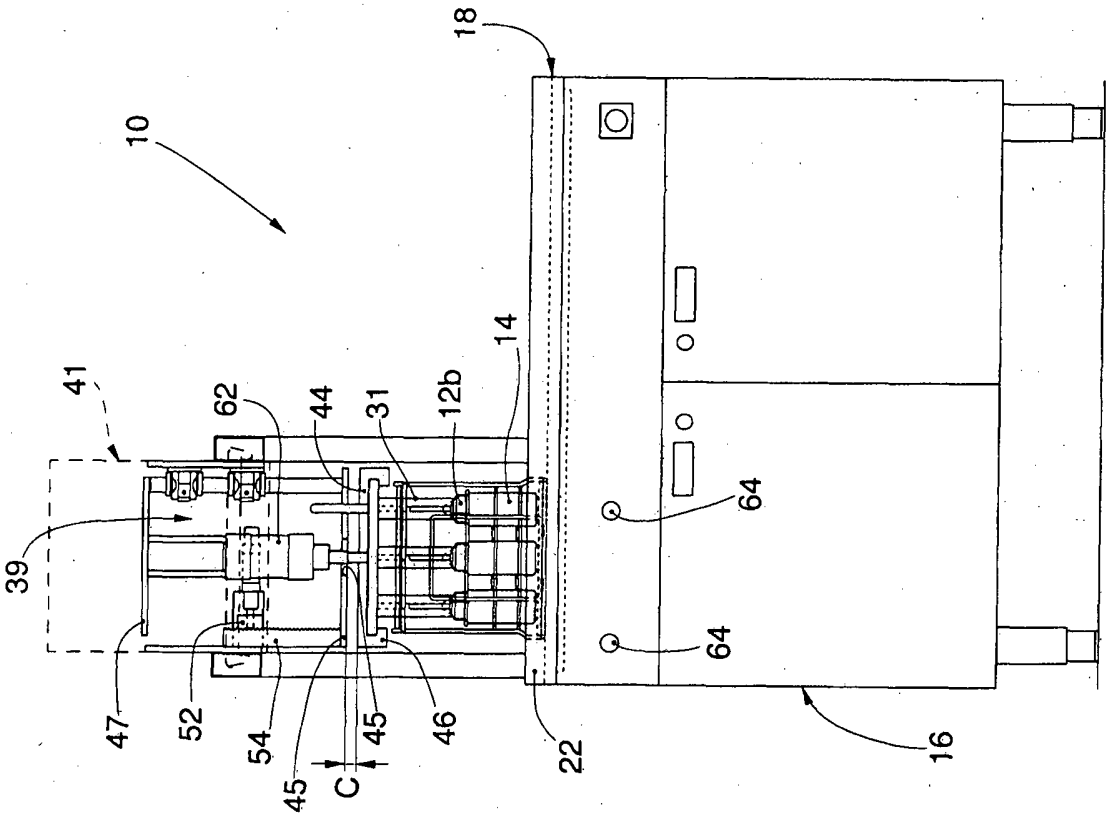
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fig.10

