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(54) An appliance for the automated dispensing of fluids, particularly suitable for dispensing colouring pastes, having the feature of easy loading of said fluids

(57) An appliance for the dispensing of fluids, particularly suitable for dispensing colouring pastes, comprising at least an external casing 1 containing the elements which constitute the appliance 1, a plurality of containers 10 filled with colouring pastes in different colours and a plurality of motor pump groups 16, equal in

number to said containers 10, for extracting from the containers 10 the colouring pastes and subsequently delivering them to a collecting vessel for dispensing the final colouring paste of the desired colour, where said containers 10 are substantially sloped with respect to a vertical axis of said appliance.

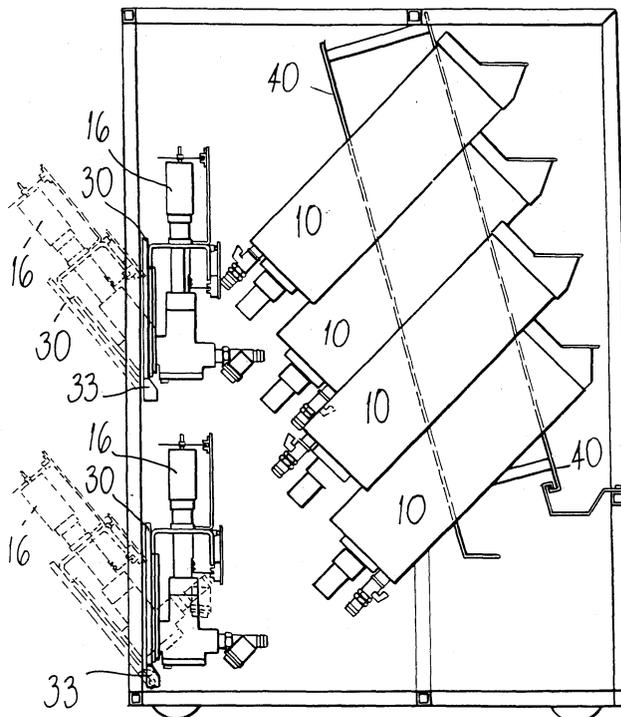


Fig. 2

EP 1 082 995 A1

Description

[0001] The present invention refers to an appliance for the automated dispensing of fluids, particularly suitable for dispensing colouring pastes, having improved features for loading said colouring pastes.

[0002] As is known, for dispensing colouring pastes of a given colour, appliances commonly known as colour meters are used, which are suitable for dispensing colouring pastes of different colours inside a semifinished paint to obtain, according to preset formulae, a finished paint of a colour pre-selected by the user, for example, in a sales point.

[0003] Colour meters normally use a white paste as a base colour, to which pastes of other colours in preset doses, to obtain the colour selected by the user, are added.

[0004] The colours that can be obtained by means of a colour meter are selected with a keyboard which allows the user to key in the code for the desired colour, which corresponds to a mixture of preset colours in preset ratios.

[0005] Colour meters are often equipped with a spectrophotometer, which allows the "reading" of a colour by means of spectral analysis of a sample of the colour and then the sending to the appliance of the data necessary to faithfully reproduce the desired colour by mixing pastes of appropriate colours.

[0006] The various colouring pastes are contained in proper containers housed inside the colour meter, each connected to a relevant motor pump for drawing a required quantity of colouring paste from the container and delivering it to a dispensing unit which subsequently dispenses it into a collecting vessel.

[0007] Access to the containers is obtained by lifting an upper, covering lid of the appliance.

[0008] Inside each container there is a motorized agitator blade, for mixing the colouring paste, in order to prevent loss of fluidity.

[0009] For the same purpose, there is also provided a path for recirculating the colouring paste, which is thus drawn out from and put back into the relevant container in a continuous manner.

[0010] The colour meters currently available have some disadvantages, notably the difficulty of access for filling and maintenance operations of individual containers. As the containers are housed within the appliance and connected to their respective motors and to the pipes of the recirculation path, filling a container and removing it for maintenance operations become laborious tasks.

[0011] Likewise, periodic maintenance and cleaning operations require long work times because of the way each container is connected to the appliance.

[0012] In addition, access to the containers is usually obtained by opening a covering lid, which has the disadvantage that it is not possible to use the top surface of the appliance as a working area for placing various

equipments closely connected with the operation of the appliance itself, such as a personal computer, a keyboard, a monitor, a spectrophotometer and the like.

[0013] Consequently, colour meters of the known type must necessarily have an additional surface adjacent to the appliance itself, on which these electronic equipments can be placed. This obviously involves an increase in overall size and an additional cost.

