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(54) **MANUAL DISPENSING MACHINE**

(57) The invention relates to a manual dispensing machine in the form of a money-activated vending machine which is extremely small owing to the very compact, modular design thereof and the arrangement of the elements inside the same. The machine, which is very small and light, can be disposed on a wall or on a piece of furniture or support. The machine is further **characterized by** the internal modular design of the storage bins, whereby each of said bins is equipped with its own money-collection device and means for dispensing products following payment. The machine also comprises means for detecting when a module contains no more cans, such as to block the money-collection device and prevent the introduction of more money.

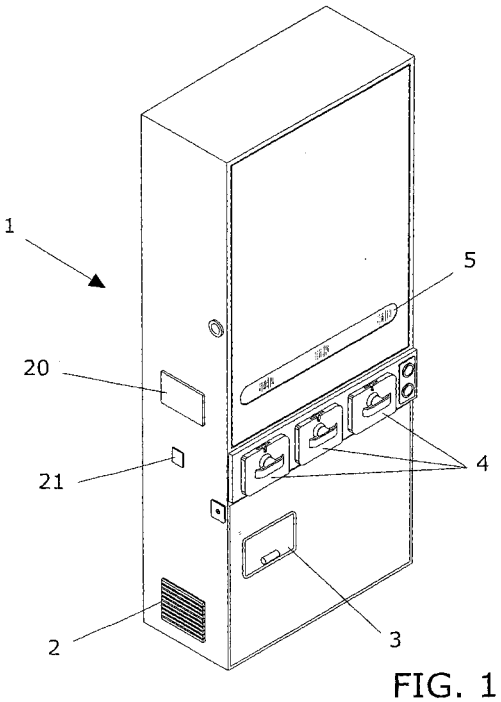

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The object of the present invention is a manual dispensing machine, from among money-activated product vending machines.

[0002] The present invention is characterized by the reduced size of the machine, obtained thanks to its very compact modular configuration, and by its internal distribution of elements. The machine, which is very small and light, may be hung on a wall or supported on a piece of furniture that hardly occupies any space.

[0003] The machine is further characterized by an internal modular configuration of the storage bins, whereby each of said bins is equipped with its own money-collection device and means for dispensing products following payment. Each one of these modules is independent from the rest due to which, it is very difficult for the machine to remain without service. The preferred embodiment is made up of 3 modules though this may be increased (4 or more) or reduced, for example 2, making its dimensional adaptation capability enormous.

[0004] Consequently, the present invention is to be found within the scope of dispensing machines and in particular of manually activated machines.

BACKGROUND OF THE INVENTION

[0005] Up to now, dispensing machines in general have been equipped with a series of pushbuttons, in the same number as the products to be dispensed. Once the pushbutton, corresponding to the selection made, has been activated, the product selected is supplied automatically, with the aid of a series of additional devices that select the activated product.

[0006] These machines, in spite of correct operation, are complex and expensive to manufacture. All this implies a series of mechanisms that recognize the coins, as well as change returning means. On the other hand, they require a selection panel with the same number of pushbuttons as the different products included, and finally they require a series of detection means of the value of the coins inserted, as well as of the selection made, for the final activation of a dispensing mechanism.

[0007] The presence of a single money-collection device is the season why these types of machines become unserviceable as soon as their mechanism fails, the money validation mechanism, or as soon as there is no more change if the mount introduced is not exact.

[0008] As a result of all the above indicated disadvantages, a dispensing machine is obtained with high manufacturing and maintenance costs, that furthermore presents safety problems during the service maintenance and which has especially, a size and weight that in the majority of cases, make impossible its installation in offices that are not located on ground floors or that do not have excessively wide accesses. It is enough to consider that the majority of these types of machines do not fit inside elevators generally found in buildings.

[0009] Therefore, the object of the present invention is to obtain an easily handled machine, that is internally equipped with interchangeable, independent modular assemblies, whereby each assembly has its own associated money-collection device, in such a manner, that it results in a machine with clearly reduced manufacturing cost and with an appreciably reduced final weight and size, able to be installed in the most reduced space.

DESCRIPTION OF THE INVENTION

[0010] The present invention of a manual dispensing machine basically consists of a mainly prismatic, rectangular assembly in which independent distribution modules or assemblies are internally housed, whereby each one of them includes at least:

- Storage means
- Payment money-collection device with activation handle for removal of the product.
- Retention and measuring-out means.

[0011] The machine is further equipped with various elements that provide service to all the modules.

[0012] From the structural point of view, the totality of the modules are attached and supported by means of a common structure that forms part of the body.

[0013] This body additionally presents a bottom plate or base which supports the refrigeration equipment. The refrigeration equipment is of high performance, providing a very efficient behaviour that assures that the internal temperature is held between 3°C and 6°C, which is reached from room temperature, in a very short time.

[0014] The refrigeration equipment mainly consists of a compressor, a condenser, a connections box and a convector equipment that expels heat outwards.

[0015] A condensation collection tray has been arranged on the compressor, which in turn is evaporated by the heat from the refrigeration equipment and is boosted by the forced convection.

[0016] On its part, the refrigeration equipment is thermally insulated from the rest of the machine by an insulator that covers the whole of the section of the machine, passing below the product removal tray. This insulation is only crossed through by the refrigerant conduit that communicates the refrigeration equipment with the evaporator coil. Similarly, the cold area of the main body of the machine is thermally insulated from the outside.

[0017] The coil responsible for the heat evacuation from the product storage is arranged on the rear wall, essentially occupying all the area covered by the store that makes up the totality of the installed bins.

[0018] The independent modular assemblies for the distribution consist of a prismatically shaped element,

opened on the front side, which internally houses the products to be distributed such as tins or cans.

[0019] On the bottom part of each one of the independent distribution modules there is a distribution pan. This pan is activated by means of a money-collection device to which it is connected on one of its ends by means of an axis, in

[0020] Each one of the bins has a money-collection device with independent payment means and operation from the rest, due to which, if a module fails, the machine does not become unserviceable.

[0021] The small and light machine requires to be placed at an easily accessible height for the user. For this, its possible to be installed on a wall by means of screwing. It is also possible to place it on a piece of furniture or support, placing it at an appropriate height. The result is a device that minimizes the space occupied for use in locations such as offices where it is scarce and very expensive.

[0022] With the object of making possible the detection of the amount of stock in each one of the independent modules, a viewer window is arranged on the front of the machine through which the piles of the independent distribution modules can be observed.

[0023] Another possibility of knowing the amount of stock remaining is by means of an indicator LED which once connected, serves as means for indicating the lack of stocks regarding said module.

