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(71) Applicant: **THE PROCTER & GAMBLE COMPANY**
Cincinnati, Ohio 45202 (US)

(72) Inventors:
- **Guillou, A. A.**
  B-1200 Brussel (BE)
- **van Rompuy T.**
  B-2800 Mechelen (BE)
- **Kelsey, S. F.**
  London W5 1QR (GB)

(74) Representative: **Engisch, Gautier et al**
B-1853 Strombeek-Bever (BE)

(54) Container comprising a metering device

(57) The present invention provides a container (10) with a metering device (20) for granular products, especially for granular detergents. This metering device allows to vary the dose dispensed form said container just prior the use of said container. Said metering device comprises a collecting chamber (34) under a dispensing channel (40). By adjusting the height of the bottom end of said dispensing channel from the bottom of said collecting chamber, the quantity of product in said collecting chamber which is able to flow from said collecting chamber through said dispensing channel to the exterior of said container is varied. The collecting chamber is refilled through an adjacent metering chamber (32).

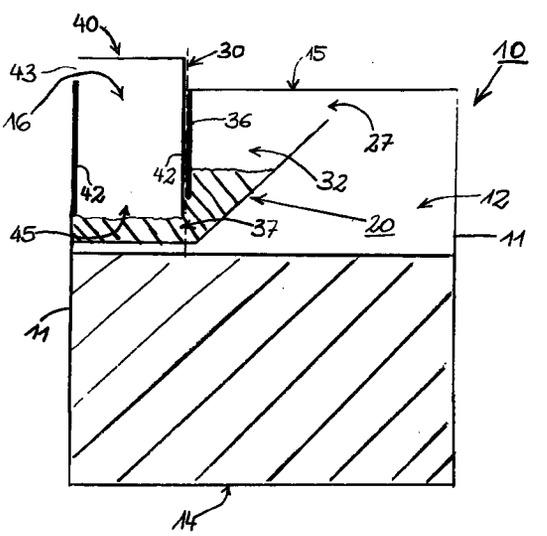

FIG. 2a

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Description

Field of the Invention

The present invention relates to a container comprising a metering device for dispensing an accurately metered amount of granular product. In particular, said metering device allows to accurately meter a variable amount of said granular product.

Background of the Invention

Metering devices are known in the art. These metering devices allow to measure out a specific and uniform amount of the total content from a container without a separate manual operation with a separate measuring device, like a scoop for example. Indeed, this manual operation is not only time consuming and messy, but may also result in an inaccurate measuring. In particular for concentrated granular detergents, the efficacy of these products is dependent upon the accuracy of the product amount used.

On the other hand, the amount of the detergent has to be varied for different washing conditions by the user. Different washing conditions can be performed with an incompletely filled dish- or laundry washing machine or different load types depending from the dirt or different degrees of water hardness. Indeed, for example, an increased amount of detergent has to be used to counterbalance a higher degree of water hardness or vice versa. Therefore the user should have the possibility to measure out smaller or greater amounts of detergent in an accurate manner to obtain optimal efficacy of said detergent for all washing conditions without wasting.

US-2 896 826 discloses a measuring dispenser adapted to regulate the amount of substance dispensed from its container. This measuring dispenser comprises an outlet channel. Said outlet channel has a part perpendicular to the side wall of said outlet channel. Said perpendicular part interrupts the direct flow from the interior of the container ensuring the dispensing of a uniform amount. Said outlet is slidable. When the distance between the container bottom wall and the lower end of said outlet channel is increased, by pulling said dispensing channel upwards, the amount of content in the measuring compartment of said dispenser is also increased. The outlet channel can be slid upwards also in the upright position of said container. Said container does not need to be inverted before said dispensing channel is pulled upwards.

