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(54) Device for the distribution of washing powders in washing machines.

(57) Device (1) serving both to extract the washing powder (17) when in the open position and to distribute it when in the closed position and placed in the drum of the washing machine.

Application to the machine washing of linen with washing powders.

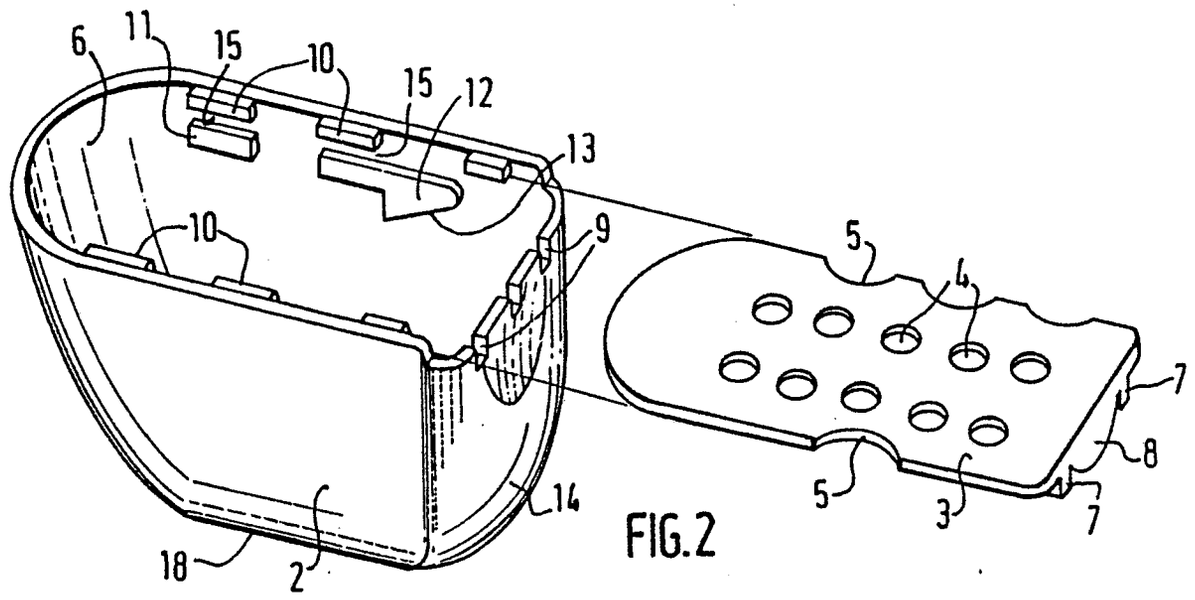

FIG.2

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Device for the distribution of washing powders in washing machines

The invention relates to the field of machine washing with the aid of washing powders. Its object is a distributor device serving various functions and offering numerous advantages over the prior art.

The machine washing of linen with washing powders is a technique very widely practised throughout the world. The washing powder is most usually packed in containers of various sizes, from which the user takes powder up to the recommended dose and transfers it to a compartment provided for the purpose in the machine. The total amount of powder required for washing is placed in position at the start, and the powder is then entrained by circulating water.

A technique of this kind has numerous disadvantages, which are well known and admitted by specialists in the industry.

Firstly, physical losses of powder occur in the pump discharging the washing water from the washing machine. These losses in the emptying circuit entail unnecessary overconsumption of product.

Because the entire amount of powder is introduced at the start, before the washing machine is put into operation, the distribution of washing powder during the washing cycle is unsatisfactory.

The present system of repeated extraction of powder from the packet up to the recommended dose, followed each time by its transfer from the packet to a compartment (or drawer) in the machine, entails various time-consuming operations. Deposits of washing powder are also found in the distributor drawer of the washing machine, and this necessitates frequent systematic cleaning after use.

The invention seeks to overcome the disadvantages mentioned above by providing a device capable of simplifying the extraction of washing powder from the packet, and at the same time effecting progressive, metered distribution of the wasshing powder during the washing cycle.

Processes and devices have already been proposed for the distribution of waashing agents in liquid form, particularly concentrated liquid form. Pertinent bibliographical references which may be cited in this regard are the following patent applications, all filed in the name of the Applicants.

Application FR 84 06151 of the 18th April 1984 (publication 2.563.250) relates to a process for the machine washing of linen with a liquid detergent, making use of the device which is first filled with detergent and then placed in the drum of the machine together with the linen which is to be washed.

Application FR 84 13210 of the 24th August 1984 (publication 2.570.720) relates to a device of the kind just referred to, which has a substantially spherical shape. A certain number of apertures permit the filling or metering and/or the diffusion of the liquid.

It must however be observed that the problems to be solved in the case of liquid washing agents and washing powders are very different. In particular, the problem of extraction from the packet, measuring and loading into the washing machine arises essentially for washing powders, while in the case of liquid washing agents the metering of the liquid contained in the package can easily be achieved by pouring out a measured amount into a separate utensil or, as described in the abovementioned French patent applications, into a distributor device intended to be placed directly in the drum of the washing machine. Furthermore, washing agents in liquid form and those in powder form have different properties in respect of dissolution in water. Consequently, technical solutions cannot be directly transferred from one case to the other.

It should also be pointed out that in the prior art certain distributor devices for powder products have been suggested for use in a washing cycle.

The patent US 3.400.808 describes a container designed for holding a bleaching agent in powder form, which differs from a washing agent and is intended for supplying oxygen in the course of the washing cycle after the cycle has started. This known device is made in two parts, which must be detached from one another in order to fill the container; a device of this kind is not very suitable for the extraction of the powder, which is introduced in conventional manner.

In its general form, the invention has as its object a device for the distribution of washing powders in washing machines, which device is provided with distribution apertures and is characterized in that it has a body having at least one movable part enabling it to occupy at least two different positions, namely a so-called open position in which the device serves as a means of extracting a measured amount of washing powder, and a so-called closed position in which the device acts as distribution means, the device being placed, in this last-mentioned position, in the drum of the washing machine.

For the purpose of use, the device is first put in the open position for direct extraction of washing powder from the packet. After being filled with powder to the desired level, the device is restored to its position of use, that is to say the closed position, in which it can be locked. The device is

then introduced into the drum of the washing machine, in the middle of the linen. A suitable number of suitably sized holes permit the progressive diffusion of the product as the washing machine drum rotates during the washing cycle. On completion of the operation, the device is recovered, completely empty of powder, from the machine, and is thus thus ready for further use.