[0014] In addition, the collecting vessel into which the various colouring pastes drawn from the various containers flow together to be mixed with the semifinished product contained in the vessel is normally placed on a supporting surface located in the appliance at a suitable height.

[0015] The disadvantage in the positioning of the collecting vessel lies in that its removal from the appliance requires a considerable effort from the user, especially when the vessel is large in size, since the user is obliged to extract it from inside the appliance.

[0016] The main task of this invention is thus to provide an appliance for dispensing fluids in general and colouring pastes in particular in which the containers are positioned in such a way as to allow an easy filling and a simple maintenance.

[0017] Within this task, an object is thus to provide an appliance for dispensing fluids in general and colouring pastes in particular in which the containers are positioned in such a way as to make available the top surface of the appliance for supporting auxiliary equipments.

[0018] Another object of the present invention is to provide an appliance for dispensing fluids in general and colouring pastes in particular, which has reduced dimensions compared with appliances of the known type.

[0019] Another object of the present invention is to provide an appliance for dispensing fluids in general and colouring pastes in particular, in which removing and inserting the vessel collecting the colouring pastes involves a minimal effort from the user.

[0020] Another important object of the present invention is to provide an appliance for dispensing fluids in general and colouring pastes in particular, which has a high level of reliability and can be produced relatively easily and at competitive costs.

[0021] This task, as well as these and other objects which will be shown more clearly later, are carried out by an appliance for dispensing fluids, particularly suitable for dispensing colouring pastes, comprising at least an external casing containing the elements constituting the appliance, a plurality of containers filled with colouring pastes of various colours, a plurality of motor pump groups, equal in number to said containers, for extracting from the latter said colouring pastes and subsequently delivering them to a collecting vessel for dispensing the final colouring paste of the desired colour, characterized in that said containers are substantially sloped with respect to a vertical axis of said appliance.

[0022] Further features and advantages of the invention will be shown more fully by the description of a pre-

ferred, but not exclusive, embodiment of the dispensing appliance according to the invention, illustrated as an indicative and non-limiting example in the attached drawings, where:

Figure 1 is a perspective view of the appliance according to the present invention;

Figure 2 is a side view, in cross-section, of the appliance according to the present invention;

Figure 3 is a scrap front view of the appliance according to the present invention;

Figure 4 is a perspective view of one detail of the appliance according to the present invention;

Figure 5 is a perspective view of one of the containers used in the appliance according to the present invention, with its relative cap;

Figure 6 is a sectioned plan view of the portion of the appliance in which the mobile support surface is provided; and

Figure 7 is a cross-section view showing the end-part of one of the containers used in the appliance according to the invention, connected to the relevant agitator system.

[0023] With reference to the above-mentioned Figures, the appliance according to the invention, globally designated by 1, comprises a substantially parallelepipedal casing 2 for containing the various elements of the appliance 1.

[0024] The casing 2 is supplied with a door 3 divided into two wings, for loading containers 10 (Figure 2) of colouring pastes, which will be described hereinafter. A further door 5 is provided for access to a chamber for dispensing the final coloured paste.

[0025] In order to facilitate the loading of containers 10 at a higher level and placing them inside the casing 2, a top door 6 is provided, positioned to correspond with the top end of the parallelepipedal casing 2.

[0026] Finally, an inspection-window 8 for the delivery area is provided, formed for example in glass, inside the door 5.

[0027] Referring now to Figure 2, the positioning of the containers 10 containing the colouring pastes of various colours to be mixed together with a base product contained in a vessel placed in the dispensing chamber to produce a finished product of the desired colour is shown in detail.

[0028] The containers 10 are sloped with respect to a vertical axis of the appliance 1 and this angulation varies according to construction requirements. In particular, in

[0029] Figure 2 the containers 10 are shown sloping at an angle of approximately 45° with respect to the vertical axis of the appliance.

[0030] As can be seen from Figure 2 and Figure 3, the containers 10 are arranged with the top part facing the front part of the appliance; they are inserted in sockets provided in the appliance 1.

[0031] According to a preferred embodiment, said

sockets consists of pairs of the holes made into two metal sheets 40 (Figure 2) parallel each other, each container 10 being inserted in a hole made into one of said metal sheets 40 and in the corresponding hole made into the second metal sheet 40.

[0032] In correspondence to the sockets of the containers 10, the front wall of the appliance 1, inside the door 3, is in its turn sloping with respect to the vertical axis, so as to allow the easy filling of the containers 10.

[0033] Figure 3 is a scrap front view of the appliance 1 without the doors 3 and 5 and the dispersing chamber; it shows that the containers 10 are arranged in row offset one from another, to allow the easy loading of the containers themselves and their easy removal from the sockets for maintenance and cleaning operations.