On the contrary, when the content is a granular substance, the sliding of said outlet channel in the opposite direction, downwards to achieve a decrease of amount to be dispensed, is not possible when the container is in its upright position. Indeed, the capacity of the measuring compartment cannot be decreased after the measuring compartment is filled with a greater amount of granular substance. The sliding downwards of said outlet channel is impeded by the part perpendicular to the side wall of said outlet channel, and which has to be moved together with said outlet channel into the filled measuring compartment. Indeed, said perpendicular part presses on the granular substance contained in said measuring compartment. We found that only a minimal part is forced to go upwards through the passageway (14), whereas most of the pressed granular substance is pushed into the outlet channel. Therefore, once said container is in its upright position, it is not possible to decrease the amount of granular substance before the next pouring.

The only possibility to decrease the amount of a granular substance is to empty the pre-measured quantity in the measuring compartment and decrease the measuring compartment before the container is returned to its normal upright position. Otherwise, the measuring compartment is filled again with an amount which cannot be decreased afterwards in the upright position of said container as explained above. Therefore the user has to foresee the amount which has to be poured in the next pouring, in particular if the user wants to reduce the amount. This is not always possible. The user should have the possibility to change the amount to be dispensed just prior to use the container.

It is therefore an object of the present invention to provide a container with a metering device enabling to increase or to decrease the amount of granular content dispensed from said container just prior to its use also when said container is in its upright position.

Summary of the Invention

The present invention provides a container (10) for granular products comprising a metering device (20). Said metering device comprises :

a) a metering chamber (32) which meters a constant quantity of said product, said metering chamber being in connection with the interior of said container through an inlet opening (27);
b) a collecting chamber (34) which collects said metered quantity of said product, said collecting chamber being in connection with said metering chamber (32), said collecting chamber comprising an opening (16) towards a dispensing channel;
c) a dispensing channel (40) comprising a side wall (42), a spout (43) in the upper portion of said dispensing channel and an orifice (45) in the lower portion of said dispensing channel, said orifice (45) corresponding to said opening (16) of said collecting chamber (34).

Said dispensing channel (40) can be variably and reversibly inserted into said collecting chamber (34) whereby a variable amount of said collected product is dispensed through said dispensing channel.

Brief Description of the Figures

Figure 1 illustrates a partial perspective view of the top part of an embodiment according to the present invention.

Figure 2 shows a cross sectional view of the container with the metering device in an embodiment according to the present invention.

Figures 3a and 3b illustrate two different shapes of dispensing channel usable in the metering device according to the present invention.

Detailed Description of the Invention

The container (Fig. 2, 10) for each embodiment of the present invention comprises a side wall (Fig. 2, 11) defining a hollow body (Fig. 2, 12) with a base wall (Fig. 2, 14) and a top wall (Fig. 2, 15) parallel to said base wall. The opening (Fig. 2, 16) is preferably located on said top wall (15). The shape of said container may be rounded or polygonal. Said container contains granular products, as granular detergents, and includes a metering device (Fig. 2, 20).

As a preferred option, the container (10) comprises also a handle (not shown). This handle may be a separate part permanently attached to the hollow body (16) of the container. But preferably said handle is an integral part of said body (16). The base wall (14) may be adapted to receive the top wall (15) of another container to allow a stable stacking of a container over another. This means that said base wall has the reversed features of the top wall. For example, if the top wall is convex shaped and has securing ribs, the base wall is consequently substantially of the same dimension as the top wall, is concave shaped and has grooves corresponding to the securing ribs of said top wall.

As an optional embodiment, said container comprises at least a transparent part which allows to look through into the container. Therefore, it is easy for the user to control the remaining amount of content in said container. This transparent part may be of any shape and dimension. Also the location of this part is not critical to the present invention. It is also possible that said container is completely transparent.

The container (10) is made of a plastic material or cardboard. Preferably, adequate materials are chosen to be sufficiently resistant to external mechanical forces against damage or breakage. This may be achieved also with flexible plastic materials which are able to absorb the external forces acting on said material without permanent deformation or damage. Using flexible materials, parts like the handle or the base wall may be reinforced in respect to other parts to ensure a sure handling and stable standing and stacking. Suitable plastic materials may be chosen by any person skilled in the art. High or low density polyethylene, polypropylene, polyethylene terephthalate or polyvinyl chloride are, for example, suitable plastic materials for the container. Blow molding is the preferred manufacturing process of the containers made of plastic materials.

