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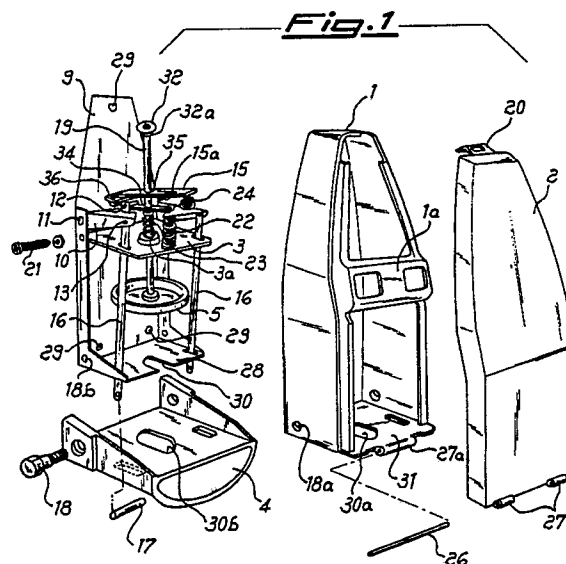
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**Wall-installable apparatus for dispensing handwashing paste.**

An apparatus for dispensing handwashing paste to be applied on a wall is described, wherein the particularly thick product is supplied in disposable cartridges (7) adapted to be perforated in the bottom and provided with a cover a portion of which (7a) can push downward the product by sliding along the cartridge walls under the action of a disk (5) with a rod (19) being in turn operated by a lever handle (4) through a pair of links (16). These cause a control rocking bracket (10) to move downward while a spring (22) is loaded for the back movement of the handle, at the same time causing also to move downward a hinge point (12) of a plate (14) through a hole (34) of which passes the disk-carrying rod (19). Plate (14) is kept inclined by a spring (23) and engages rod (19) by the edges of through hole (34) thus dragging it downward. The movement to the opposite direction, upon releasing of handle (4), is prevented by another plate (15) which is placed above the downward pushing plate (14) and hinged at a fixed end, being also provided with a hole (35) through which passes said rod (19), and with a spring (24) for keeping the same inclined, whereby only pressing it by hand the orientation angle of plate (15) can be reduced and, by means of a tooth (15a), also the angle of the underlying plate (14), which is thus released and allowed to move upward.



## WALL-INSTALLABLE APPARATUS FOR DISPENSING HANDWASHING PASTE

The present invention relates to a handwashing paste dispenser for wall installation, capable of dispensing quantities of a particularly thick paste upon each manual operation of a control lever handle hinged to the apparatus.

Devices for dispensing liquid soap are known, which are installed in lavatories of public premises and communities of whatever type, while remarkable difficulties arise when special products of greater density must be supplied, such as the so-called "handwashing pastes", which are required where operations are made which cause a heavy soiling of the operators' hands. It is true that for pastes in the form of gel a dispenser apparatus has been developed being the object of EP-A-0296130 in the name of the same applicant. However also this apparatus uses a crushing operable dispensing valve, particularly studied for the gel-type products, whereby it cannot be used for pasty product having greater density, such as the particularly thick hand washing paste.

Usually these products are dispensed by means of real simple pumps drawing from vessels laid down on the floor or even by rendering the same available in containers accessible to anyone, into which the users dip their hands in turn. It is clear that with such dispensing methods remarkable wastes of product are experienced while the respective users are subject, particularly with the second coarser solution, to the unpleasant feeling of sharing with others the hand-washing paste, possibly contaminated by other people's dirt. Furthermore all these known types of dispensing means show an aspect which is certainly not very attractive due to the temporariness of the equipments.

Object of the present invention is therefore that of providing a dispensing apparatus for pasty products having high density such as the hand-washing paste, which can be applied to walls and is enclosed in a housing such as to render the same absolutely similar, as to the outer aspect, to the known dispensers of liquid soap or gel giving the certainty to each user that he comes in contact with a portion of product never touched by other users and thus clean, all that with a simple manual operation of a lever handle and the least waste of product.