[0034] In addition, the containers 10 are offset with respect to the depth of their insertion in said sockets

[0035] The containers 10 are therefore housed in an offset manner both from top to bottom (that is from the container in the top row to the container in the bottom row) and with respect to the rows.

[0036] Referring now to Figure 5, one of the containers 10 used in the appliance according to the invention is shown in perspective view. This container is substantially cylindrical with an upper end intended to project out from the sloping wall of the appliance, and is equipped with a cap 13 shaped according to the conformation of the inlet mouth of the container 10.

[0037] This conformation comprises a raised sleeved flange 14 which allows the easy loading of the colouring pastes into the container.

[0038] Figure 4 shows the door 5 of the appliance giving access to the dispensing chamber of the final colouring paste, which, when opening towards the outside, brings out a support surface 20 for a collecting vessel, shown in Figure 3 and indicated by 15, making the operation of loading the collecting vessel 15 very practical.

[0039] The collecting vessel 15 must be positioned at predetermined height with respect to the containers 10 so as to receive the colouring paste extracted from these by means of the motor pump groups 16, one motor pump group 16 being provided for each of the containers 10.

[0040] The support surface 20 is able to translate vertically along the vertical axis of the appliance and is connected to the door 5.

[0041] In addition, the support surface 20 has a series of eccentric circles 21, 22, 23, and 24 drawn on its upper surface and defining rest areas for vessels 15 of different sizes.

[0042] In this way, the vessels 15 are always positioned in an optimal position to receive the jet of colouring pastes drawn from the containers 10.

[0043] Figure 2 shows the positioning of the containers 10 in relation to the relevant motor pump groups 16. As can be seen, the motor pump groups 16 are arranged along the rear wall of the appliance and are each supported by a bracket 30 arranged, in the operating posi-

tion, parallel to the rear wall of the machine and hinged at a fulchrum 33.

[0044] This bracket 30 can be tilted, by rotating around its fulchrum 33, so as to be able to extract easily the relevant motor pump group 16 from the rear wall of the appliance, which can be opened.

[0045] In Figure 2 the portion outlined with a broken line shows the rotated position of the bracket 30 for the easy extraction of the relevant motor pump group 16.

[0046] Figure 7, on the other hand, shows the end portion of each container 10, which is equipped with an agitator 25 for mixing the contents of the container 10.

[0047] At the outlet of each container 10, at its lowest part, there is a ball valve 26 with a short lever for the closure of the container 10 for maintenance purposes of the motor pump group 16 connected to the container 10.

[0048] The agitator 25 is driven by a motor 27 integral with the pump and coupled with a reduction gear 28, which allows the desired speed to be obtained. Electronic control components of the motor 27 are also provided, thus forming the autonomous motor pump group 16.

[0049] Returning to Figure 4, in order to load the vessel 15 easily onto the support surface 20, it is necessary to ensure that this support surface 20 is brought to the minimum distance possible from the floor, in cases where the vessel 15 to be loaded is heavy (and therefore of bulky dimensions)

[0050] A photocell (not shown) is provided to verify the presence of the vessel 15 and the correct positioning in height of the support surface 20.

[0051] In this way, the sloping position of the containers 10 allows easy loading and quick maintenance, leaving the top surface of the appliance completely free and therefore available to support auxiliary electronic equipment.

[0052] In addition, the particular arrangement of the containers 10 and of the relevant motor pump groups 16 allows the side dimensions of the appliance to be drastically reduced.

[0053] Finally, the support surface 20 connected to the door 5 and protruding from the parallelepipedal casing 2 of the appliance with the opening of said door 5, allows the collecting vessel 15 for the colouring pastes mixed with the base colour to be loaded and removed easily, even in cases where the vessel 15 used is of the maximum possible dimensions.

[0054] Figure 6 shows a plan view, in vertical section, of the part of the appliance in which the support surface 20 is provided for loading the collecting vessel 15 (shown in Figure 3).

[0055] Humidification means are provided to keep the group of nozzles (not shown) moist, arranged in a position above the vessel 15 and each connected to a container 10.

[0056] The humidification means ideally comprise an arm 35 pivoted in such a way as to be able to rotate

parallel to the support surface 20 and in a position immediately underneath the group of the delivery nozzles for the colouring pastes.

[0057] The arm 35 supports a spongy element 36 which is moistened and then comes into contact, in a rest position, with the nozzles of the appliance, in order to keep them moist, thus avoiding the occlusion which would otherwise occur following a period of non-use.