[0024] The inclusion on the piles of tins of an additional module blocking part is considered to be within this same invention. This additional part descends as the tins are used up. When the last tin is dispensed, the turning of the pan places its bottom side upwards remaining in contact with the blocking part. The pan is equipped with a groove in which a pin of the blocking part is inserted, preventing the completion of the turning of the money-such a way, that when the money-collection device is activated after the coin with the activation value has been inserted, the money-collection device turns and consequently followed by the pan.

[0025] The pan presents a curved cavity in which the product to be distributed is housed. The shape and dimensions of the pan are in accordance with the product to be supplied. This pan configuration permits, without changes, the supply of products of diverse shapes and configurations, and when necessary, slight dimensional changes appreciably widen the range of products to be supplied.

[0026] In resting position the pan is arranged with its concave side downwards, directly supporting on its top or convex part, the product to be distributed. Once turned, the product placed on the bottom position of the column drops and houses in the pan. Continuing with the turn, the pan once again becomes the support of the product column with its convex side, simultaneously freeing the product that remains housed inside, dropping it on the collection tray.

[0027] The collection tray covers all the adjacent modules and is connected at its bottom part with the collection window of the supplied products.

[0028] The number of modules to be installed depends on the capability of the machine to be constructed. For example it is possible to shorten the height of the bins due to restrictions forced by the space where it is to be located and to increase the number of modules to compensate the reduction in the capacity of each one of the bins. collection device.

[0029] As a result, the module becomes blocked after the dispensing of the last tin, making impossible the insertion of another coin. Without the presence of this blocking part, the insertion of a new coin would not be prevented even though a led should light up, indicating the lack of more tins.

DESCRIPTION OF THE DRAWINGS

[0030] In order to complement the description herewith included, and with the purpose of aiding to a better understanding of its characteristics, the present descriptive specification is enclosed with a set of drawings in the figures of which are represented, in illustrative and non limitative manner, the most significant details of the invention.

[0031] Figure 1 shows a perspective representation of an embodiment of the machine that is the object of the invention.

[0032] Figures 2 and 3 show the interior of the dispensing machine according to an embodiment of the invention, with the distribution of the various elements it consists of.

[0033] Figure 4 shows a perspective view of the independent distribution modules according to another embodiment of the invention.

[0034] Figure 5 shows a detailed view of the union between the pan and the money-collection device as well as the interaction with the products to be distributed.

[0035] Figure 6 represents a detailed view of the constructive characteristics of the distribution pan.

[0036] Figure 7 represents a detailed perspective view, and with the view point situated at an elevated position, of the support structure of the storage modules with the bottom distribution means.

[0037] Figure 8 represents a similar detailed view to that of Figure 5 in which the configurational flexibility of the pan while dispensing the most varied products is emphasized.

[0038] Figure 9 represents an embodiment of a blocking part together with the pan. The chosen position is the blocking position.

PREFERRED EMBODIMENT OF THE INVENTION

[0039] In view of the figures, a preferred embodiment of the proposed invention is herewith described.

[0040] It can be observed in Figure 1 how the manual dispensing machine (1) that is the object of the invention,

presents a rectangular prismatic shape, which is externally equipped on the bottom part of one of its sides with a grille (2) to permit the internal refrigeration of the cooling means.

[0041] The mainly prismatic shape may present external changes proper to the design, as for example smoothed rough edges, projected or penetrating areas corresponding to the money-collection device zones, said configurations being capable of perimetrical extensions, or of performing as many aesthetic changes as required by the external appearance wished to be given to the machine, considering these changes at all moments as a means of performing the same invention, since the configuration of the internal structure is not changed.

[0042] It is provided on its front part with a window (3) for collection of the dispensed products, and over this, a series of money-collection devices (4), as many as there are independent modular distribution assemblies on the machine. Three modules have been used in this embodiment.

[0043] A viewing window (5) can be observed over the above, which can be optionally included to detect the state of the stocks in each one of the piles. This viewing window (5) may be associated to LEDs that indicate the level of the stocks in the assembly.

[0044] This same Figure 1 shows, at a side, by means of rectangles, the places in which the switch (21) and the temperature controller (20) have been placed in this embodiment of the invention, together with all the safety means permitted by the acceptable adjustment ranges.

[0045] In Figure 2 it can be observed how there are a series of independent modular distribution assemblies (6) inside the machine, in this case, three. Each one of said assemblies is made up of a receptacle or bin, essentially prismatic, open at its front part in order to facilitate the replacement of the internal products.

[0046] Said receptacles are narrowed on their bottom part in order to facilitate the alignment of the dispensing products so they can exit one by one. Alternatively, as is shown in the embodiment example of Figure 4, instead of being narrowed on the bottom part, the rectangular receptacles are equipped with a deflector for the products.

[0047] There is a pan on the bottom part of each receptacle, which in this Figure can be hardly seen. Associated to said pan there is a money-collection device (4) and below all of these there is a tray (11) with channels (11) for the products towards the window (3) which permits access to the product.

[0048] The refrigeration equipment is housed under said tray (11), and is mainly constituted by a compressor (9) connected to a coil (7) (viewed in Figure 3) through which the refrigerant gas circulates, a condenser and a forced convection equipment (8). Said coil (7) is placed behind the independent modular distribution assemblies (6) in order to cool said products. Behind the coil is where the thermal insulating plate (7.1) is situated which corresponds to this side of the body of the machine. Between the compressor (9) and the forced convection equipment (8) a connections box (22) of the refrigeration equipment is represented.

[0049] Figure 3 shows the rear position of the coil (7) that connects with the refrigeration equipment crossing through the tray (11) and the insulator that covers its bottom surface.

[0050] The ventilator (8) is situated adjacent to the compressor, this ventilator reducing by convection and with air from the outside, the temperature generated in this part. On the other hand, there is a collection tray (10) over the compressor (9), for the collection of the water condensation caused by the internal refrigeration. The ventilator convection together with the highest temperature in this zone of the machine, favours the evaporation and removal of the water condensed on the tray (10).

[0051] Figure 4 shows more clearly each one of the independent modular distribution assemblies (6) according to a second embodiment, in which, instead of a narrowing of its bottom part, it is equipped with a deflector (12) that aids the alignment and subsequent distribution of the products, one by one.

[0052] Associated to the bottom part of each one of the modular assemblies (6), there is a support assembly (13) that serves to attach the pans, and in turn, to attach them on the other hand, to the money-collection devices (4).

[0053] Figure 5 shows in detail all the elements and parts that intervene in the assembly, on one hand, the pan (16) that in resting position shows its aperture or concave side downwards, due to which, the products are supported on its convex part awaiting distribution.

[0054] On the other hand, the money-collection device (4) is attached to the grooved axis (17) which the pan (16) is equipped with on one of its ends, this device being associated to an activation axis (18) that is housed in the groove of said axis (17).