The distribution apertures are provided in the body of the device, or in the movable part of the latter.

As has previously been mentioned, the operation of extraction from the packet, which is accomplished by the device of the present invention, did not exist for distributors of washing liquids. The specialist knows that in the case of a washing powder it is necessary to use unitary doses corresponding to the properties of the powders, the load of linen, and the type of machine. A volume of an average of 250 to 600 cubic centimetres is frequently used. The invention provides devices capable of containing a volume of powder of this kind, while still being able to be easily handled, for example for insertion into packets of the smallest dimensions existing on the market.

In a first embodiment the device according to the invention comprises a body having the general shape of a shovel or scoop with a movable lid which, in the open position of the device, serves as a handle for the extraction of powder and, in the closed position, can be detachably locked on the body.

In one advantageous embodiment the lid is mounted slidably on the top part of the body, thus making it possible to level off the powder and thus permit accurate measurement.

The interior of the body may be provided with grooves enabling the lid to slide to different levels in order to introduce variable amounts of powder into the interior of the body. These grooves may be so directed that the lid occupies a horizontal or oblique position relative to the bottom of the body when the latter is laid flat.

In this embodiment it is preferred that the movable lid should be provided with perforations intended to effect the diffusion of the product during the washing. In addition, the movable lid is advantageously provided with lateral notches in which the user can place his fingers when extracting powder from the packet.

In the closed position of the device the lid can be fastened on the body by any means known to those versed in the art, for example by clipping and/or by matching shapes - which is easy to achieve because the devices in question are made of plastics material. The selection of the material will ensure that the latter is compatible with repeated use in a washing machine, while avoiding any noise of impact with the drum of the machine.

As an example which has proved advantageous from the practical point of view, one of the side walls of the body is provided at the top with notches cooperating with tongues moulded on the lid, and the lid has at one end a stop which in the closed position is applied against said wall. When the lid is mounted slidably, locking is effected in the closed position in cooperation with the grooves which are provided in the body and in which the lid slides.

In another embodiment the distributor device according to the invention comprises a body of generally spherical shape, provided with an opening, and a lid which forms an additional thickness and which in the open position leaves the opening free, while in the closed position it covers the opening after the style of a dome.

In this embodiment it is advantageous for the lid to be provided with perforations in order to effect the diffusion of the product during the washing.

In a preferred arrangement the lid is rotatable about two studs or nipples disposed opposite one another on the outside of the spherical body. It is also advantageous for the end edge of the lid to cooperate in the closed position with a stop provided on the spherical body. The lid is thus locked in the closed position when the device is inserted into the drum of the washing machine.

In order to facilitate handling, grooved portions may be provided on the outside of the spherical body, in the parts where the user's fingers will be placed; this will be useful in particular for the ex traction of powder.

In another embodiment the device according to the invention comprises a body of generally cylindrical shape, with an opening in one side wall and a pivoting drawer or scoop comprising a cylindrical wall bounded by two plane walls facing one another, each of the two plane walls being mounted pivotally on an edge of the opening in the body; when the drawer is pivoted in the outward direction (open position), it serves to extract powder, and when it is swung inwards (closed position) it acts as a distributor.

In this last-mentioned embodiment it is advantageous for the perforations effecting the diffusion of the product during washing to be distributed over the body of the device.

In yet another embodiment the device according to the invention comprises a body of generally cylindrical shape which has an opening near one end wall, and a swing lid in the form of a shovel or

scoop, mounted pivotally on the body; when this lid is swung outwards, it enables powder to be extracted and when it is closed down onto the body it covers at least part of said opening.

In this embodiment the shape of the lid is complementary to that of the opening in the body, so that the latter will be at least partly closed when the lid is swung inwards.

In this last-mentioned embodiment perforations on the body effect the diffusion of the product during the washing. In addition, a gap may be formed between the body and the lid when the latter is in the closed position, this gap also allowing the passage of the powder product.

The embodiments described above are of a construction such that in the closed position of the device the movable part is detachably fastened to the body of the latter. Widely varying means may be used for this purpose, through the action of matching shapes or the provision of cooperating surfaces on the movable part and the body respectively, for example cutouts, studs, nipples and other clip means ensuring stability in the closed position but able to be manipulated by force in such a manner that the movable part can be removed. These means are easy to produce by moulding plastics material.

In all the embodiments described above the body of the device may in addition be provided with a flat ensuring its stability when it is laid down, particularly after being filled with washing powder.

The embodiments described above have produced good results in practice in the machine washing of linen. It is however possible to use variants which are not beyond the general scope of the invention as previously defined. Thus, the structure of the movable part must be adapted to the shape of the body of the distributor device. Similarly, the method of fastening the movable part on the body may have numerous and diverse forms. This is facilitated by the fact that the device is made of plastics material. The movable part can therefore be displaced relative to the body by various movements, such as translation and/or rotation. For example, an embodiment, which is not shown in the drawings, could comprise the fastening of the movable part by screwing or clipping on the body. Such variants are within the capacity of those versed in the art. It is obvious that the definitive choice of a distributor will take into account its external shapes with a view to avoiding any damage to the linen loads.

Tests for the machine washing of linen with a washing powder distribution device according to the present invention have shown that this device provided substantial advantages. Improved effectiveness of the washing action of the powder concerned was first noted. The powder is in fact perfectly metered and, in contrast to the present washing technique, the powder is not eliminated in the water evacuation circuit of the ma chine. The device also provides a higher concentration of washing agent on the linen at the beginning of the washing cycle, thus improving soil removal.

The fact that the distribution of washing powder is metered and progressive makes it possible to avoid overconsumption of product.

The device according to the invention combines the functions of extraction and distribution. Thus, extraction from the packet, measurement and loading in the washing machine can be effected in a single operation with this device. It is no longer necessary, as it is at present, to extract powder several times with a beaker until the recommended dose is obtained, and then also to transfer this dose to a compartment (or drawer) in the washing machine.

It may also be pointed out that parasitic depositions of washing powder in certain parts of the machine are avoided because of the invention. After having been introduced into the drum and undergoing the washing cycle together with the linen, the device according to the invention is recovered completely empty of powder and is thus ready for further use, while the machine is not soiled by parasitic depositions which it would have been necessary to clean off.