Figure 1 is a partial perspective view from the bottom of the top portion of an embodiment of the present invention showing the metering device (20). Said metering device is preferably located around said opening (Fig. 2, 16) of said container. In particular, a volume or reservoir (28) is located under said opening (16) of said container. Said reservoir (28) is surrounded by a wall (26). Therefore, said opening (16) is not directly connected with the interior of said container. At least an inlet opening (27) ensures the connection between said reservoir (28), and consequently said opening (16), and the interior of said container. Said wall (26) of said reservoir may have any possible shape. Preferably, said wall of said reservoir is shaped in such a way to direct the content of said container to said inlet opening (27) when said container is tipped into the pour direction preventing any trapping. As shown in Figures 1 and 2, at least the part of said wall (26) comprising said inlet opening (27) is inclined towards said top wall (15) of said container. Other parts of said wall (26) may have other inclinations. The size of said inlet opening is sufficient to allow to fill said reservoir when said container is tipped into the pour position. Said inlet opening is preferably located close to the top wall (15).

The interior of said reservoir (28) is subdivided in different chambers according to their specific function. As shown in Figure 2a, with the help of the dashed line (30), said reservoir may be divided principally in two chambers: a metering chamber (32), which is in connection with the interior of said container through said inlet opening (27), and a collecting chamber (34) which is in connection with said metering chamber. Said collecting chamber comprises said opening (16) of said container. Preferably, said collecting chamber is located right under said opening (16) of said container, whereas said metering chamber is at least partially displaced from said opening (16).

As said before, said metering (32) and collecting (34) chambers perform different functions. This becomes evident during the pouring action, as illustrated in Figure 2b. Said metering chamber (32) is filled with a certain amount of granular content from said container through said inlet opening (27) when said container is tipped into the pour direction. Therefore, this metering chamber meters a certain amount which is sufficient to fill or refill the collecting chamber (34). In the embodiment of Figures 2a and 2b, said metering chamber is defined by part of said top wall (15), a part of said wall (26) of said reservoir (28) with said inlet opening (27) and a perpendicular wall to said top wall. Said perpendicular wall can be part of the side wall (42) of the dispensing channel (40) or said non-movable baffle (36). The collecting chamber together with the metering chamber contain the maximum amount of granular product which is ready to be dispensed through said opening (16) to the outside of said container.

The dispensing channel (40) comprises a side wall (42). Said dispensing channel (40) comprises a spout (43) in the upper portion of said dispensing channel and an orifice (45) in the lower portion of said dispensing channel. This dispensing channel is inserted into said opening (16) of said container. In this manner, said orifice (45) corresponds to said opening (16). Preferably, a certain insertion height of said dispensing channel closes said opening (16). The insertion height of said dispensing channel can be changed upwards or downwards through said opening (16). The side wall (42) is rounded or rectangular and does not comprise any protruding part which prevents said dispensing channel from being able to be reversibly pushed into said collecting chamber regardless that said container is in its upright position and that said collecting chamber is filled with granular product.

A different insertion of said dispensing channel inside said opening (16) changes the height of said orifice (45) relative to the bottom of said collecting chamber. The effect of changing the height is to change the volume of granular product that communicates with the orifice of said dispensing channel. Indeed, the granular product that does not lie immediately beneath said orifice (45) is unable to pass through said dispensing channel (40) and remains in said reservoir (28) when said container is tipped into the pouring direction. Therefore, a different quantity from the total amount present in said collecting chamber can be dispensed by varying the height upwards or downwards of said dispensing channel. Indeed, a small amount can be dispensed, if the height of the orifice of said dispensing channel is low over the bottom of said collecting chamber. This amount can be increased by increasing the height of said orifice.