[0055] With the purpose of attaching the pan (16) to the rest of the structure, an intermediate part (15) is used, that presents a perforation on its bottom part, through which the grooved axis (17) is made to pass, said intermediate part (15) being attached by means of screws to the support profile (14) which in turn is attached to the actual modular distribution assemblies.

[0056] It is possible to supply products with diversely different containers, and sizes and shapes without modifying the pan (16), and furthermore, such as is shown in Figure 8, it is possible to increase, in greater degree, the diversity of products to be dispensed, with very small changes in the pan (16).

[0057] An equivalent scheme to the one in Figure 5 is represented in this Figure 8, in which the pan (16) is equipped with an auxiliary reception element (16.1) adapted to a tub (16.2), similarly shown in enclosed and separate detail so as to point out the variability of presentation and type of products it is capable of dispensing just by establishing small changes in the pan (16).

[0058] Figure 6 shows a detail of the pan (16) which is equipped at one end with a rear axis (19) and on the other with a grooved axis (17), in which the activation stem of the pan (16) of the money-collecting device (4) is housed.

[0059] As is shown in Figure 7, each one of the modules is grouped and supported by a common structure (23) with dimensions depending essentially on the number of modules included.

[0060] This common structure (23) is the one that supports and is attached to the body (24) which in turn supports all the machine components, in particular those of the refrigeration equipment of the bottom part.

[0061] Finally the figure 9 representation is described, in which a section of the bin (6) walls and pan (16) are shown turned, after having dispensed the last tin or can.

[0062] An embodiment of a blocking part (25) is drawn on the pan (16) intended to prevent the operation of the module when no more tins remain.

[0063] This blocking part (25) presents guiding means (25.2) intended to maintain the appropriate position during descent and in particular during the blocking moment of the pan (16).

[0064] These guiding means (25.2) abut on the bin walls (6). In this schematic representation, the guiding means are straight wings, though they may however be constituted by curved sections or may include antifriction elements.

[0065] It is equally possible to establish additional vertical guides as guiding means (25.2) for this part (25) to ensure its orientation.

[0066] There is a pin (25.1) in the centre of the blocking part (25) intended to be housed inside a groove (16.3) of the pan (16). When the pan (16) turns, the action of the force of gravity makes this pin (25.1) enter inside the groove (16.3) and prevents the pan from continuing with the turning.

[0067] Parts that are equipped on their central body with concave or convex curved sections for adapting better or well to the tin or else to the pan (16) surface are considered to be within the same invention.

[0068] Variations in the materials, shape, size and arrangement of the component elements described in non limitative way do not alter the essentiality of this invention, it being sufficient for reproduction by an expert in the art.

Claims

1. Manual dispensing machine from among those dispensing, money-activated machines, **characterized in that** it is internally equipped with a series of modular independent distribution assemblies (6), each one of them having on its bottom part, a distribution pan (16) associated to an activation money-collection device (4), the activating and distribution of each one of the modular assemblies (6) being performed independently, placing under all the independent modular assemblies (6), a product channelling tray (11) up to a point when it is in correspondence with the products collection window (11), also including a series of refrigeration means.

2. Manual dispensing machine, according to Claim 1, **characterized in that** the independent modular assemblies (6), in order to achieve the guiding and subsequent one-by one distribution of the products, present a rectangular element with narrowed bottom part, or else present a rectangular assembly without any narrowing, though with an internal deflector (12).

3. Manual dispensing machine, according to Claim 1, **characterized in that** the refrigeration means are housed under the channelling tray (11) and are equipped with a compressor (9) in connection with a conduction coil (7) of the refrigerant gas, and placed behind the independent modular distribution assemblies (6), additionally there is a ventilator (8) for the forced convection of the refrigeration equipment housing which in-takes air from the outside through a grille (2), as well as a condenser.

4. Manual dispensing machine, according to Claim 1 **characterized in that** on the compressor (9) there is a collection tray (10) of the condensation water produced by the cooling of the top part.

5. Manual dispensing machine, according to claim 1, **characterized in that** the distribution pan (16) placed under the pile of products to be distributed is equipped with a rear axis (19) and a grooved axis (17), the money-collecting device (4) activating stem (18) housing in its groove; in order to attach the pan (16) to the rest of the assembly an intermediate part (15) is used, which presents a perforation on its bottom part through which the grooved axis (17) is made to pass, said intermediate part (15) remaining attached by means of screws to the support profile (14) which is in turn attached to the actual modular distribution assemblies.

6. Manual dispensing machine, according to Claim 5, **characterized in that** the dispensing pan (16) includes an auxiliary reception element (16.1) adapted to the particular shape of the product to be dispensed.

7. Manual dispensing machine, according to Claim 1, **characterized** because in order to know the lack of stock in each one of the modular independent distribution assemblies (6), either a viewer window (5) on the main panel that permits the observing of the inside of the modular assemblies, or else, a series of LEDs that indicate the lack of any of the products in any of the modular distribution assemblies, is used.

8. Manual dispensing machine, according to Claim 1, **characterized in that** it is equipped with a blocking part (25) of each one of the modules to prevent the introduction of coins after dispensing the last tin or can.

9. Manual dispensing machine, according to Claim 8, **characterized in that** the blocking part (25) is equipped with guiding means (25.3) which maintain its correct orientation, and a pin (25.1) intended to be housed in a groove (16.3) of the pan (16) preventing its turning.