The invention will now be illustrated, without being in asny way limited, by the description given below with reference to the accompany drawings, in which:

Figure 1 shows in perspective a first form of construction of the device according to the inventiOn,

Figure 2 is another view in perspective illustrating in greater detail the structure of the device shown in Figure 1,

Figure 3 is yet another view in perspective illustrating a method of utilizing the device shown in Figure 1,

Figure 4 shows an operation of extracting powder from a packet with the aid of the device shown in Figure 1,

Figure 5 is a perspective view of another form of construction of the device of the invention, showing said device in the closed position,

Figure 6 is a perspective view of the device shown in Figure 5, but in the open position,

Figure 7 is a view in perspective of another form of construction of the device, in the closed position,

Figure 8 is a view in perspective of the device shown in Figure 7, but in the open position,

Figure 9 is a view in perspective of another form of construction of the device of the invention, said device being in the closed position,

Figure 10 is yet another view in perspective showing the device of Figure 9 in the open position, that is to say in the extraction position.

The device shown in Figures 1 to 4 is given the general reference numeral 1. It is composed of a body 2 having the general shape of a shovel or scoop, and of a lid 3 which is movable by sliding. The lid 3 is provided with perforations 4 permitting the diffusion of the powder in the course of the washing cycle.

Figure 1 shows the device in the closed position, in which the lid 3 is fully inserted by sliding, so as to cover the open top 6 of the body 2.

Figure 2 shows the body 2 and the lid 3 separately in order to illustrate their assembly. On each side of the opening 6 small bars or studs 10 are formed at the top of the body 2. In the example selected two rows of three small bars 10 can be seen on the respective sides of the opening 6. Small bars 11, 12 are provided on each internal side face of the body 2 and, in conjunction with the top bars 10, define a passage 15 serving as a groove. There is thus one groove 15 on each side of the opening 6. The lid 3 can be engaged by sliding in said grooves 15 in order to be placed in position on the body 2. It will also be noted that the pair of small bars 12 are provided with inclined surfaces 13, the purpose of which will be explained later on with reference to Figure 3. Finally, the face 14 of the body 2 is provided at the top with notches 9.

On its face turned towards the interior of the body 2 the lid 3, as shown in Figure 2, is provided with three integrally moulded tongues 7 which, on the sliding of the lid 3 in the grooves 15 engage in the notches 9 provided on the top of the face 14 of the body 2. The lid 3 is also proided with a small plate-like portion 8 which serves as a stop, being applied against the face 14 of the body 2, when the lid is placed in position on the body. It will also be noted that the lid is advantageously also provided with notches 5 permitting easy manipulation, particularly during filling with washing powder.

Figure 3 illustrates the device of Figure 1 when it is in the open position, that is to say ready for extracting powder.

Figure 4 illustrates the utilization of the devvice shown in Figure 3 as an extraction means. In the situation shown in Figure 3 the lid 3 is partially engaged inside the body 2 by passing it along the inclined portions 13 of the bars 12. The lid 3 remains held in this position because the tongues 7 are in addition inserted into the corresponding notches 9 in the body 2. In the position shown in Figure 3 the lid 3 serves as a handle, the user's fingers being applied at the notches 5, so that manipulation is facilitated. Figure 4 shows a packet 16 containing a washing powder 17. This figure shows clearly how the device shown in Figure 3 is used for extracting powder. Once the desired amount of powder has been introduced into the body 2, the device is closed by sliding the combined lid and handle 3 to the position shown in Figure 1. It will be noted that the closing of the device by means of the sliding lid 3 will level off the powder and consequently provide an accurate dose of powder.

Various levels of closure may be provided with the aid of successive rows of grooves 15. In Figures 2 and 3 of the drawings only a single groove 15 in which the lid 3 can slide has been shown. It is obvious that other grooves disposed opposite one another could be provided in order to make variable filling levels available. When the device is filled and closed, it can easily be laid down in a standing position because of the provision of a flat 18 on the bottom of the body 2.

For the purpose of washing, the device containing the powder is placed in the drum of the washing machine together with the linen, before the commencement of the washing cycle. The washing powder 17 contained in the device 1 gradually diffuses into the linen through the perforations 4, and also through those parts of the notches 5 which allow the powder to pass through freely in order to be dissolved in the washing water. The number and the size of the perforations 4 and notches 5 must be adapted to the washing conditions, namely the nature of the washing powder, the soil in the linen, and other parameters which have to be taken into account in the washing.

It can thus be seen that the device described above with reference to Figures 1 to 4 is very suitable for use with washing powders, becaue it serves not only for extracting powder from the packet but also for the progressive distribution of the powder by dissolution in the washing water during the washing cycle. The device is designed to hold volumes of powder varying between 450 and 600 cubic centimetres approximately.

The description of a complete example of a device according to the invention having been given in detail with reference to Figures 1 to 4, the description of alternative embodiments will be given below in a more summary manner.

The device 21 shown in Figures 5 and 6 comprises a body 22 of generally spherical shape, with an opening 26. The lid 23 is rotationally movable about two pivots 27, of which only one is visible in the drawings.

In the open position, which is shown in Figure 6, the lid 23 leaves the opening 26 free, so that the body 22 can be filled. It is sufficient to grip the device 21 firmly in the hand and to dip it into the packet containing the powder. The powder can be taken out in a single operation. Once this has been

done, the lid 23 is turned to the closed position shown in Figure 5, in which the lid 23 covers the opening 26 after the style of a dome. In this position the lid 23 is locked by the cooperation of a catch 25 on the body 22, engaging in a corresponding cutout 28 in the lid 23. Perforations 24 permit the progressive diffusion of the powder in the linen during the washing cycle.

The device 31 shown in Figures 7 and 8 comprises a body 32 of generally cylindrical shape, with an opening 36 in one side wall of the body. The movable part is a swing scoop or drawer consisting of a cylindrical wall 33 bounded by two plane walls 35, 37 disposed opposite one another. Each of these plane walls is mounted pivotally on an edge of the opening 36, as shown as 38. When the drawn is swung outwards, as shown in Figure 8, the device 31 is used for the extraction of powder. When it is swung inwards it closes the opening 36, the shape of the wall 33 being such as to achieve continuity of the cylinrical wall of the body 32. To ensure stability in the closed position shown in Figure 7, a nipple 40 is provided on each of the walls 35 to cooperate with a cutout 40a on the edges of the opening 36.