Figures 3a and 3b show other possible shapes of the dispensing channel usable in the present invention. The dispensing channel of Figure 3a comprises said orifice (45), a top wall (46) and a side wall (47). The side wall (47) in this embodiment of said dispensing channel comprises a window (48). Said window represents the spout of said dispensing channel. Therefore, said window is located in the pour direction. As described above, this dispensing channel can vary its height form the bottom wall of said collecting chamber in either direction upwards or downwards. In this manner, only the amount of granular product which is immediately below said orifice is able to dispensed through said dispensing channel. Any choice of the dose can be achieved when said container is in its upright position. Tipping said container in the pour direction, the selected amount flows through said dispensing channel to the exterior of said container through said window (48).

Another example is shown in Figure 3b. In this case, the side wall (47) comprises a series of flow holes (50). This dispensing channel further comprises a top wall (46). By changing the height of said dispensing channel a variable amount of granular product contained in said collecting chamber is in communication with different flow holes of different dimensions and/or with a variable number of flow holes. Therefore, a selected quantity of product is able to flow through said dispensing channel outwards from the uppermost hole in said side wall (47) acting as said spout (43). As before, the user has the possibility to vary the dose of granular product when said container is in its upright position. The position, dimensions and the number of the flow holes (50) are determined by the diameter of said dispensing channel, the quantity of the different doses desired, the capacity and the depth of said collecting chamber.

As said before, the dosing channel (40) has to be positioned in different heights relative to the bottom of said collecting chamber to vary the quantity of granular product dispensed through said spout (43). The variable positioning of said dispensing channel will preferably be sufficiently accurate so to obtain that the dispensed quantity remains always the same for any selected dosing, i.e. to ensure the reproducibility of any selected dosed amount. Nevertheless, the manipulation of said dispensing channel in height has to be simple and immediate for the user. For example screw threads, snapping recesses and corresponding protrusions or ratchets between said dispensing channel and said opening (16) of said container may be employed to variably position in a defined height said dispensing channel. The change of height of said dispensing channel may be achieved by sliding or rotating said dispensing channel upwards or downwards. As a preferable option, the height of said dispensing channel can be varied with the help of a lever or a similar device attached to the top of said dispensing channel. This lever remains easy to be manipulated by a user of said metering device (20). A clear indication of the amount which will be dispensed thereafter by tipping said container in the pour direction can be added to said dispensing channel itself and/or on the external surface of the top wall (15) of said container.

As a preferred option, said dispensing channel comprises a child resistant restraint means to limit the possibility of a child removing granular detergent from said container and accidentally ingest the detergent. For example, a possible child resistant restraint means which can be used in the present invention are caps which have to be at the same time pressed and screwed in order to detach them from a container.

As a preferred embodiment of the present invention, said metering chamber (32) is always partially segregated from said collecting chamber (34) by a part of said side wall (42) of said dispensing channel. The passageway (37) provides the necessary communication between said metering and said collecting chamber. This partial segregation of said metering chamber from said collecting chamber ensures that the flow, and therefore the continuous refilling of said collecting chamber from said metering chamber, is interrupted during the normal course of pouring. This continuous refilling of said collecting chamber during pouring may otherwise result in a dispensing of an inaccurate amount of granular product.

As a preferred option of the latter embodiment, said metering chamber (32) is partially segregated from said collecting chamber (34) by a non-movable or fixed baffle (36). This fixed baffle ensures that the flow interruption always happens at identical conditions. Furthermore, in this manner the size of said passageway (37) remains constant. In the case of part of said side wall (42) of said dispensing channel (40) acting as segregation, the dimension of said passageway is variable with the height of said dispensing channel itself. As before, said baffle achieves a more accurate dispensing of granular product. Said baffle projects from the top wall of said container intermediate to said metering and said collecting chamber. Preferably, said baffle is substantially perpendicular to the top wall of said container. Therefore, said baffle is substantially parallel to said side wall (42) of said dispensing channel.