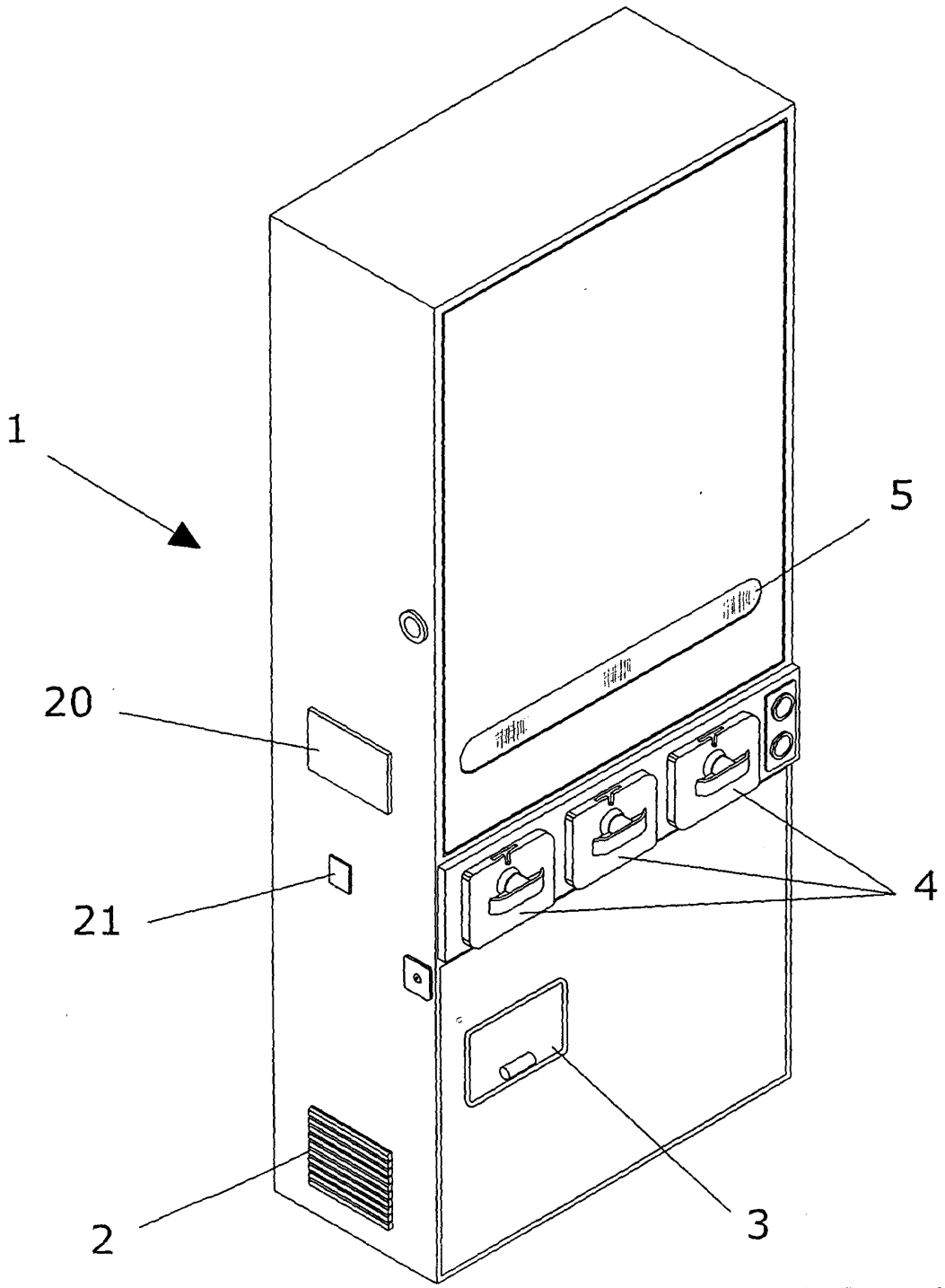


FIG. 1