[0058] In Figure 6, the arm 35 is shown in the three positions which it can assume: the first position, in which the arm is facing the rear part of the machine, is the position assumed when the appliance is operating; the second position, with the arm substantially central, is the position assumed in a state of rest (thus, in this case, the spongy element 36 comes into contact with the delivery nozzles); finally, the third position, with the arm 35 emerging from the front portion of the appliance, is the one provided for substituting the spongy element 36.

[0059] A safety device is also provided, to prevent the support surface 20 from rising above a predetermined height, when the vessel 15 is loaded on it; in this case, there is a risk that the vessel 15 may strike the cover of the machine and the motor provided for driving the support surface 20 may burn out.

[0060] To eliminate this disadvantage, which may occur when the photocell described above breaks down, means are provided for cutting off the operation of the motor driving the movable support surface 20.

[0061] It has been established in practice how the appliance according to the invention fully performs the set task in that it allows the operations of loading the containers 10 of colouring pastes to be simplified, at the same time optimizing the dimensions of the appliance.

[0062] The appliance thus devised is capable of numerous modifications and variations, all of which are included in the scope of the invention; in addition, all parts may be substituted by other, technically equivalent, elements.

[0063] In practice, any materials as well as any dimensions may be used, according to requirements and the state of the art, provided that the former are compatible with the use specified.

45 Claims

1. Appliance for dispensing fluids, particularly suitable for dispensing colouring pastes, comprising at least an external casing (2) containing the elements which constitute the appliance (1), a plurality of containers (10) filled with colouring pastes of different colours, a plurality of motor pump groups (16), equal in number to said containers (10), for extracting from said containers (10) said colouring pastes and subsequently delivering them to a collecting vessel for dispensing the final colouring paste of the desired colour, characterized in that said containers (10) are substantially sloped with respect to a ver-

- tical axis of said appliance (1).
2. Appliance according to Claim 1, characterized in that said containers (10) are arranged in rows offset one from another, said containers (10) being in addition offset with respect to the depth of their insertion in sockets provided in said appliance (1). 5
3. Appliance according to claim 1, characterized in that it provides at least one front door (3) for access to the loading zone of said containers (10). 10
4. Appliance according to Claim 3, characterized in that, in correspondence to the sockets of said containers (10) and inside the front door (3), the front wall of said appliance (1) is substantially sloping with respect to the vertical axis of said appliance (1). 15
5. Appliance according to one or more of the previous claims, characterized in that it comprises at least one top door (6) to facilitate the loading of said containers (10). 20
6. Appliance according to one or more of the previous claims, characterized in that it provides at least one door (5) for access to a dispensing chamber of the final colouring paste, a support surface (20) for a collecting vessel (15) being connected to said access door (5) to the dispensing chamber. 25
7. Appliance according to one or more of the previous claims, characterized in that said support surface (20) protrudes from said external casing of the appliance (1) when said door (5) for accessing to the dispensing chamber is opened. 30
8. Appliance according to one or more of the previous claims, characterized in that said support surface (20) provides indicating marks (21-24) for positioning collecting vessels (15) of different dimensions. 35
9. Appliance according to one or more of the previous claims, characterized in that said motor pump groups (16) relevant to said containers (10) are arranged along the rear wall of said appliance (1). 40
10. Appliance according to one or more of the previous claims, characterized in that each of said motor pump groups (16) is connected to a support bracket (30) which is hinged so that it can be rotated from a position parallel to the rear wall of said appliance (1) to a position rotated towards the outside of said appliance (1), for the easy extraction of the relevant motor pump group (16). 45
11. Appliance according to one or more of the previous claims, characterized in that each of said container (10) is equipped on the top, in correspondence with 50
- a part projecting from said front wall of the appliance, with a flange (14) to facilitate the loading of said container (10).
12. Appliance according to one or more of the previous claims, characterized in that each of said container (10) has a closure cap (13). 55
13. Appliance according to one or more of the previous claims, characterized in that said containers (10) are removable from said sockets.
14. Appliance according to one or more of the previous claims, characterized in that it comprises one or more of the features described and/or shown.