In the position shown in Figure 7, the device 31 is used for the distribution of powder. For this purpose it has perforations 34 which, in this particular case, are provided in the body 32. In order to facilitate manipulation, the device 31 has a part 39 enabling it to stand in a stable position.

The device 41 shown in Figures 9 and 10 likewise has a body 42 of generally cylindrical shape. In this case the opening is provided near one end wall, as shown at 46 in Figure 10, instead of in a side wall of the cylinder. A lid 43 in the form of a shovel or scoop comprises two walls 45, 47 disposed opposite one another and surrounding a part 43. The open scoop 43 is bounded by edges 48, 49 which are applied against the edges of two walls 52 bounding the opening 46 of the body 42. The scoop 43 is mounted on the body 42 by two pivots 50 (only one being visible in Figures 9 and 10). In the position shown in Figure 10, the device 41 is used for extracting powder, with the scoop 43 pivoted outwards. In the position shown in Figure 9 the device 41 is in the closed position. When it contains the desired amount of powder, it can be placed in the drum of the washing machine and the powder will progressively diffuse through the openings 44. In order to ensure stability in the position shown in Figure 9, a nipple 53 is provided on each of the walls 45, 47 to cooperate with a corresponding cutout 54 in the walls 52.

It is not necessary for the scoop 43 to match closely the shape of the opening 46 in the body 42. In the closed position the scoop may partly cover the opening 46 and thus allow the powder to diffuse not only through the openings 44 but also through the gaps 51 left free at the end of the body 42.

It will be noted that the devices described above as examples can easily be produced by moulding in plastics materials. When they are in the closed position, for the purpose of distributing powder inside the drum of the washing machine, it is advantageous for them to have no sharp edges which could damage the linen in the course of the washing. It is for that reason that the shapes shown in Figures 1 to 10 are advantageously rounded.

As has already been mentioned, those versed in the art will be able to make numerous modifications to or provide numerous variants of the invention without going beyond its scope.

Claims

1. Device for the distribution of washing powder in washing machines, which device is provided with distribution apertures and is characterized in that it has a body having at least one movable part enabling it to occupy at least two different positions, namely a so-called open position in which the device serves as a means of extracting a measured amount of washing powder, and a so-called closed position in which the device acts as distribution means, the device being placed, in this last-mentioned position, in the drum of the washing machine.

2. Device according to Claim 1, characterized in that the distribution apertures are provided in the body of the device or in the movable part of the latter.

3. Device according to one of Claims 1 or 2, characterized in that it comprises a body (2) having the general form of a shovel or scoop and a movable lid (3) which in the open position of the device serves as a handle for the extraction of powder (Figure 4), and in the closed position (Figure 1) is adapted to be detachably locked on the body (2).

4. Device according to Claim 3, characterized in that the lid (3) is mounted slidably on the top of the body (2).

5. Device according to Claim 4, characterized in that the interior of the body (2) is provided with grooves (15) enabling the lid (3) to slide to different levels, said grooves being able to be so directed that the lid occupies a horizontal or oblique position relative to the bottom (18) of the body (2) when the latter is laid flat.

6. Device according to any one of Claims 3 to 5, characterized in that one (14) of the side walls of the body (2) is provided at the top with notches (9) cooperating with tongues (7) on the lid.

7. Device according to any one of Claims 3 to 6, characterized in that the lid (3) is provided with a stop (8) which in the closed position is applied against the wall (14) of the body (2).

8. Device according to any one of Claims 3 to 7, characterized in that the lid is provided with perforations (4) intended to effect the diffusion of the product during the washing.

9. Device according to any one of Claims 3 to 8, characterized in that the movable lid (3) is provided with lateral notches (5) in which the user can place his fingers when extracting powder from the packet (Figure 4).

10. Device according to one of Claims 1 and 2, characterized in that it comprises a body (22) of generally spherical shape provided with an aperture (26) and a lid (23) which forms an additional thickness and which in the open position (Figure 6) leaves the opening (26) free, while in the closed position (Figure 5) it covers the opening (26) after the style of a dome.

11. Device according to Claim 10, characterized in that the lid (23) is provided with perforations (24) in order to effect the diffusion of the product during the washing.

12. Device according to one of Claims 10 and 11, characterized in that the lid (23) is rotationally movable about two nipples or pivots (27) disposed opposite one another on the outside of the spherical body (22).

13. Device according to any one of Claims 10 to 12, characterized in that in the closed position the end edge of the lid (23) cooperates with a stop (25) provided on the body (22).

14. Device according to one of Claims 1 or 2, characterized in that it comprises a body (32) of generally cylindrical shape, with an opening (36) in one side wall and a swing scoop or drawer comprising a cylindrical wall (33) bounded by two plane walls (35, 37) disposed opposite one another, each of the two plane side parts being mounted pivotally (38) on an edge of the opening (36) of the body (32), and the drawer serving for extraction in the outwardly pivoted position (open position - Figure 8) and serving for distribution in the inwardly pivoted position (closed position - Figure 7).

15. Device according to Claim 14, characterized in that the perforations (34) effecting the diffusion of the product during washing are distributed over the body (32).

16. Device according to one of Claims 1 or 2, characterized in that it comprises a body (42) of generally cylindrical shape having an opening (46) near an end wall and a swing lid (43) in the form of a shovel or scoop mounted pivotally (50) on the body, said cover permitting the extraction of powder in the outwardly pivoted position (Figuire 10), and at least partly closing said opening in the position folded down onto the body (Figure 9).

17. Device according to Claim 16, characterized in that the shape of the lid (43) is complementary to that of the opening (46) of the body (42), so that the latter will be at least partly closed when the lid is pivoted inwards (Figure 9).

18. Device according to one of Claims 16 or 17, characterized in that perforations (44) are provided on the body (42) in order to effect the diffusion of the product during washing.

19. Device according to any one of Claims 16 to 18, characterized in that in the closed position the lid (43) leaves free gaps or apertures (51) which also permit the diffusion of the powder product.

20. Device according to any one of Claims 1 to 19, characterized in that in the closed position the movable part is detachably fastened to the body of the device with the aid of shape matching means known per se or through the provision of respective cooperating surfaces on the movable part and on the body, for example cutouts, nipples, studs, and other clipping means providing stability in the closed position but adapted to be manipulated by force in such a manner that the movable part can be detached.

21. Device according to any one of Claims 1 to 20, characterized in that the body of this device is provided with a flat enabling it to stand in a stable position when laid down, particularly after being filled with washing powder.