Said metering device (20) is preferably located in the most upper portion of said container (10). In this manner, said metering device is separated from the rest of the content of said container. This ensures a more accurate measuring, since the content gets in contact with said metering device only during pouring when said content is metered in said metering chamber. To have the possibility to refill said container (10) with a granular product, the top wall (15) may also comprise a refilling opening. This refilling opening has a sufficient aperture to allow an easy refilling from a refilling bag or pouch. As a preferred option, the container comprises a leakage tight, reversibly detachable lid substituting the top wall (15) completely or only partially. Therefore, the refilling may be achieved either by having said refilling opening and/or detaching said lid. When said container comprises a lid, said metering device (20) is preferably part of said lid or said metering device is completely inserted into a suitable orifice of said lid. This does not change the functioning mode of said metering device as will be described below. Preferably said lid is made of a plastic material and manufactured through injection molding.

The function of the container (10) with said metering device (20) of the present invention as normally operated is as follows. In its upright position, a pre-metered product volume is resting in the collecting chamber (34). The user adjusts the height of the dispensing channel. In this manner, the user selects the desired quantity of product just prior to the use of the container (10) itself, before the dispensing through the spout (43) of said dispensing channel. Thereafter, the user tips said container in the direction of said spout (43). As the container is tipped, the quantity of the product selected previously by adjusting the height of said dispensing channel flows through said dispensing channel and out of said spout (43). On the contrary, the granular product that does not lay immediately beneath said orifice (45), as determined by the height of said dispensing channel (40), is unable to pass through said dispensing channel and remains in said reservoir (28) also when said container is tipped into the pouring direction.

Simultaneously, the granular product from the container (10) flows through the inlet opening (27) into the metering chamber (32). This flow continues until said metering chamber is filled and blocked by a part of the side wall (42) of said dispensing channel or by the fixed baffle (36). When the user finishes pouring the selected quantity of product, the container is returned to its upright position. A certain amount of granular product flows from the metering chamber (32) through the passageway (37) into the collecting chamber (34) to fill said collecting chamber again. A rest amount of the metered amount remains in the metering chamber. When the user wants to re-use the container with the metering device (20), the height of the dispensing channel can be re-adjusted again to select a different quantity before the tipping of the container into the pour position as described above. Therefore the metering device according to the present invention gives the opportunity to chose the quantity to be dispensed just prior to use the container. The user has also the possibility to change a previous selected quantity by simply readjusting the height of the dispensing channel of said metering device also when said container is in its upright position.

The container according to the present invention can be used for any dispensing of granular substances. Preferably, said container may contain dish washing or laundry granular detergent.

Claims

1. A container (10) for granular products comprising a metering device (20), said metering device comprising :

   a) a metering chamber (32) which meters a constant quantity of said product, said metering chamber being in connection with the interior of said container through an inlet opening (27);
   b) a collecting chamber (34) which collects said metered quantity of said product, said collecting chamber being in connection with said metering chamber (32), said collecting chamber comprising an opening (16) towards a dispensing channel;
   c) a dispensing channel (40) comprising a side wall (42), comprising a spout (43) in the upper portion of said dispensing device and an orifice (45) in the lower portion of said dispensing device, said orifice (45) corresponding to said opening (16) of said collecting chamber (34);

   characterized in that said dispensing channel (40) can be variably and reversibly inserted into said collecting chamber (34) whereby a variable amount of said collected product is dispensed through said dispensing channel.

2. A container according to claim 1 characterized in that said metering device (20) further comprises a

non-movable baffle (36) substantially parallel to said side wall (42) of said dispensing channel (40) dividing said metering chamber (32) from said collecting chamber (34).

3. A container according to any of the preceding claims characterized in that the part of the wall (26) of said metering device (20) comprising said inlet opening (27) is inclined towards the top wall (15) of said container.

4. A container according to any of the preceding claims characterized in that said dispensing channel (40) is slid or rotated in the different heights.

5. A container according to any of the preceding claims characterized in that screw threads, snapping recesses with corresponding protrusions or ratchets are employed between said dispensing channel (40) and said opening (16) to variably position said dispensing channel in a defined height.

6. A container according to any of the preceding claims characterized in that said side wall (42) of said dispensing channel comprises a window (48) or flow holes (50).

7. A container according to any of the preceding claims characterized in that said dispensing channel (40) comprises a child resistant restraint means.