It should be noted that such an apparatus is designed to be used with containers of the disposable cartridge type, the cover of which has an outer edge acting as a sealing gasket and being removable by tearing off from the remaining disk-shaped portion which is adapted to slide along the inner wall of the cartridge under the push of a disk plate that is caused to move downward by a prefixed

length upon each operation of the control handle of the apparatus, so as to force the product, without leaving residue, to flow out through an opening previously formed on the cartridge bottom, through corresponding slits provided on the bottom of housing and the control handle itself.

The dispensing apparatus according to the invention comprises structural parts consisting of a back portion adapted to be anchored to a wall, having mounted thereon the dispensing mechanism and hinged the operating handle thereof, of a box adapted to be fastened to said back portion and a cover hingedly mounted to said box for covering the front side of access to the inside mechanisms by means on a snap shutting at the top, and is characterized in that said mechanisms comprise a pair of side links, the lower end of which is connected to said handle and the upper end to the sides of a control bracket being hinged to said back portion and usually kept inclined upward by a compression spring on the front side of a horizontal separating shelf, fixed to said back portion under the pivoting axis of said bracket, on the latter there being also mounted the pivoting axis of a rod pushing plate which is also kept usually inclined upward by a second compression spring between the plate itself and said separating shelf, there being further provided a second plate also hinged at an end to said back portion above said first plate, and being usually kept inclined upward by a third compression spring which is fastened to the front end of the plate and caused to rest onto a member fixed to said box, there being provided coaxial holes on said two plates, said bracket and said separating shelf for allowing a cylindrical rod passing therethrough, at the lower end of which a disk is fixed therefore acting onto a cover portion, thus pushing the same downward, that remains upon removal of an outer edge of a cartridge containing hand-washing paste and placed on a shelf at the lower end of said back portion, showing a central opening which mates with a corresponding opening formed in the operating handle.

According to the present invention, upon a handle operation, accomplishing a limited rotation thereof downward about the hinge pivot on the back portion of the device, the links cause a respective lowering of the control bracket with contemporary compression of the associate spring which has loaded for the subsequent return of bracket and handle to the start position. At the same time a pivoting point of the rod pushing plate is dragged downward, while said plate is still inclined upward due to the thrust exerted by its associate spring, so as to engage, by the edges of

the through hole, the disk-carrying rod by which it is crossed, thus dragging downward the latter by friction, whereas the upper plate is also slightly lowered with a small contemporary compression of its spring.

When releasing the handle, the previously compressed spring of the bracket causes the latter and consequently the links and the handle itself to return to the start position, but the lifting of the rod pushing plate does not cause the rod and associated disk to return upward, since such a movement is hindered by the fact that the upper plate returns to its initially inclined position in correspondence of which the inner edges of its through hole are in engagement with the rod passing therethrough. In order to allow the upward movement of the rod, which is necessary at the end of its downward stroke, when the cartridge has to be replaced, it will be enough to press by hand the spring associated with the non-return upper plate, thus determining a lowering thereof of larger entity and, as it is formed according to the invention with an extension directed downward which comes in engagement with the underlying rod pushing plate, also the latter is caused to lower. Thus both the plates have a substantially horizontal orientation, thereby leaving the greatest clearance to the rod passing therethrough, which is then free to be shifted at will.

It should be appreciated that, still according to the invention, the disposable cartridge used as container of the hand-washing paste to be dispensed is provided with a cover the outer edge of which is easily removable such as through an oblique cut, while the remaining portion of equal diameter or only slightly smaller than the inner diameter of the cartridge is slidable, under the push exerted by the disk in its downward strokes, when scraping with its edge the inner wall of cartridge, whereby it is ensured that all the product is used.