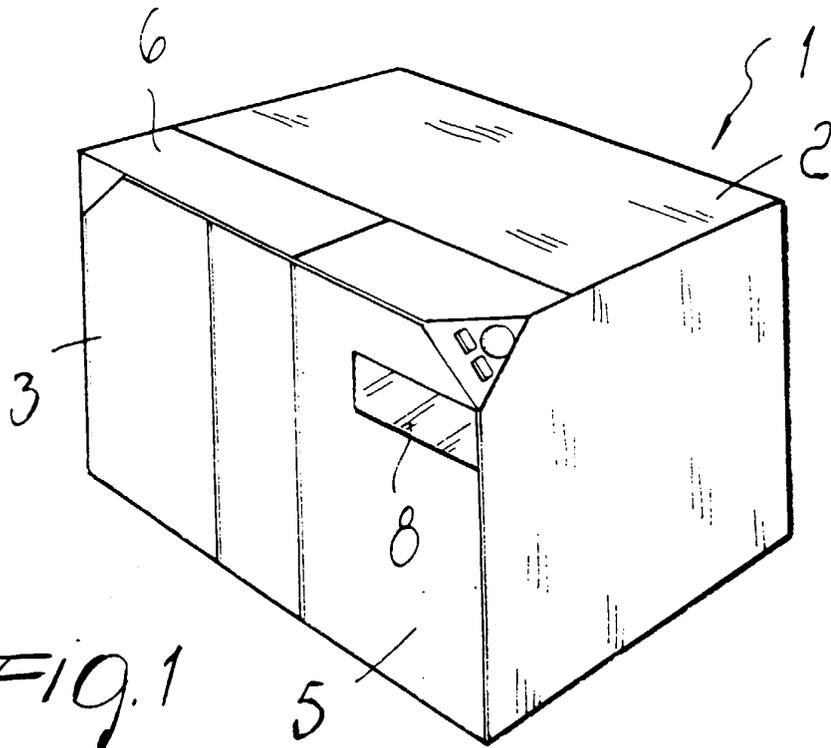


FIG. 1

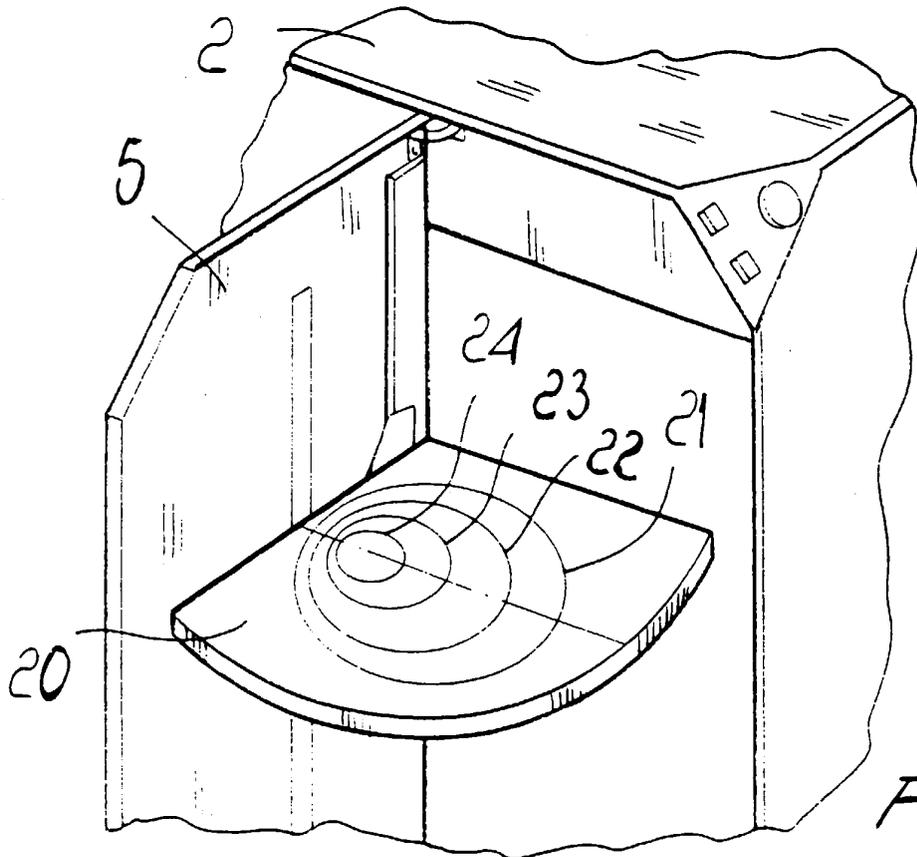