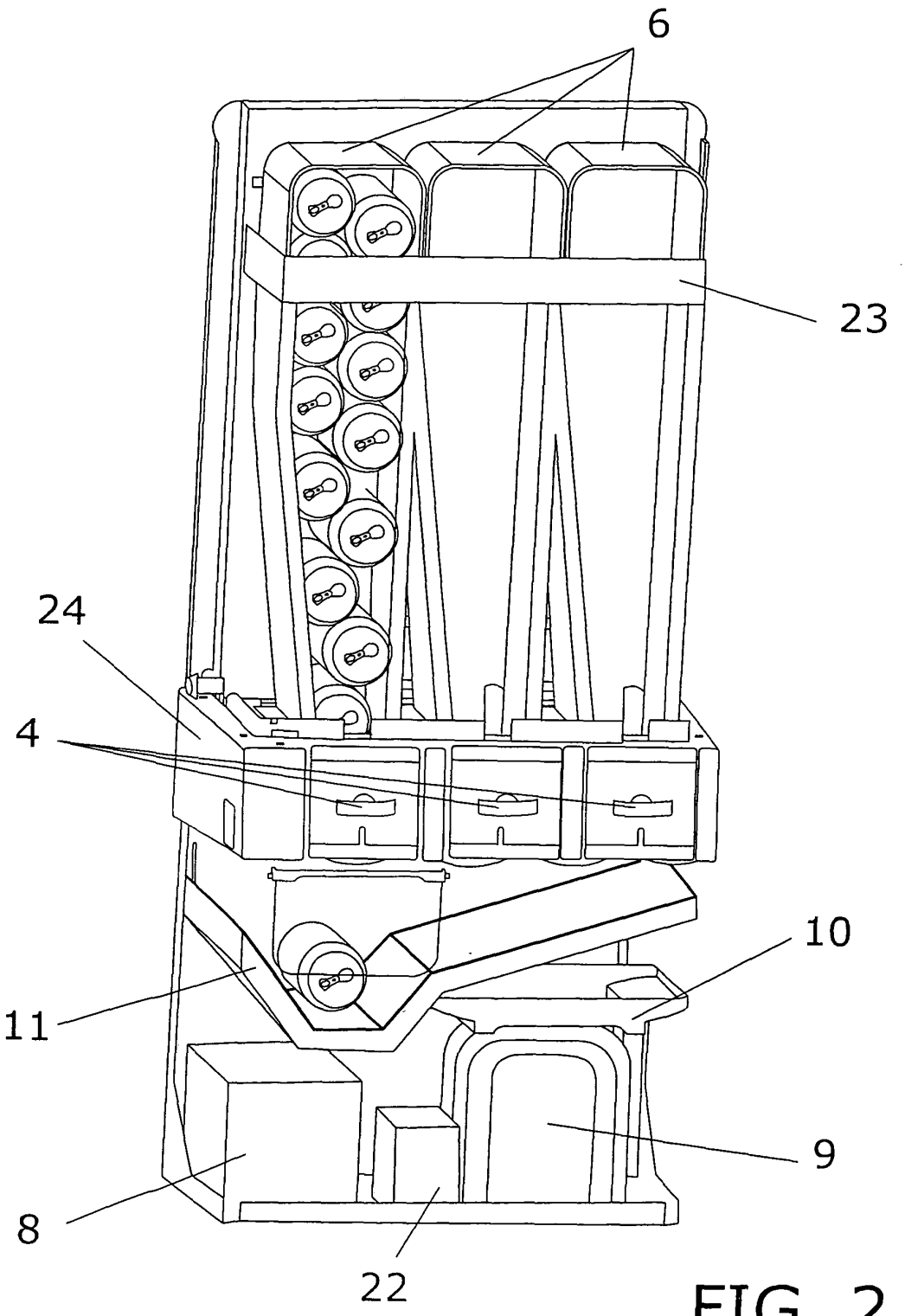
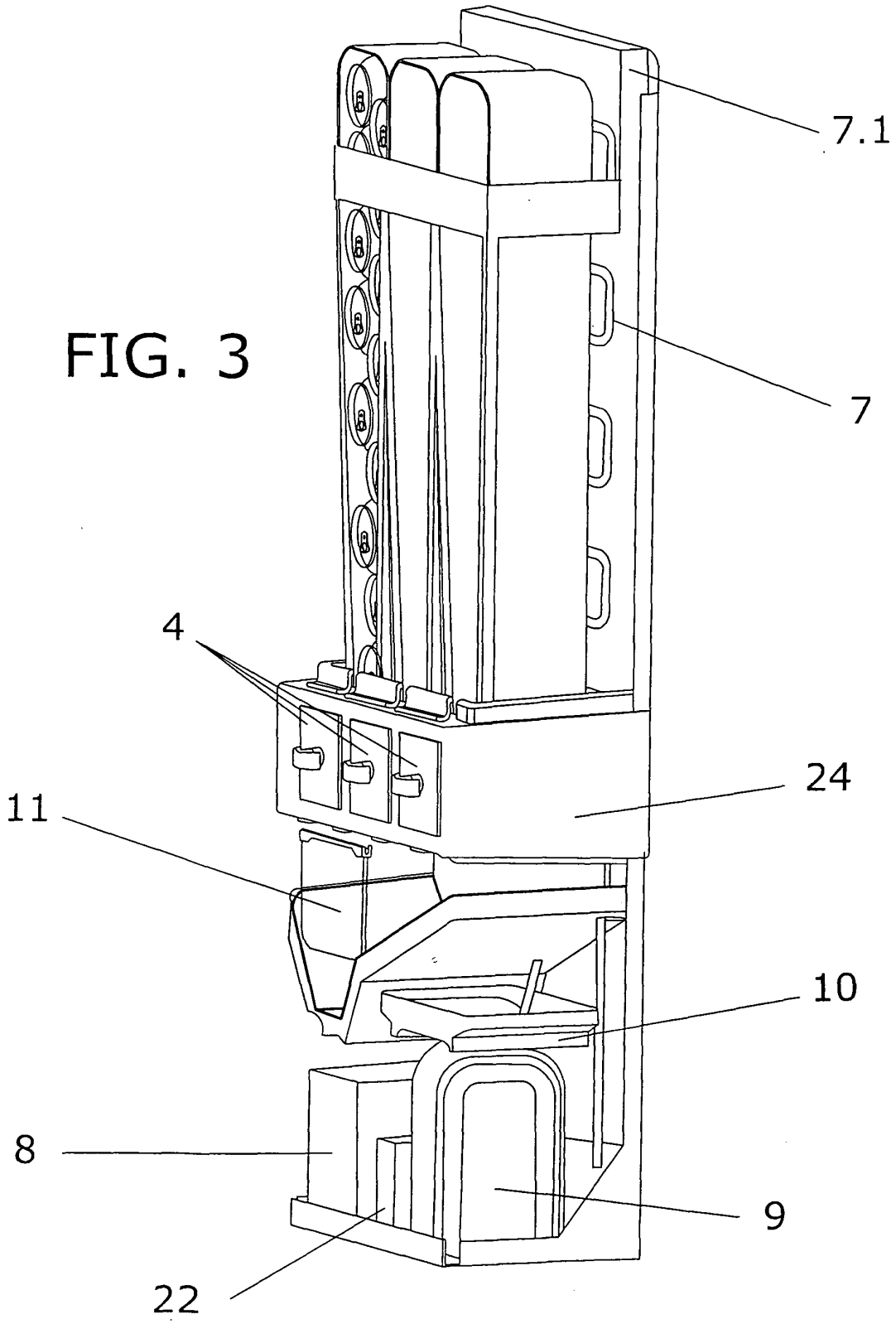