These and further aims, advantages and characteristics of the device according to the present invention will appear more clearly from the following detailed description of a preferred embodiment thereof, even by way of a non-limiting example, with reference to the annexed drawings, in which:

**FIGURE 1** is a partially exploded view of the dispensing apparatus according to the invention;

**FIGURE 1a** is a perspective view of a detail of Fig. 1;

**FIGURE 2** shows a front view of the same apparatus without cover and with broken away parts; and

**FIGURE 3** is a cross-section view along line III-III of the assembled apparatus, with cover mounted.

With reference to the drawings, numeral 1 des-

ignates the box which forms the housing of the device and acts as a support for the front cover 2 being hinged to the lower side of box 1, e.g. by means of a pivot 26 passing through mutually aligned bushes 27, 27a integrally formed by molding with cover 2 and box 1 respectively. At the top the cover has a closing tongue 20 suitable to snap fit into a corresponding seat of the upper end of box 1. Through holes (not shown) formed in the wall of the latter allow introduction of tools for lowering the tongue 20 and opening the cover 2.

The box 1 is adapted to house at the inside a back portion 9 with all the mechanisms mounted thereon as will be better described in the following. Box 1 and back portion 9, this having holes 29 for the installation to a wall, are assembled together preferably by means of only two side screws 21 with washer, provided in association with a horizontal shelf 3, which could be called "separating" the purpose of which will be better explained in the following. At the lower end of the back portion 9, slightly above a bracket 28 for supporting the cartridge 7, toward the rear side, there is hinged a handle 4, rotatably mounted about a pair of pivots 18 which are fixed to the device frame by passing through associated holes 18a, 18b, respectively of the box 1 and of back portion 9. The handle 4 is so shaped at its front side, as to aid its grasping by the user.

At both ends of the handle 4, in a zone between the front portion of grasping and the pivoting point 18, there is fixed by means of an underlying pin 17 the lower end of a link 16. Both links 16 are extended upward by passing through slots formed to this purpose in the handle 4 itself, in the box bottom 31, in the bracket 28 and in the separating shelf 3 up to an upper pivoting point 13 where each link is connected to a side of a "control" bracket 10, being hinged in 11 at the sides of back portion 9, slightly above said shelf 3. On the latter, toward its front side, there is fixed one end of a conic or cylindrical compression spring 22 to the other end of which there is usually resting the front side of bracket 10. A vertical cylindrical rod 19 passes through holes provided in the central zone of shelf 3 and of bracket 10 and its lower end bears a disk plate 5 which is adapted to lower like a plunger within a cartridge 7 (not shown in Fig. 1) so as to push what is contained therein downward by a predetermined stroke for each operation of handle 4, as will be better described in the following, thus causing the product to get out therefrom through an opening formed in the bottom of cartridge 7 before placing the same onto the bracket 28. Corresponding slots or passages 30, 30a, 30b are of course provided in the central zone of bracket 28, of the box bottom 31, and handle 4. At the upper end of rod 19 there is mounted a washer 32

for an easier manual holding of the rod 19 for its lifting, with a spacer member 32a thereunder, such as a threaded nut with adjustable positioning, which is suitable to prevent rod 19 and consequently disk 5 from lowering beyond a prefixed limit.

A rod pushing plate 14 is mounted on the bracket 10 as it is hinged to the rear end thereof about a pin 12 which is fixed to bracket 10. Said plate 14 is kept usually inclined, with its free end upward, by a spring 23 capable of exerting its bias between the plate itself and a circular projection 3a integrally formed with the separating shelf 3 and surrounding the hole through which the rod 19 passes through the latter. Also the plate 14 has a hole 34 for the rod 19 passing therethrough, the clearance of which is such that, when said plate is normally inclined at rest conditions of the device, the edges of the through hole are in tight engagement with the rod 19, thus "biting" the same at two diametrically opposed points, at different heights spaced by a length corresponding to the plate thickness.

According to the invention, above plate 14 there is finally provided an additional plate 15 which could be called of non-return, being hinged at its rear end to the back portion, such as by means of a U-bent tab within a slot formed in a member 36 protruding from the back portion itself. Also the plate 15 has a through hole 35 co-axial with 34 and the holes provided in the bracket 10 and separating shelf 3 for the passage of a rod 19 and additionally is normally inclined upward like plate 14, as it is fixed at its free end to an end of a third compression spring 24 the other end of which rests, as is better seen in Fig. 3, on a member 25 integrally formed with the structure, as preferably a step projecting inwardly from a median band 1a of box 1, as provided in the region of shelf 3 and of the above-described mechanism. The size and position of band 1a will be such as to allow, upon opening the cover 2, to render preferably accessible only the front side end of plate 15.