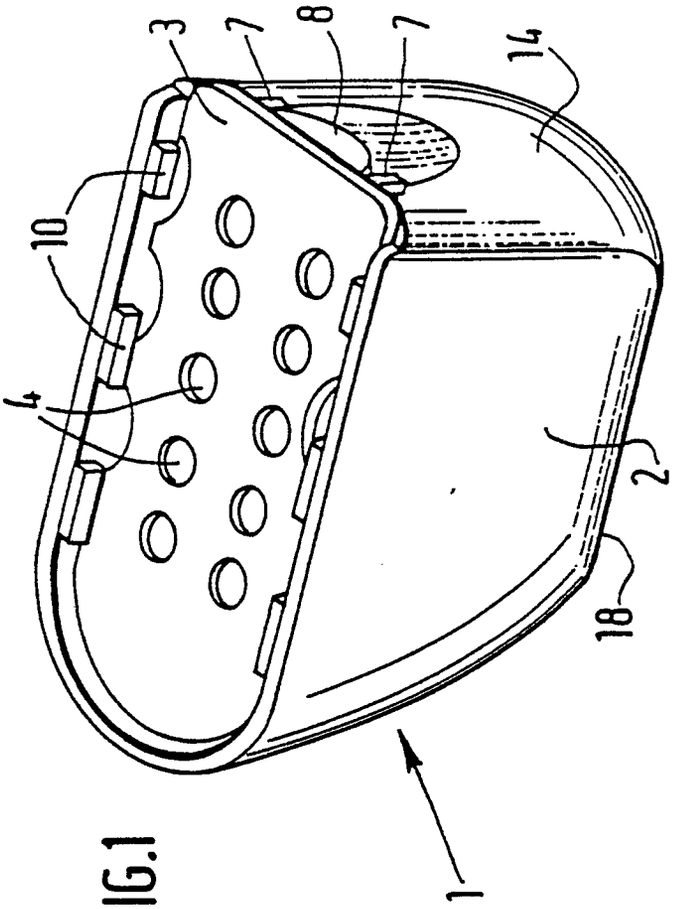

FIG.1

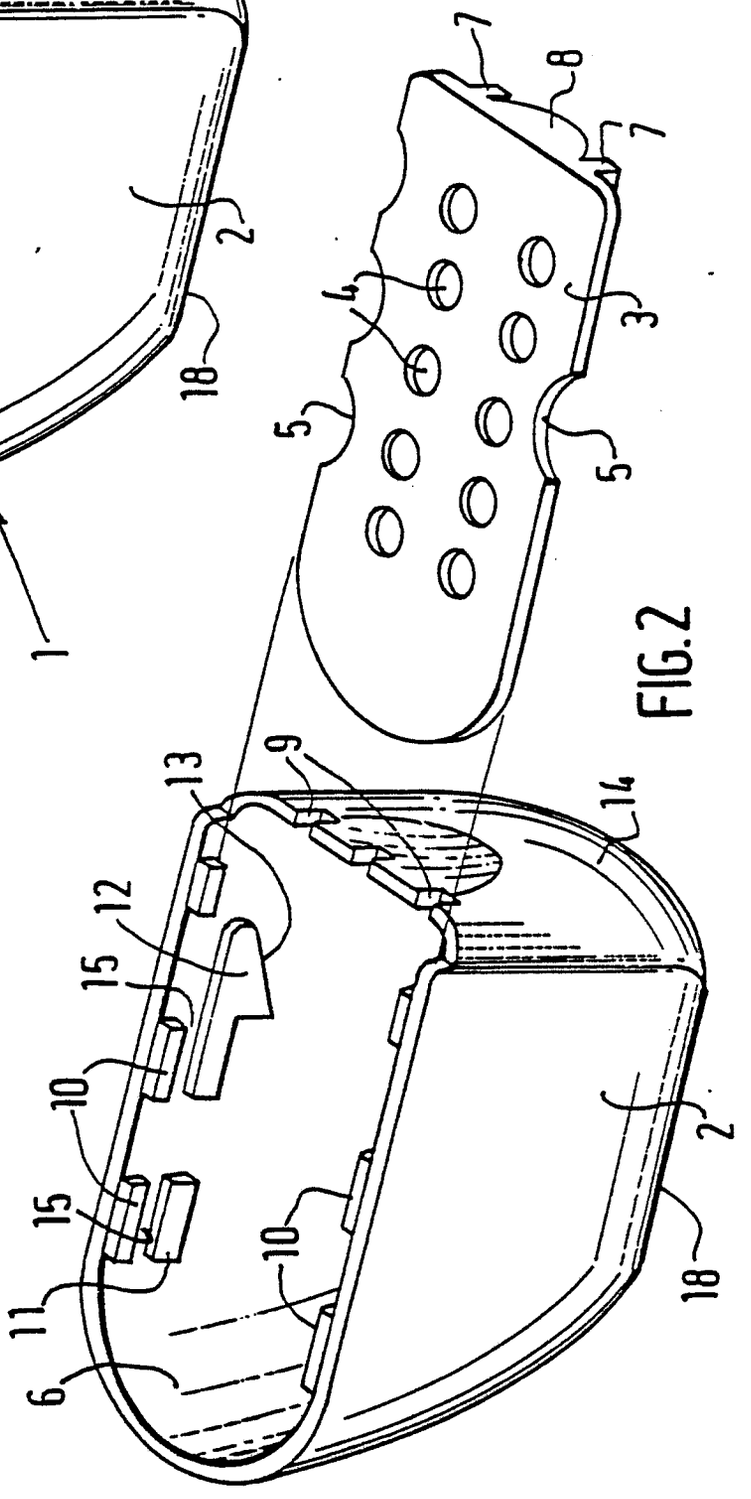

FIG.2

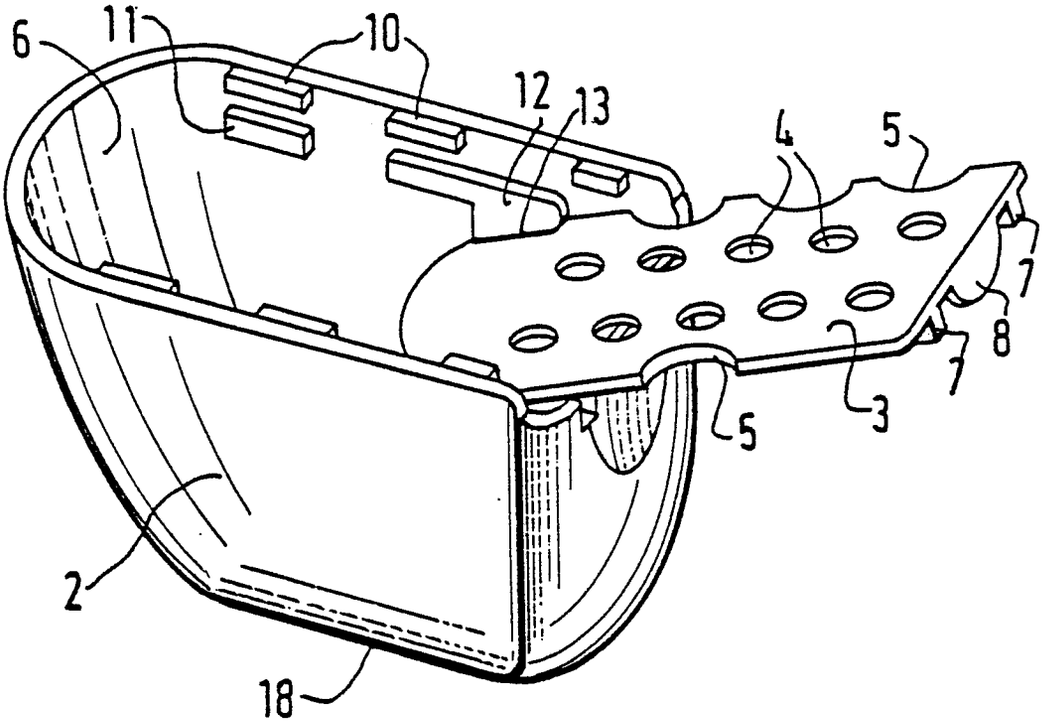

FIG. 3

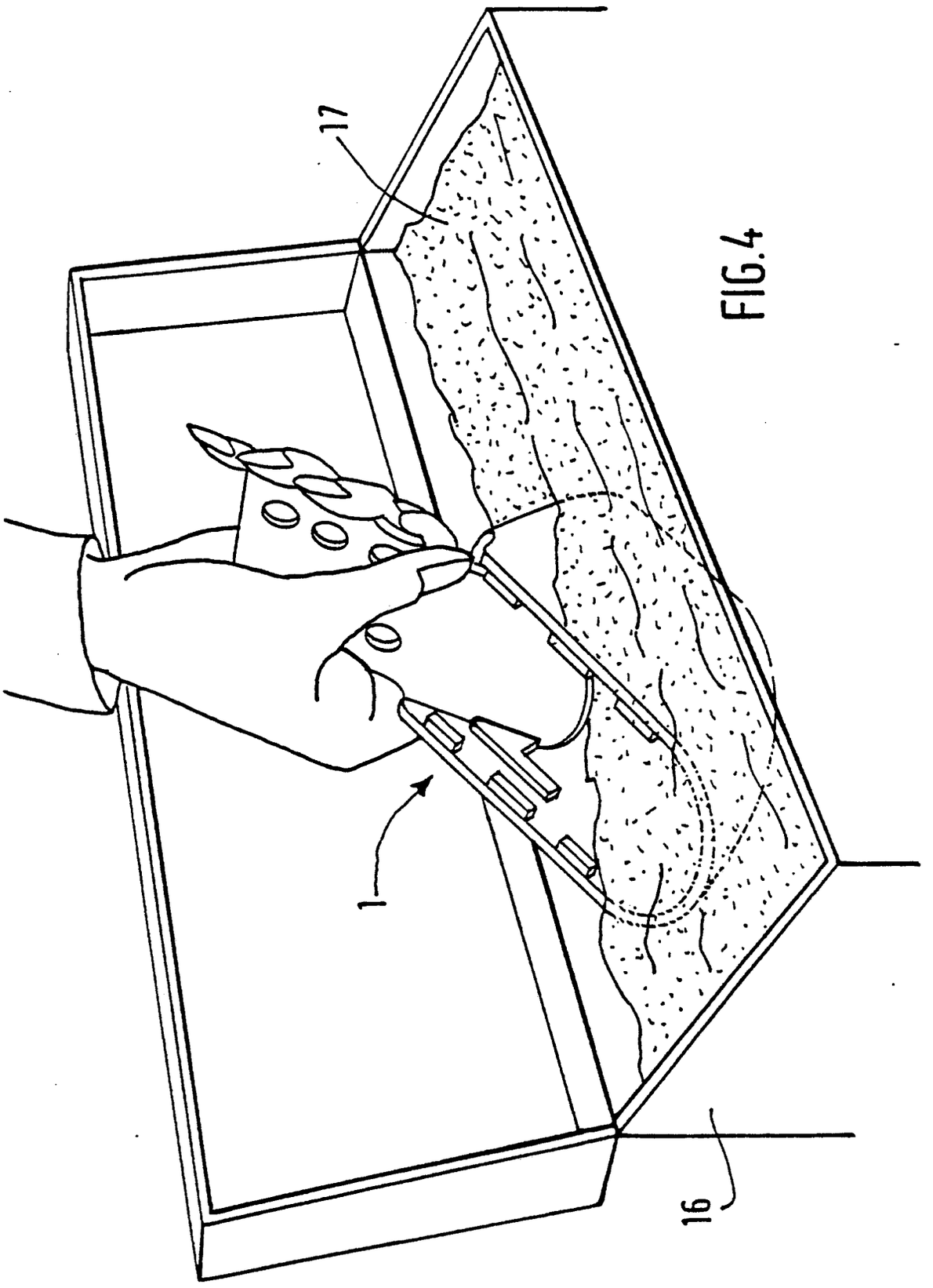

FIG.4

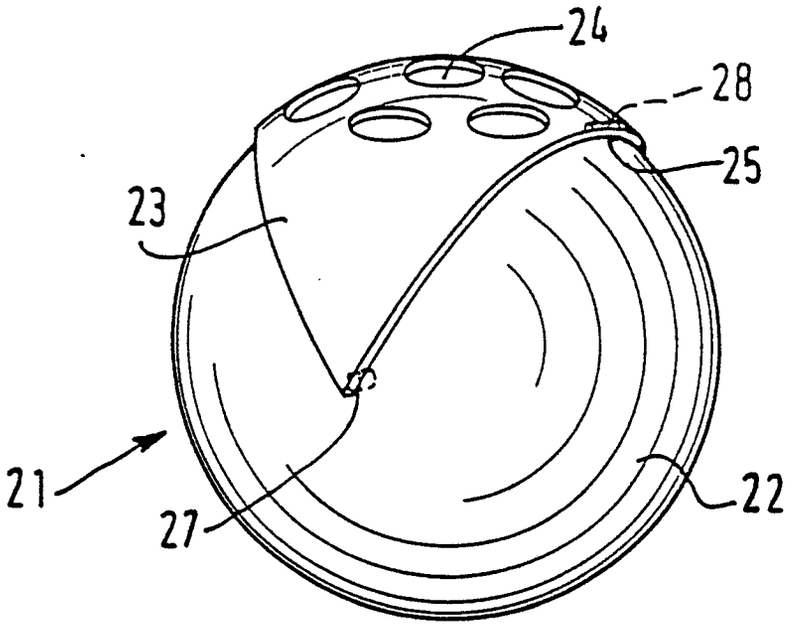

FIG.5

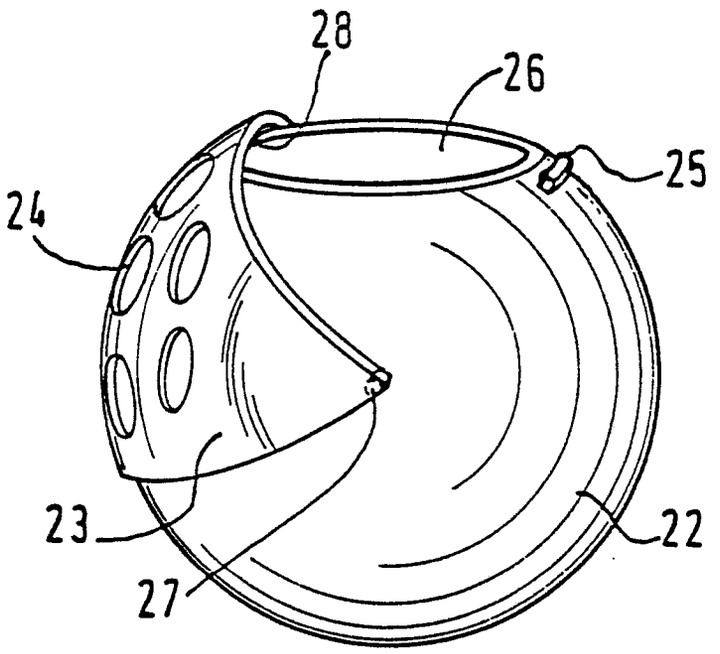

FIG.6

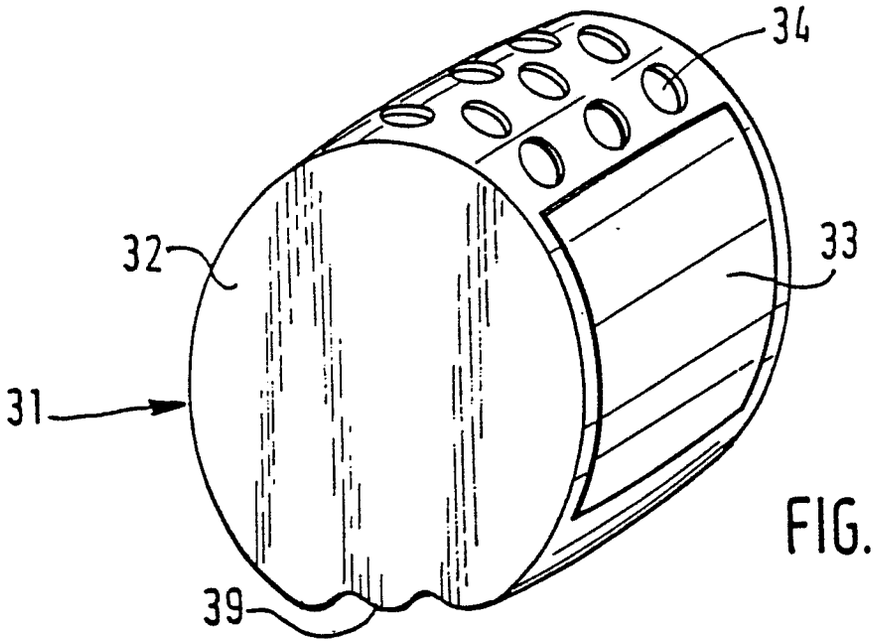

FIG.7