FIG. 2

FIG. 3



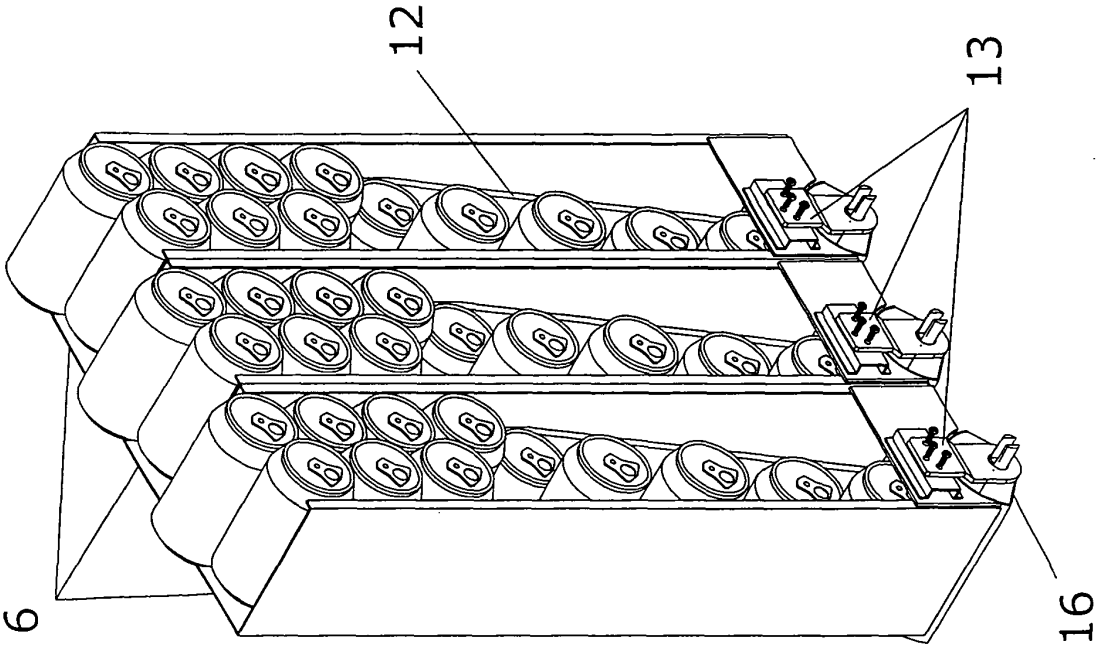
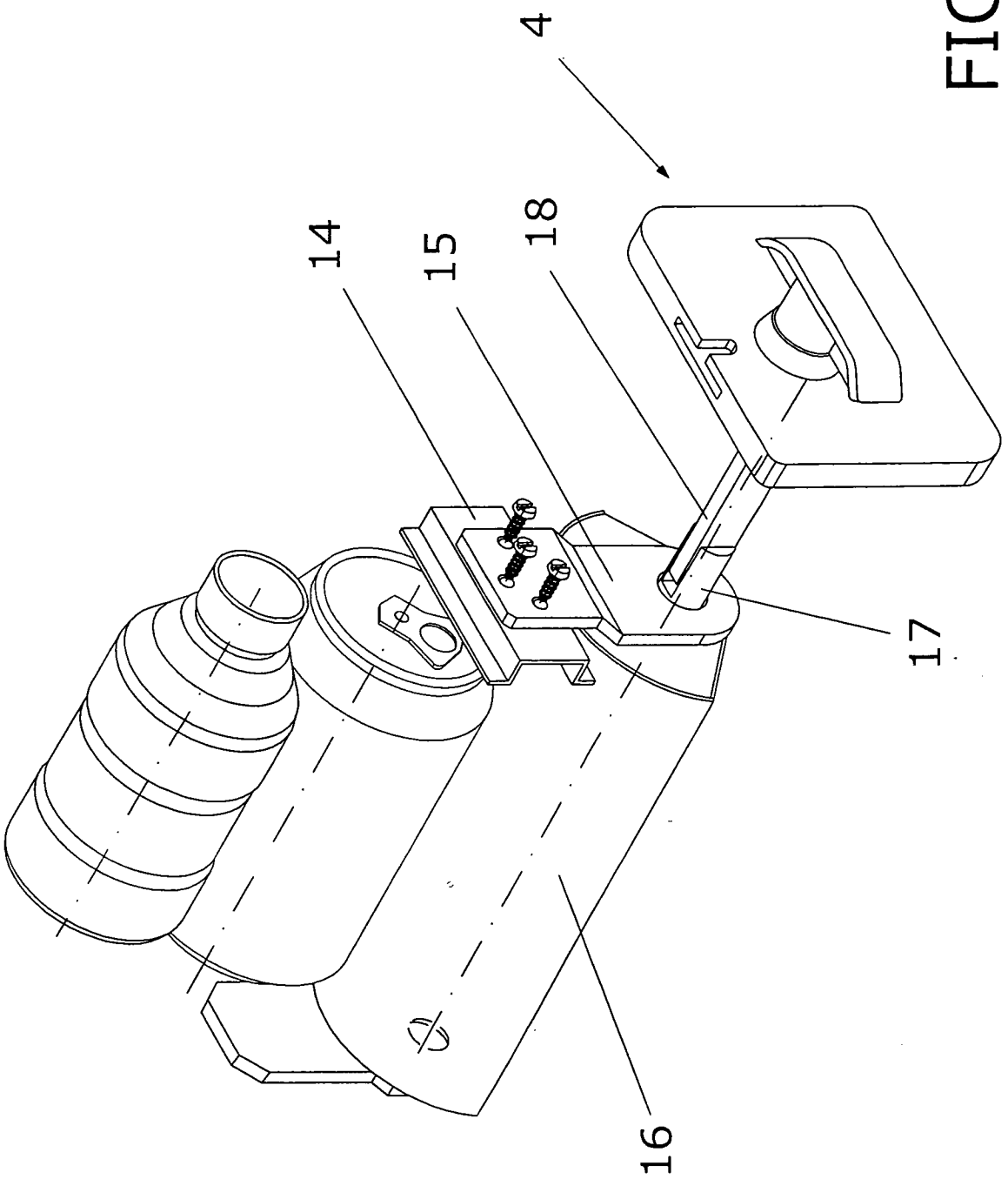