FIG. 4

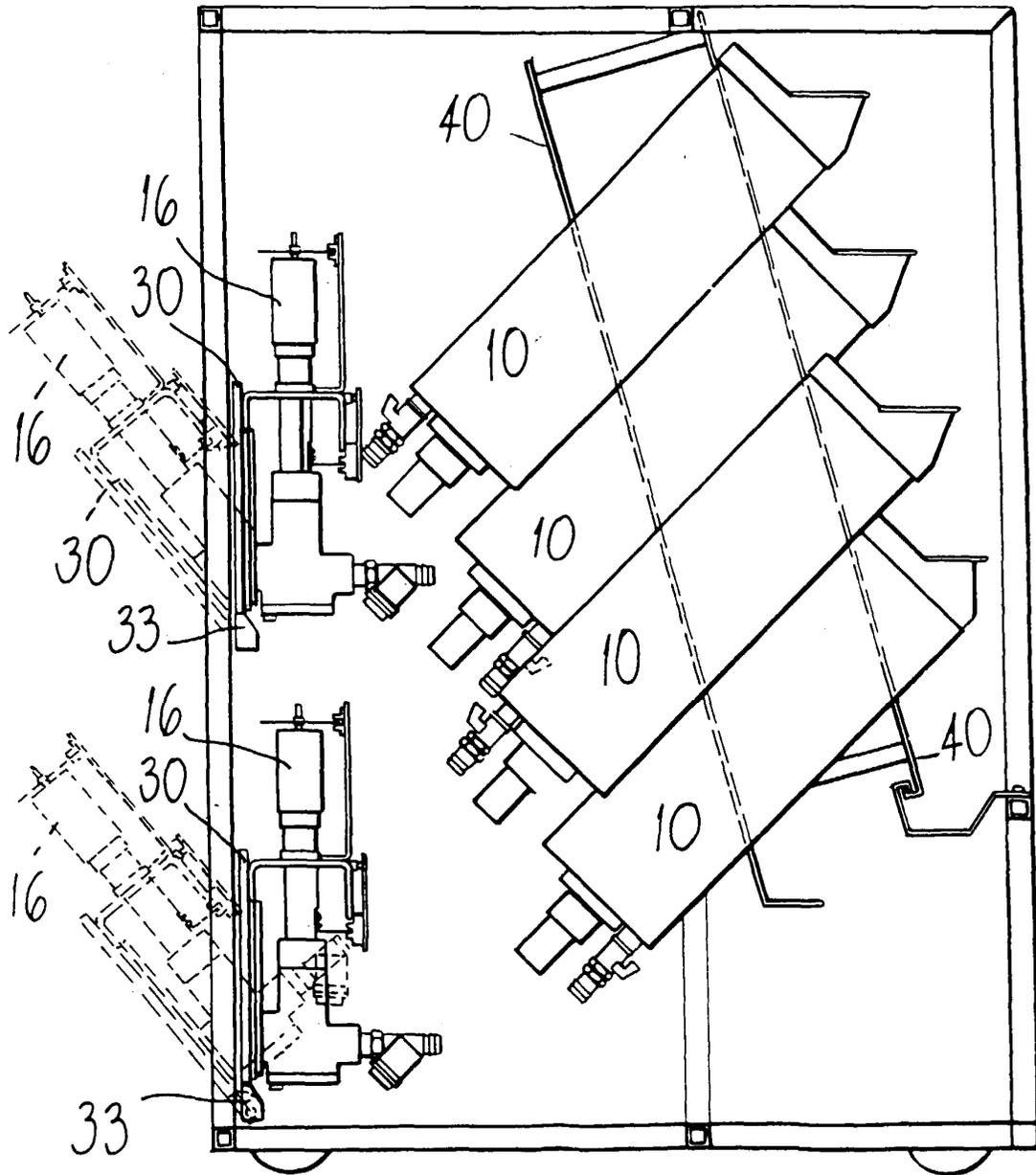


Fig. 2