Also the clearance between rod 19 and hole 35 will be such as to keep the rod 19 blocked between two opposed edges of the hole when the plate 15 is in the normally inclined rest condition, as shown in the drawings. From the lower side of plate 15 a tooth 15a protrudes by a length sufficient for causing it to come in contact with the underlying plate 14 in case of downward rotation of plate 15 as a consequence of a pressure thereon from the outside by compressing the spring 24.

From the foregoing description it is clear how operate the hand-washing paste dispensing apparatus according to the invention.

When considering the assembled device as in Figs. 2 and 3, with the cover 2 rotated downward, onto the bracket 28 reinforced thereunder by the

bottom 31 of box 1, there is placed in the central zone a cartridge 7, in correspondence with the opening 30, after having removed the outer edge of its cover and a portion of a bottom for causing the product to be discharged through holes 30, 30a and 30b. The thickness and density of this type of hand-washing pastes is such that no dripping of product can occur but in consequence of a pressure exerted from above by disk 5 as a plunger, as will be better described in the following.

When pushing downward the grasping zone of handle 4, its rotation causes a lowering of the links 16, which give rise to a downward rotation of bracket 10 about the pins 11, while the spring 22 loads itself for the subsequent return to the initial position. This movement causes a lowering of pin 12, being fixed to the bracket 10, as it is e.g. mounted between two parallel projections 37 as better shown in the detail of Fig. 1a. With its lower end pushed still more downward, the plate 14 tends to increase its angle of inclination because the spring 23 continues to push it upward, and hence to hold tighter the rod 19 which immediately thereafter will be forced to move downward, as the lowering movement of the pin 12 continues, with a slight compression of the spring 23 which is loaded for returning to the initial conditions. At the same time the friction exerted by the downward moving rod 19 against the wall of hole 35 will be such as to reduce the angle of inclination of the plate 15 with contemporary slight compression of the spring 24. In other words the "non-return" plate 15 will assume a less inclined position thus allowing some clearance between hole 35 and rod 19 for the downward movement of the latter. The downward stroke of the rod 19 and plate 15 for each operation of handle 4 can be controlled in advance through a suitable choice of the lengths and the pivoting points of links 16, of the bracket 10 and the position of the pin 12 on the latter, as well as the bias exerted by the three springs.

Upon releasing the handle 4, the spring 22 being no longer compressed by the manual force through the bracket 10, causes the latter (and also the links 16 and the handle itself) to return to the initial position. At the same time the pin 12 moves upward, but this cannot result in an upward stroke of the rod 19 as not only the plate 14 reduces its gripping action onto the rod due to the reduced inclination, but the upper non-return plate 15 takes again its inclined position of engagement with the rod 19, thus preventing it from any movement, as the spring 24 is no longer compressed. At each operation of the handle 4 a progressive lowering is obtained of disk plate 5 and cover portion 7a (remaining after removal of the outer edge acting as a seal of warranty), thus forcing a given quantity of product to be discharged from the opening in

the bottom of cartridge 7.

Upon reaching the lower end of stroke, when disk 5 and inner cover 7a have already come to the bottom of cartridge 7, the spacer 32a, being previously adjusted to this purpose, will engage the upper plate 15 thus causing the same to undergo a notable lowering, such as to contact with its lower tooth 15a the rod pushing plate 14 on the side opposite to the pivoting point with respect to the rod 19. Whereby to the lowering of pin 12 will correspond now an even greater lowering of the opposite end of plate 14, so that the latter takes a less inclined position, almost horizontal, which disengages the rod 19 thereby avoiding useless and dangerous stresses. Therefore a further action onto the handle 4 will remain without any effect. In order to replace the exhausted cartridge by a fresh one for starting a new operation cycle it will suffice, once tilted down cover 2, to press by hand the end of plate 15 above the band 1a crossing the box 1, against the force of spring 24, until the tooth 15a disengages the plate 14, thereafter the rod 19 can be easily lifted by holding the washer 32. The lifting will be maximum at the beginning to allow insertion of a new cartridge 7 from which the outer sealing edge will have been already removed while leaving the inner portion 7a of a diameter not less than the disk plate 5, whereas subsequently the rod will be positioned so as to bring the disk into coaxial correspondence with said cover 7a, which has been planned to move downward under the successive thrusts of the disk, still remaining in contact with the inner wall of the cartridge 7, of course upon having formed an opening on the bottom thereof.