FIG. 4

FIG. 5



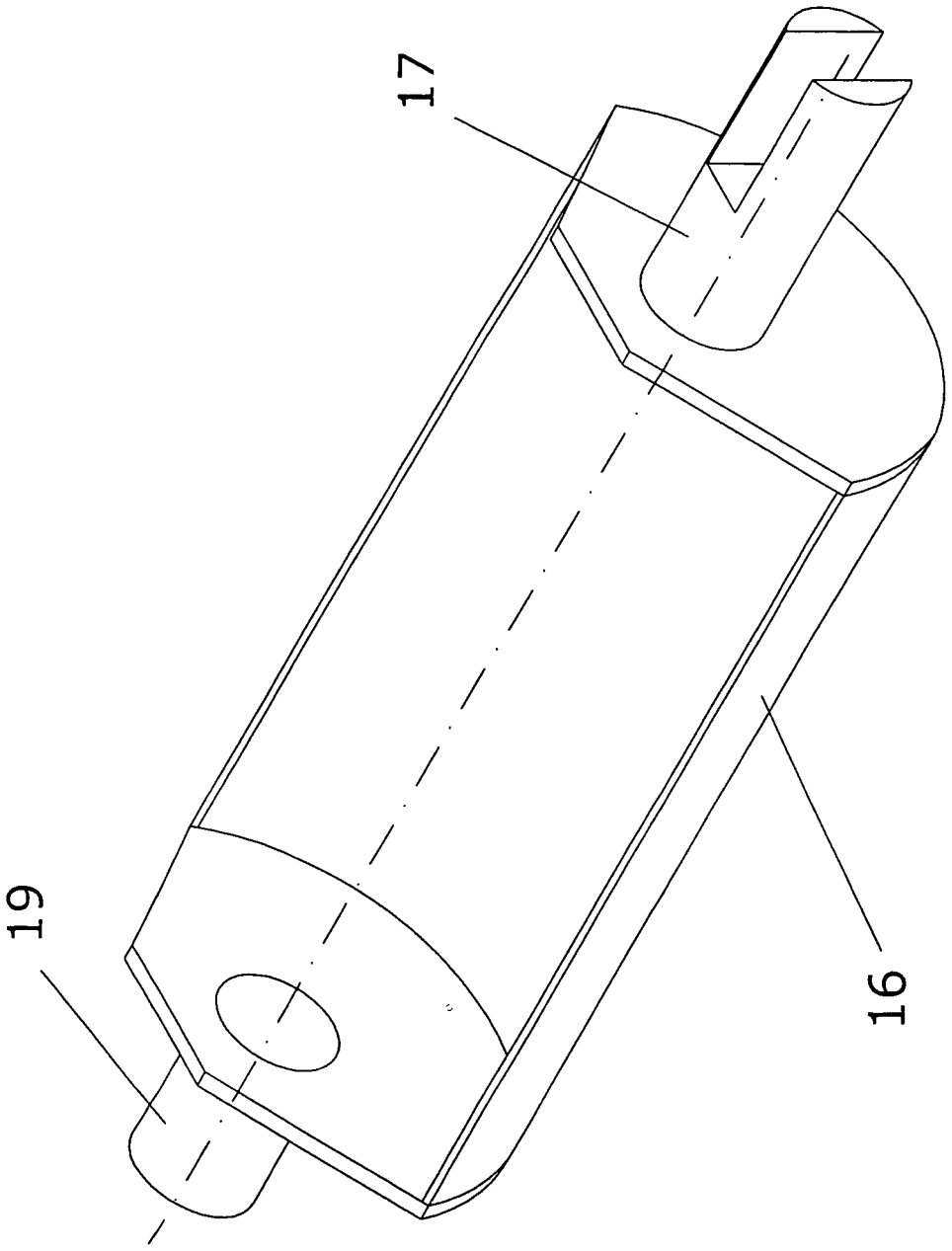


FIG. 6

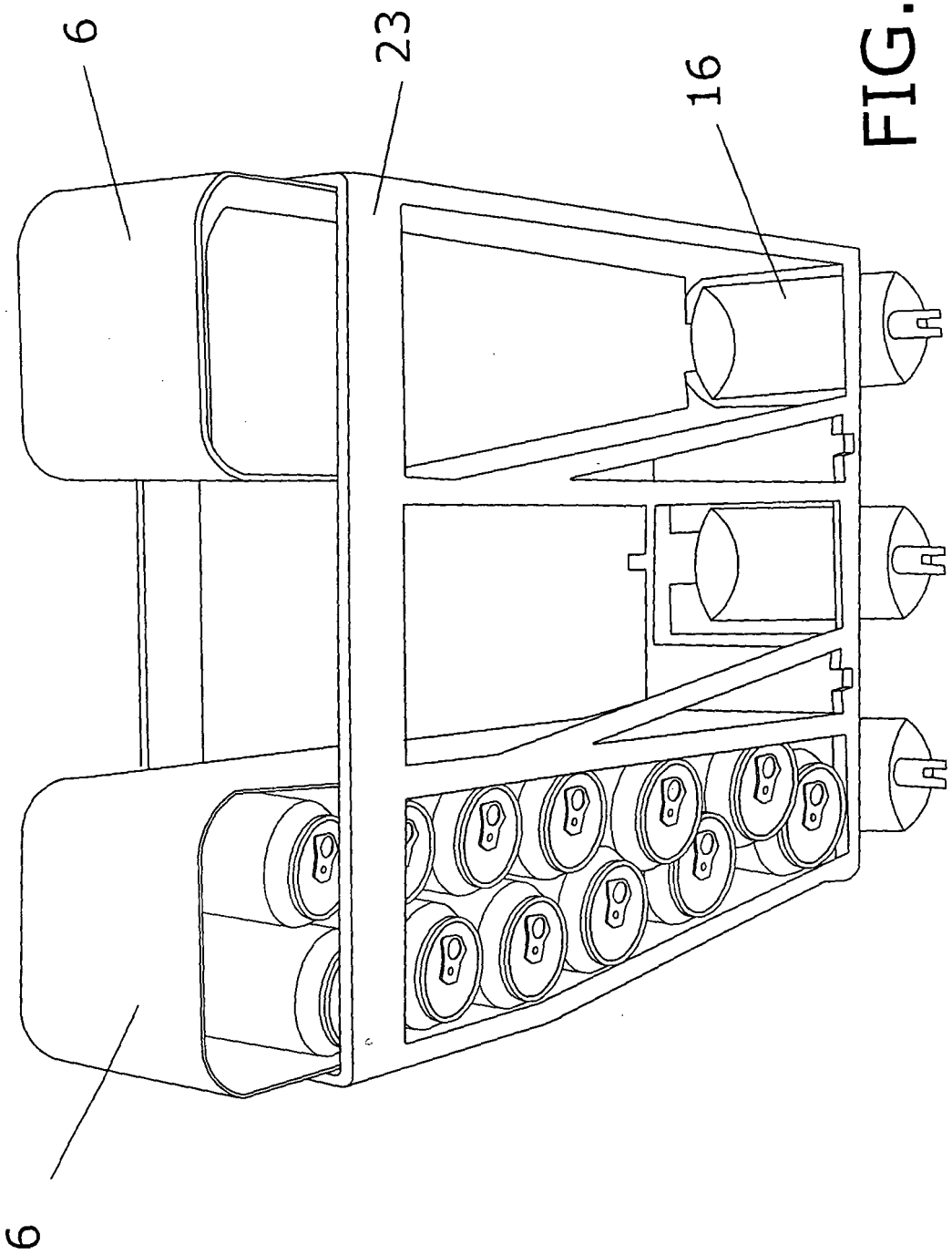


FIG. 7

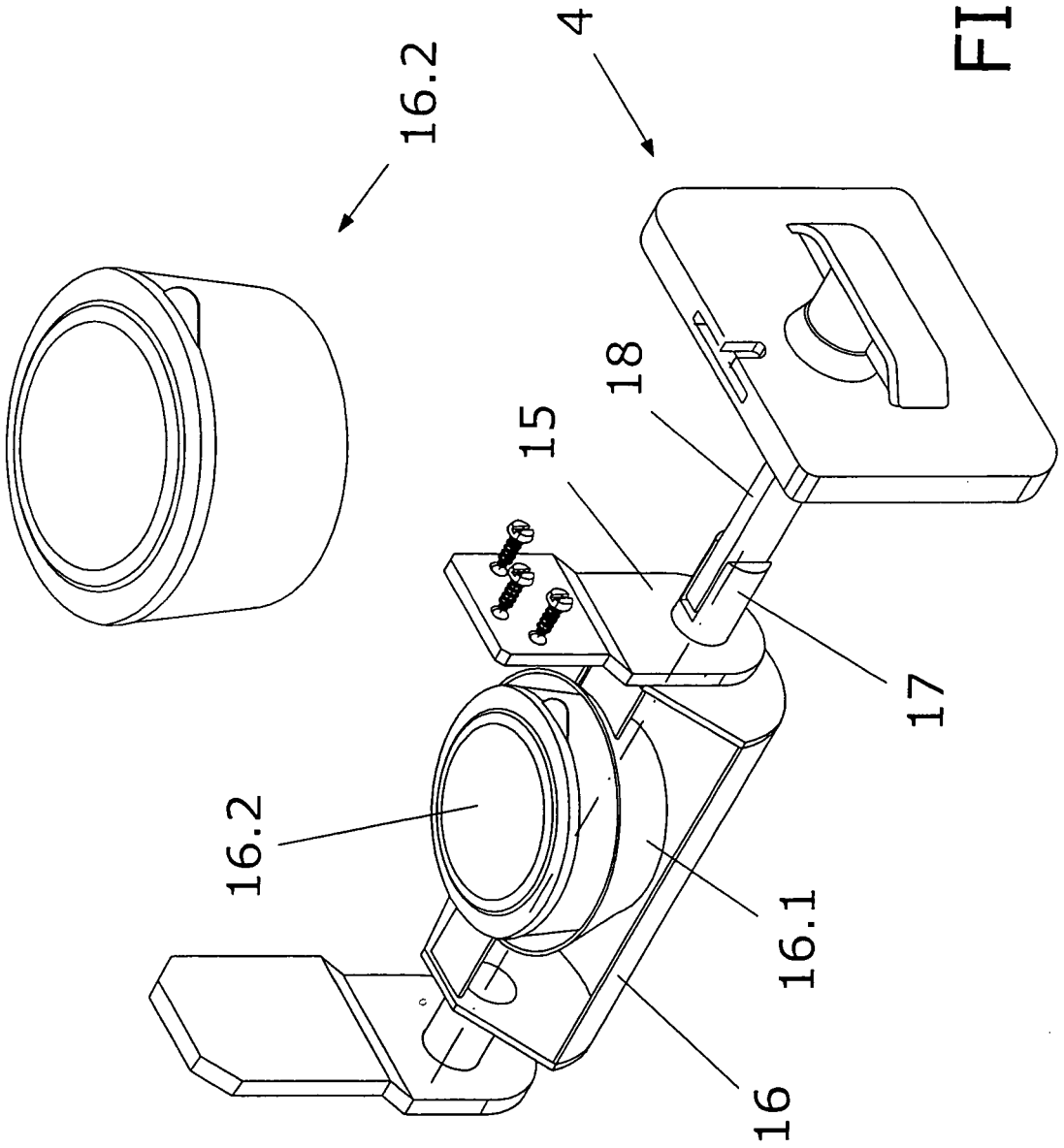
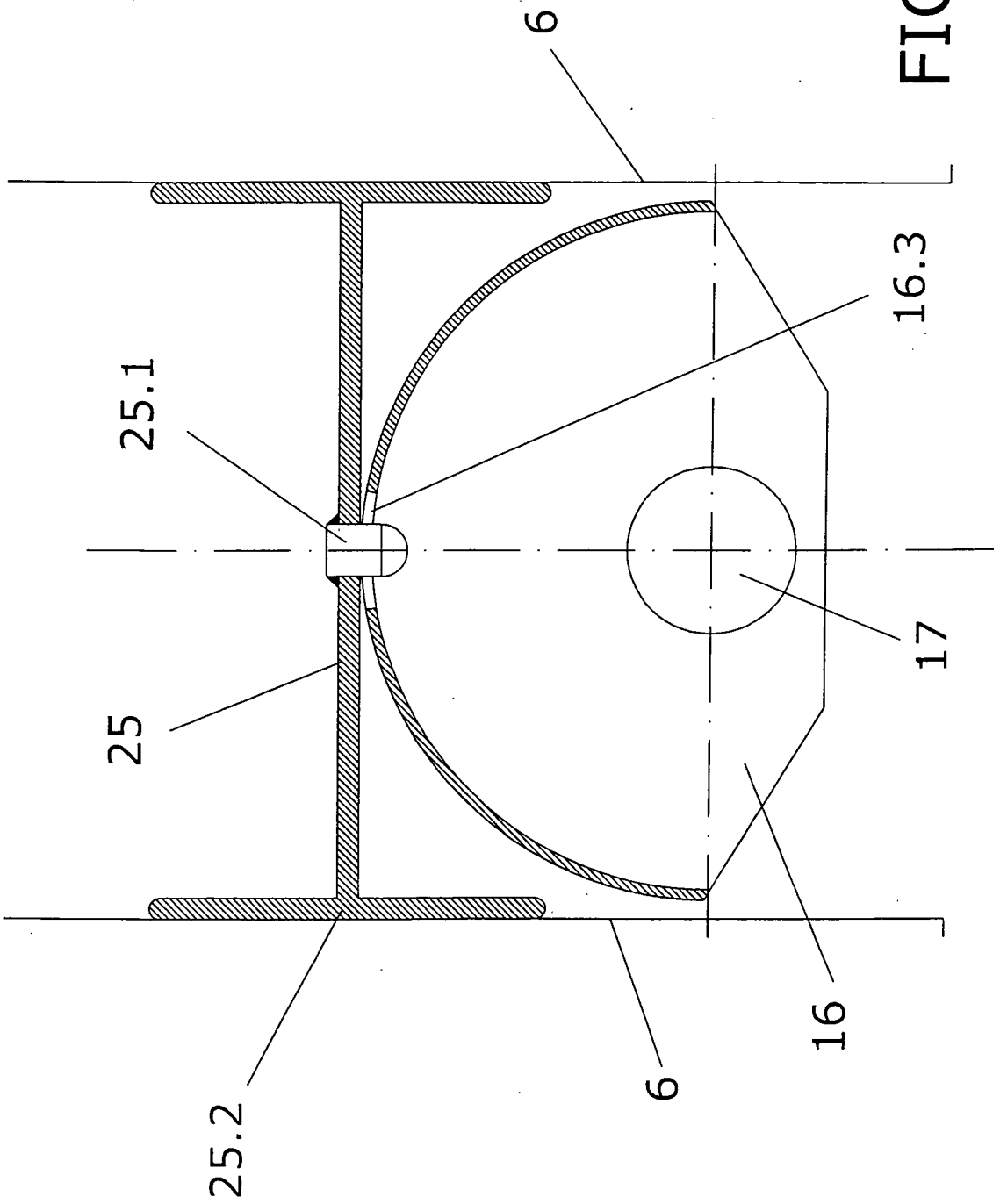


FIG. 8

FIG. 9



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2004/070024

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7: G 07 F 11/24, 11/08, 9/10

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)

IPC 7: G 07 F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPODOC, WIPL, PAJ, CIBEPAT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 852 767 A (HUMPHREY) 01.08.1989, **abstract** ; col 2, lin 50-col 5, lin 68; fig 1-3	1, 2
Y		3, 4, 7-9
Y	Base de datos PAJ en EPOQUE, JP 03 058 194 A (TOKYO SHIBAURA ELECTRIC) 13.03.1991, **abstract** , figures	3, 4
Y	US 3 797 701 A (ALLOCCO et al) 19.03.1974, col 2, lin 40-lin 62; fig 1	7
Y	US 3 869 064 A (PAYNE) 04.03.1975, **the whole document**	8,9
A		1
X	US 2 156 196 A (ROMANOSKI) 25.04.1939, **the whole document**	1

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
30 June 2004 (30.06.04)	**16 July 2004 (16.07.04)**
Name and mailing address of the ISA/ S.P.T.O.	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2004/070024

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Base de datos PAJ en EPOQUE, JP 08 273 042 A (MATSUDA TETSUO) 18.10.1996, **abstract** , figures	1-5

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/ES2004/070024

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JP 08 273 042 A	18.10.1996	NONE	

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