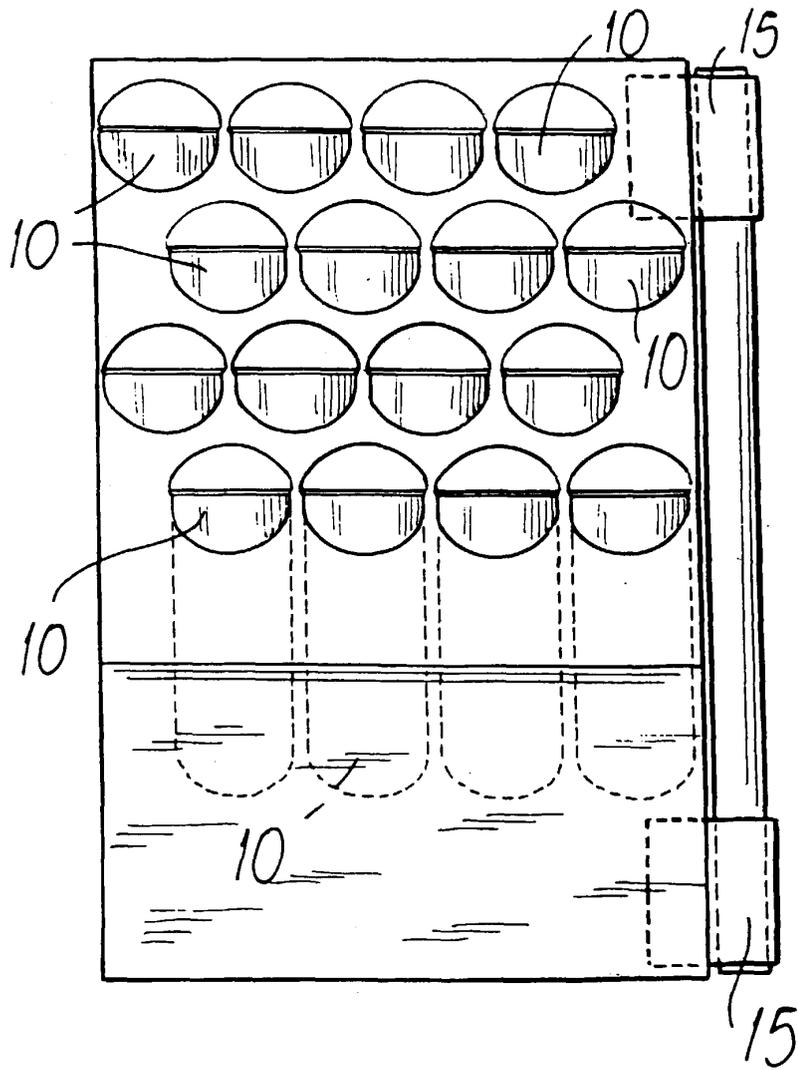
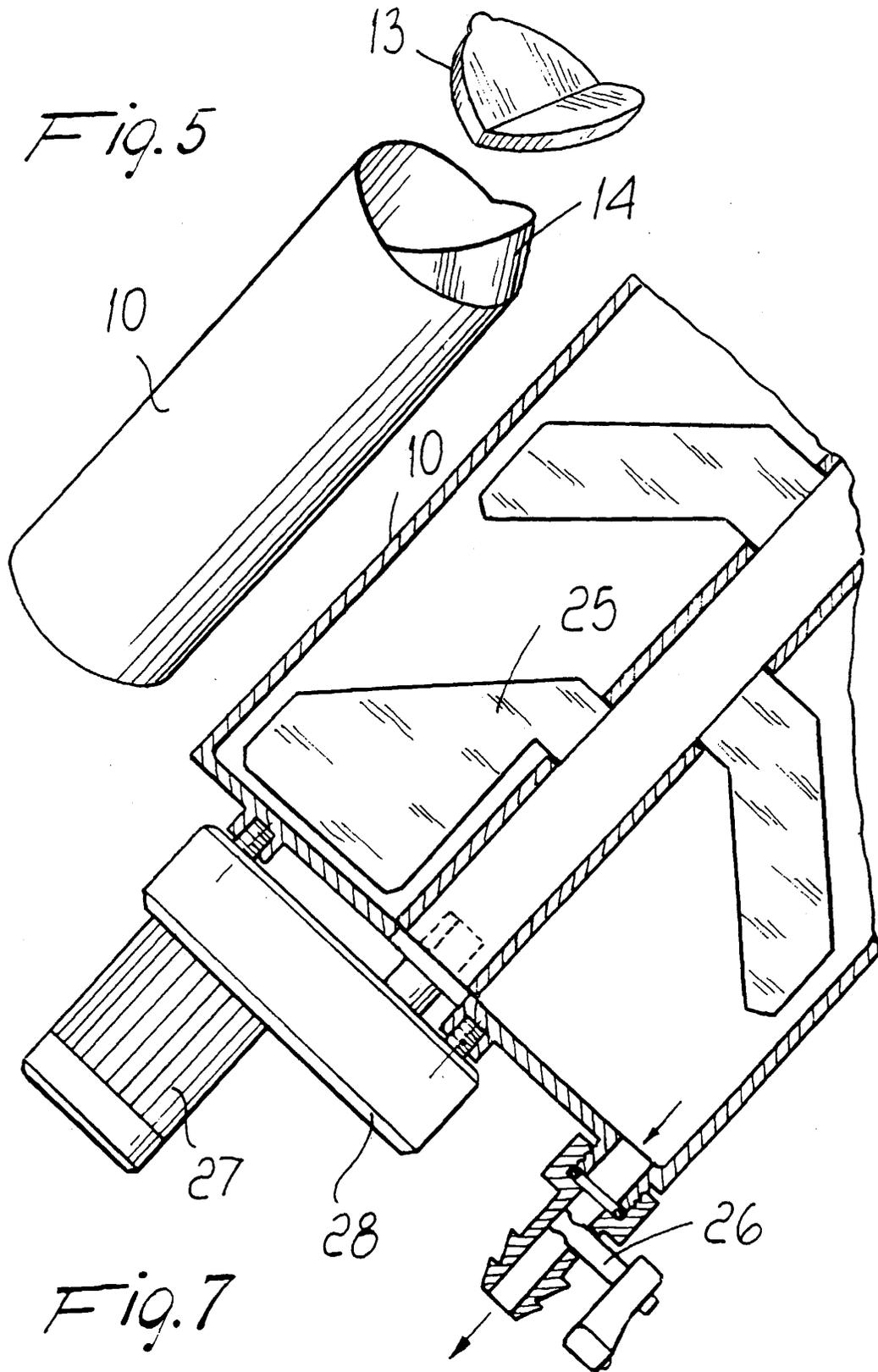