As it results from the foregoing, the apparatus according to the invention is particularly solid and of simple and efficient operation, adequate to the characteristics of the particular product to be dispensed, as it does not comprise parts that may become obstructed or damaged owing to the high density of the product itself.

Possible additions and/or modifications can be provided by those skilled in the art with respect to the above-described and illustrated embodiment of the apparatus according to the invention without departing from the scope of the invention itself. In particular different embodiments could be provided from those illustrated as to the portions forming the device, especially the handle and the structural parts such as box and cover.

## Claims

1. A hand-washing paste dispensing apparatus comprising a back portion (9) to be anchored to a wall, on which the dispensing mechanism is moun-

ted and an operating handle (4) is hinged, a box (1) to be fastened to said back portion and a cover (2) hinged to the front side of said box and closable at the top by a tongue (20) snap shutting, characterized in that said dispensing mechanism comprises a pair of side links (16) the lower end of which is pivotally mounted about pins (17) to said handle (4) and the upper end is hinged in (13) at the sides of a control bracket (10) which is hinged to said back portion (9) and kept normally inclined upward by a compression spring (22) provided at the front side of a horizontal separating shelf (3) being fixed to the back portion (9) under the pivoting axis (11) of said bracket (10), on which bracket also the pivoting axis (12) is mounted of a rod pushing plate (14), the latter being also normally inclined upward by a second compression spring (23) between said plate (14) and said fixed shelf (3), there being further provided a second plate (15) hinged at an end thereof to said back portion (9) above said plate (14) and kept normally inclined upward by a third compression spring (24) which is fixed with an end to its front end and adapted to rest onto a member (25) integrally formed with the said box (1), coaxial holes (34, 35) there being respectively provided in said two plates (14, 15) as well as in said bracket (10) and said shelf (3) for a cylindrical rod (19) passing through, at the lower end of which there is mounted a disk plate (5) for pushing downward a portion (7a) of cover remaining upon removal of an outer edge of a cartridge (7) containing hand-washing paste, caused to be placed on a bracket (28) at a lower end of said back portion (9) having a central opening (30) corresponding to openings (30a, 30b) in the box (1) and handle (4).

2. A dispensing apparatus according to claim 1, characterized in that said upper plate (15) is provided with a tooth projection (15a) directed to the underlying plate (14) and adapted to come in contact with said plate (14) as a consequence of an operation from the outside for compressing said spring (24).

3. An apparatus according to claim 2, characterized in that said box (1), with cover (2) tilted down is completely open on the front side except for a horizontal band (1a) substantially extending from said separating shelf (3) to said upper plate (15) thus leaving the latter accessible from the outside and having a stepped projection (25) to the inside, on which the lower end of said spring (24) rests.

4. An apparatus according to claim 1, characterized in that said spring (23) is spiral-wound about said disk bearing rod (19) between said plate (14) and a projection (3a) of the separating shelf (3).

5. An apparatus according to one or more of the preceding claims, characterized in that the

clearance between the rod (19) and the walls of the through hole of bracket (10) is substantially greater than the clearance between the same rod (19) and the walls of holes (34) and (35).

6. An apparatus according to claim 2, characterized in that said tooth (15a) projects from the plate (15) so as to push downward, with spring (24) being compressed, said plate (14) in an area opposed to the pivoting point (12) with respect to the rod (19).