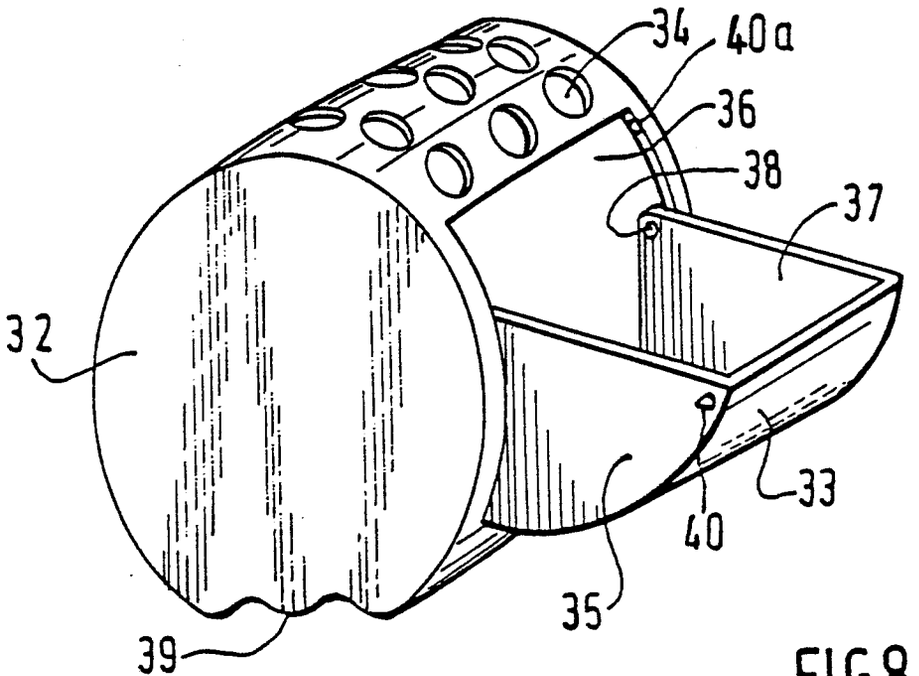

FIG.8

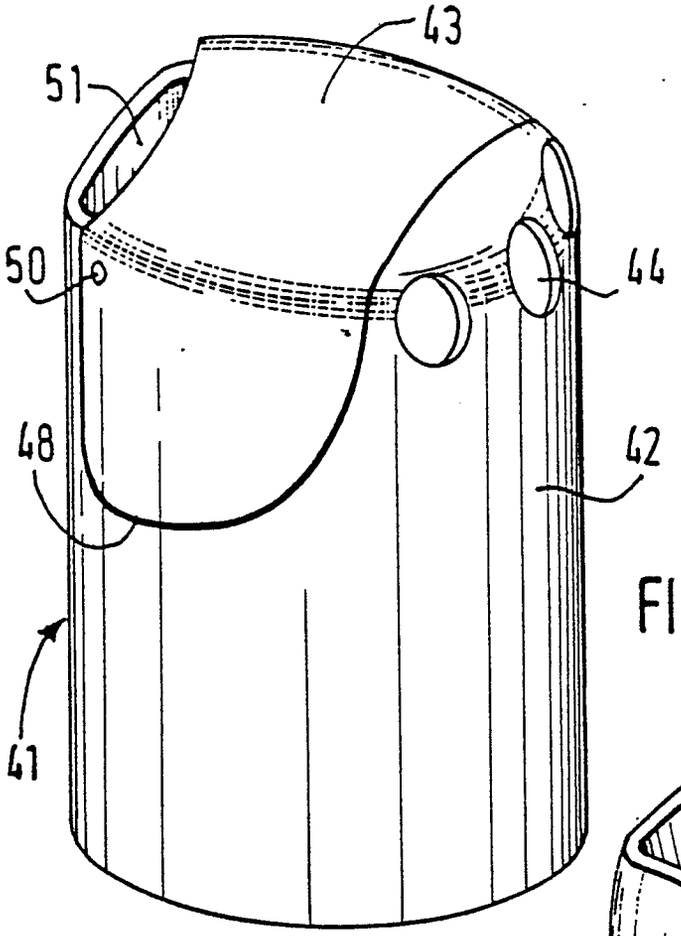

FIG.9

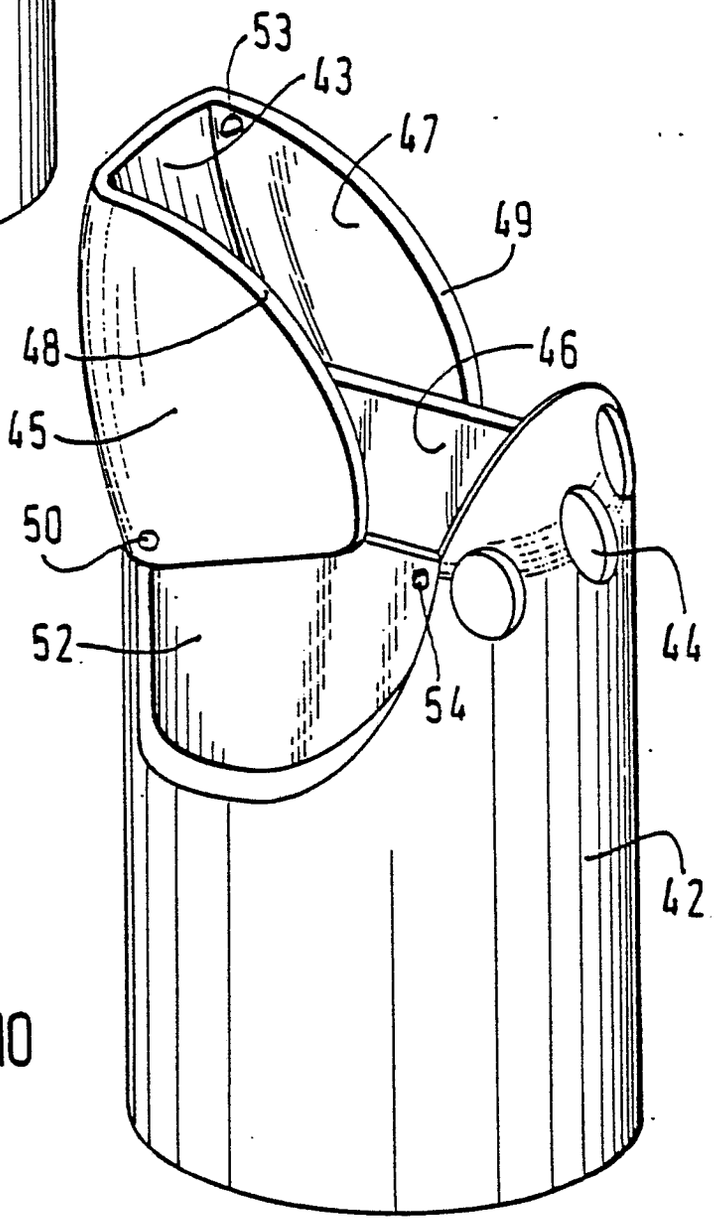

FIG.10

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EUROPEAN SEARCH REPORT

Application number

EP 87 20 1177

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.4)
X,D	US-A-3 400 808 (COLGATE PALMOLIVE) * Figures; claims *	1-3,8, 21	D 06 F 39/02
A,D	EP-A-0 151 549 (THE PROCTER & GAMBLE CO.) * Figure 1; abstract *	1-3,21	
A,D	EP-A-0 152 359 (THE PROCTER & GAMBLE CO.) * Figure 8; abstract *	1-3,8	
A	US-A-4 532 722 (SAX) * Figures 1,3,4 *	1-3,8, 10-12, 20,21	
A	US-A-3 706 140 (SYSTEMATIC RESEARCH & DEVELOPMENT) * Figures *	1-3,20	TECHNICAL FIELDS SEARCHED (Int. Cl.4) D 06 F
A	US-A-2 941 309 (WHIRLPOOL CORP.)		
A	DE-A- 870 985 (HEIDECKER)		
A	DE-A- 206 947 (POHL)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15-09-1987	COURRIER,G.L.A.

CATEGORY OF CITED DOCUMENTS

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

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