FIG. 3



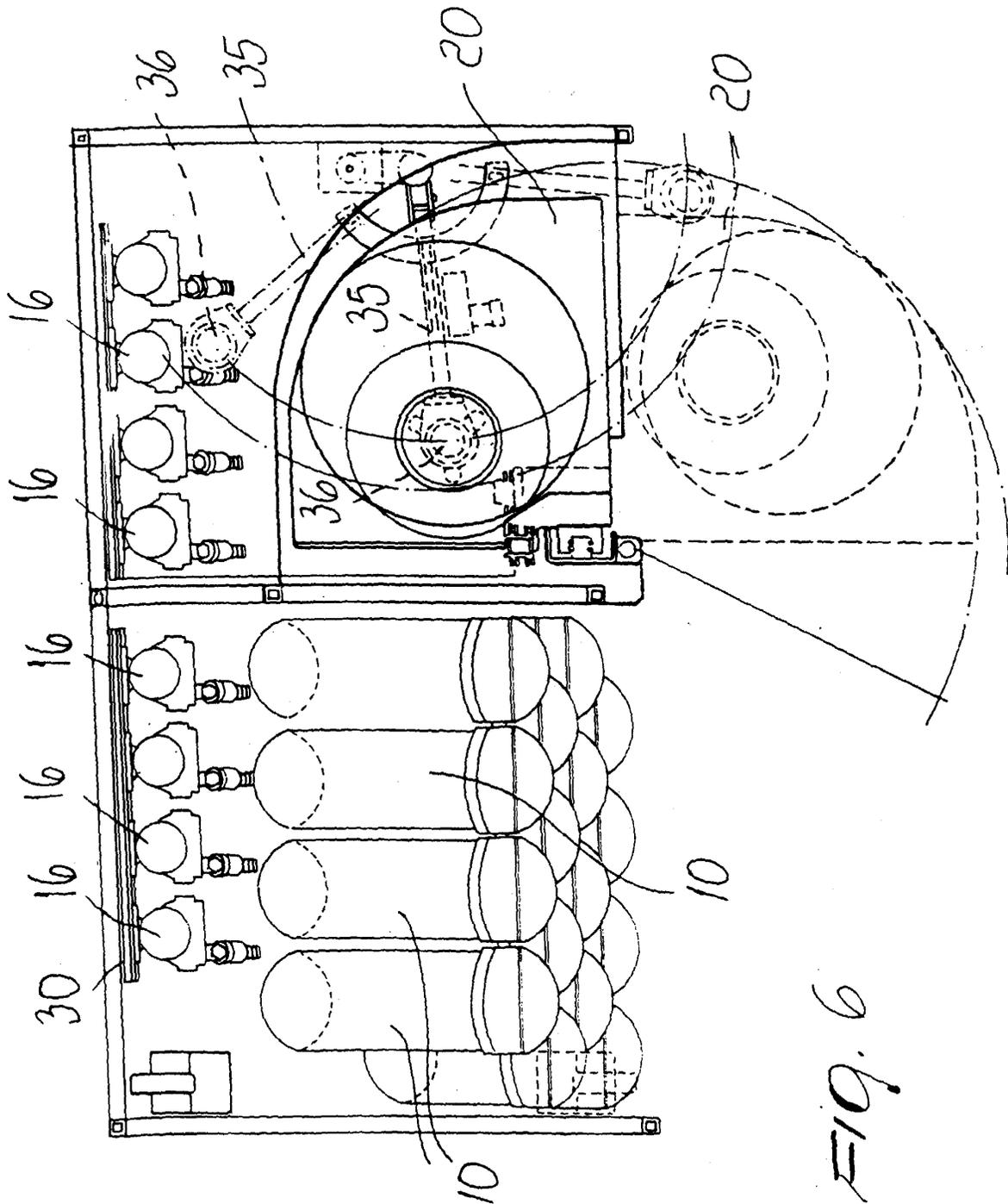


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 7764

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Place of search THE HAGUE		Date of completion of the search 11 February 2000	Examiner Gourier, P
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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