7. An apparatus according to claim 2, characterized in that said rod (19), at the end opposite to the disk (5) side, has an adjustable spacing element (32a) for pressing said plate (15) at each further operation of handle (4) in correspondence with the lower end of stroke of rod (19), whereby said projection (15a) pushes downward the plate (14) thus releasing the rod (19) itself from the engagement with the latter.

8. A dispensing apparatus according to claim 1, characterized in that said handle (4) is pivotally mounted on pins (18) fixed at the lower end of the back portion (9) in the proximity of the installation wall and the links (16) are pivotally mounted on pins (17) fixed under the handle itself, at each side thereof, by passing through suitable slots formed in the handle, in said lower bracket (28), in the bottom (31) of box (1) and in the separating shelf (3), the upper pivoting points (13) being in the proximity of the front side of said rocking bracket (10) the compression spring (22) of which operates as a spring of return to the initial conditions of rest of the handle (4) when this is released.

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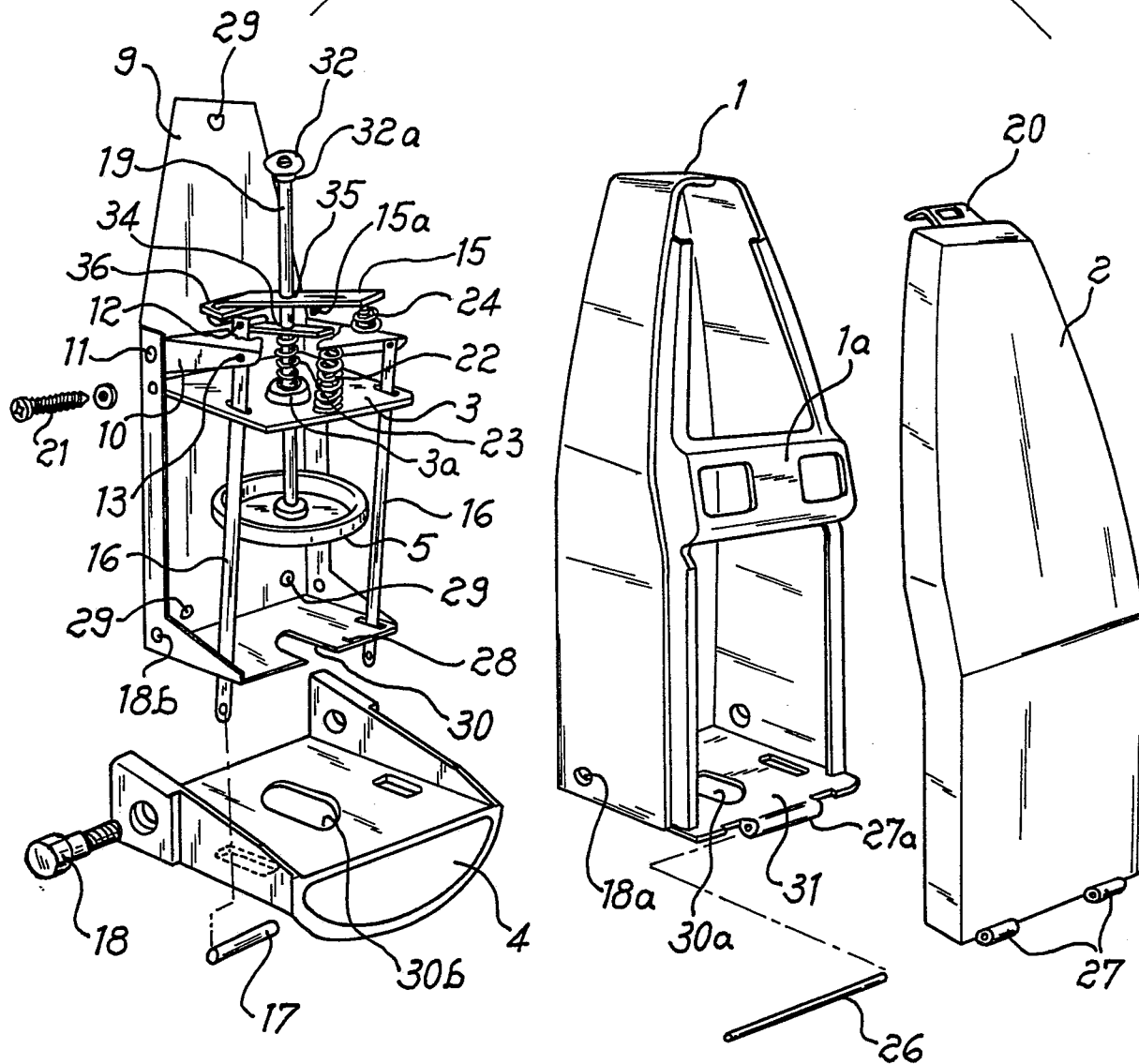
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***Fig. 1***