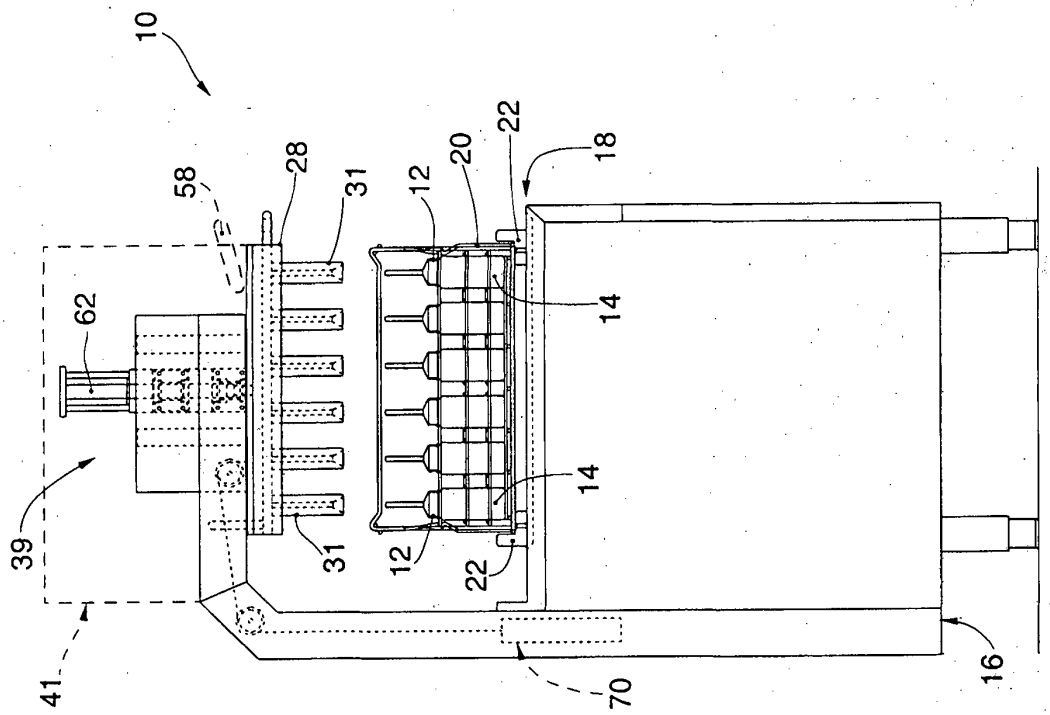
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fig.13

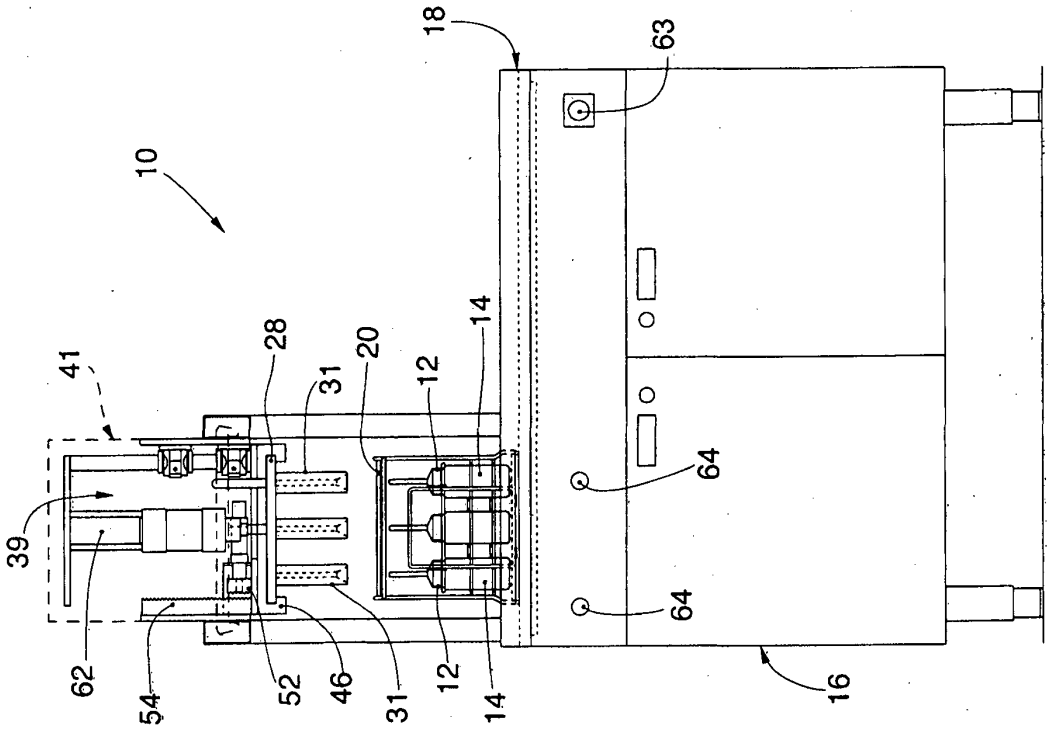
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fig.12

REFERENCES CITED IN THE DESCRIPTION

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