***Fig. 1a***

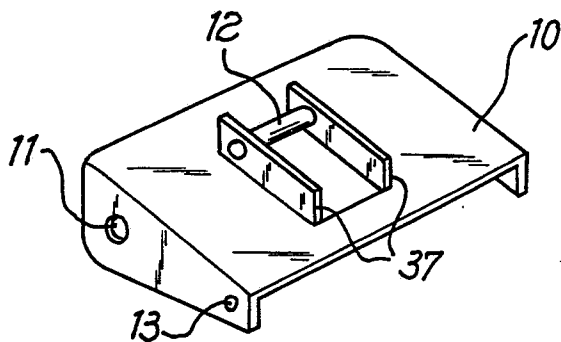


Fig. 2

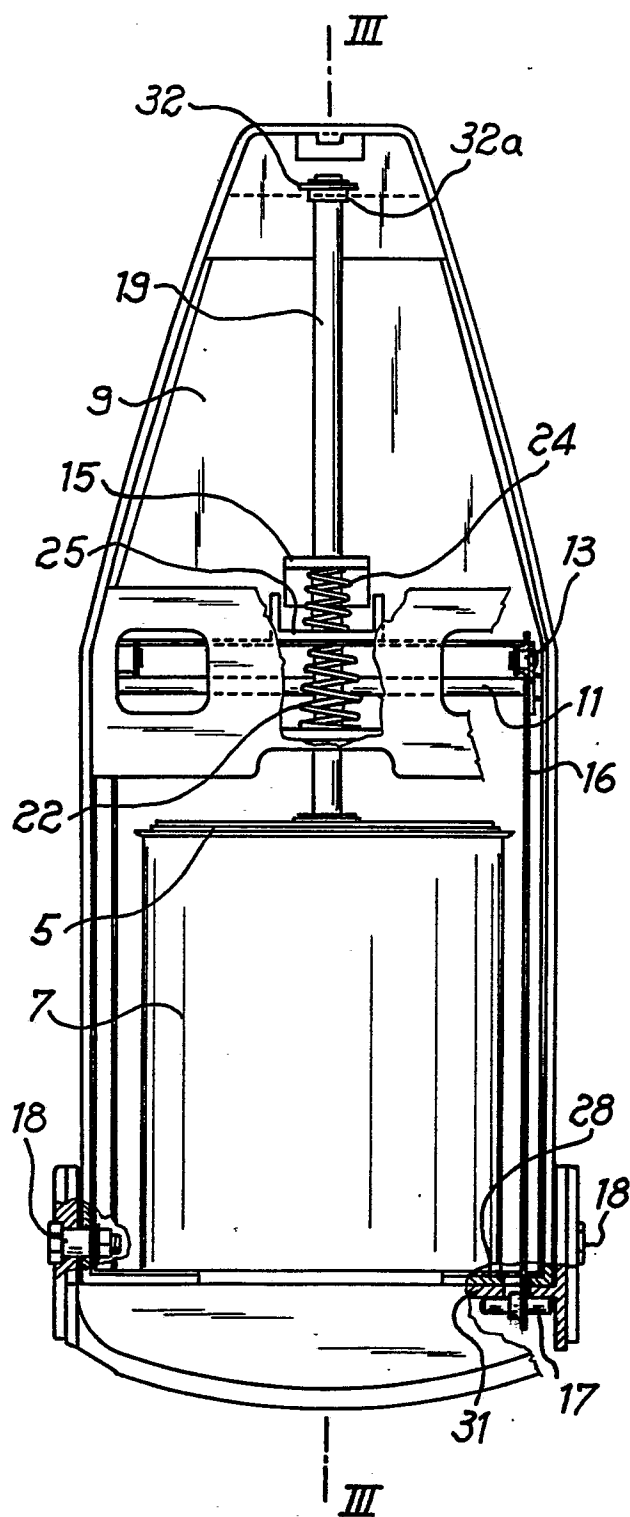
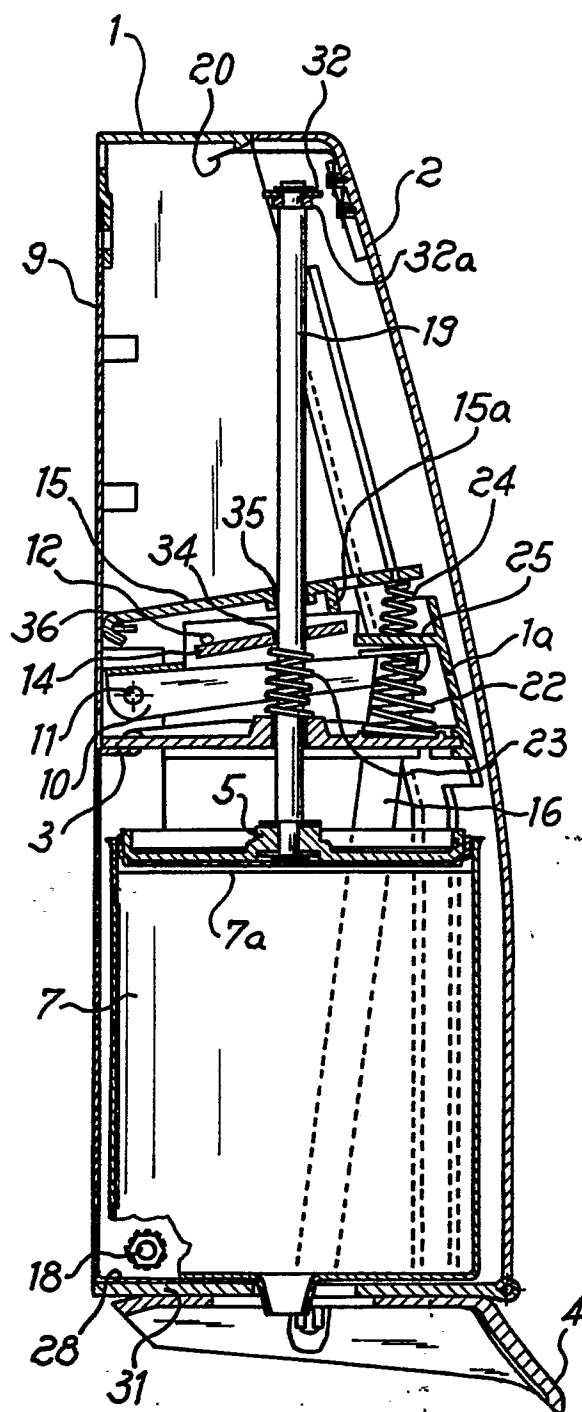


Fig. 3





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	FR-A-1179562 (SECOMASTIC LTD.) * the whole document *	1, 4	A47K5/12
A	FR-A-1453486 (CAOUREP S.A.R.L.) * page 2, column 1, line 1 - column 2, line 31; figures 1, 2 *	1, 8	
A	FR-A-2186212 (STEINER CO.) * page 3, lines 20 - 36 * * page 5, line 22 - page 8, line 5 * * page 8, line 37 - page 9, line 13; figures 1, 2 *	1	
A	US-A-4036406 (PAUL W. JESPERSEN ET AL.) * column 2, line 51 - column 3, line 17; figures 1-3 *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A47K B67D B05C
Place of search THE HAGUE		Date of completion of the search 20 JULY 1990	Examiner BARBAS A.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			