8. A container according to any of the preceding claims characterized in that said container further comprises a lid, said lid comprising an opening connecting the interior with the exterior of said container, and said metering device (40) being an integral part of said lid or said metering device being inserted in an orifice of said lid.

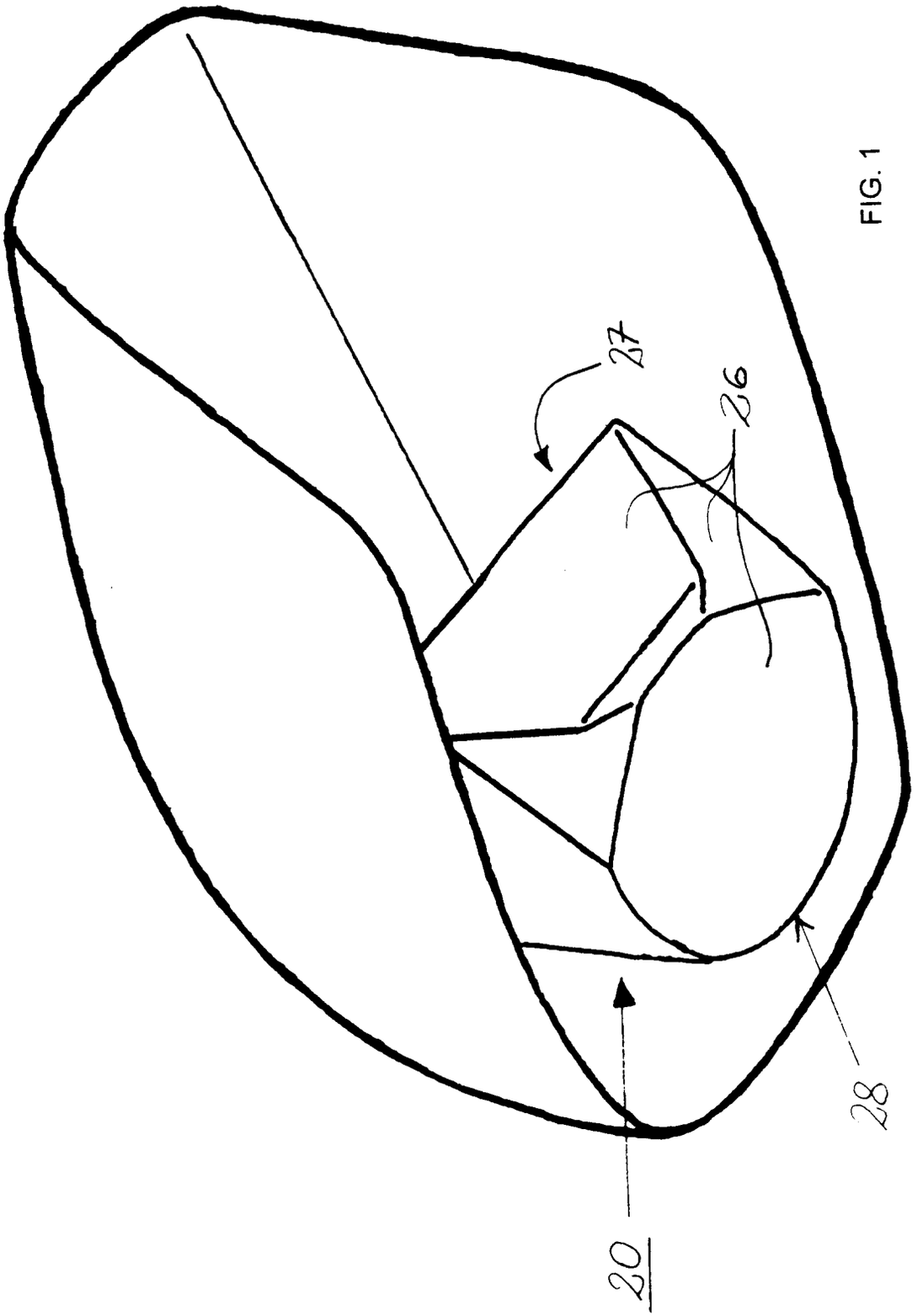

FIG. 1

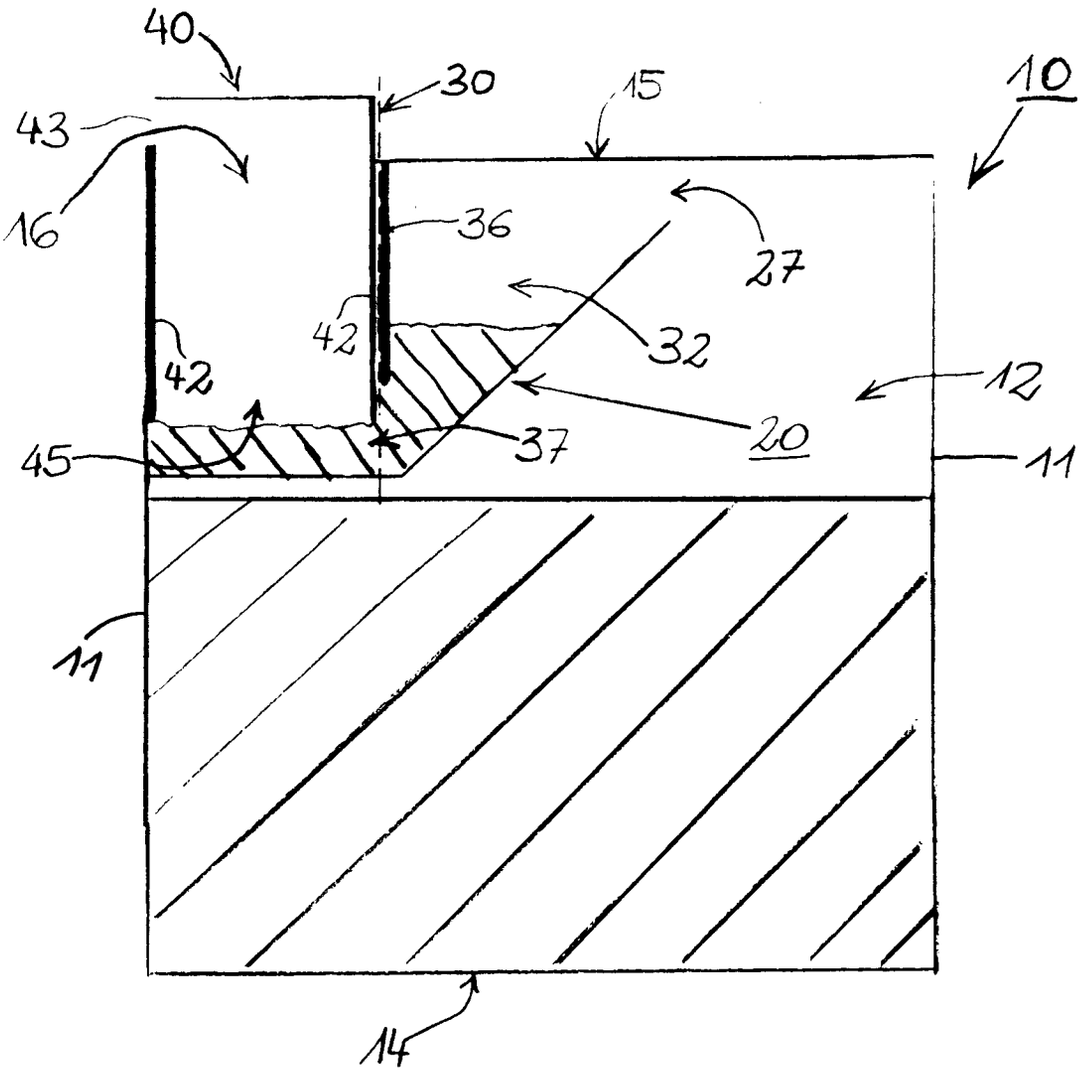

FIG. 2a

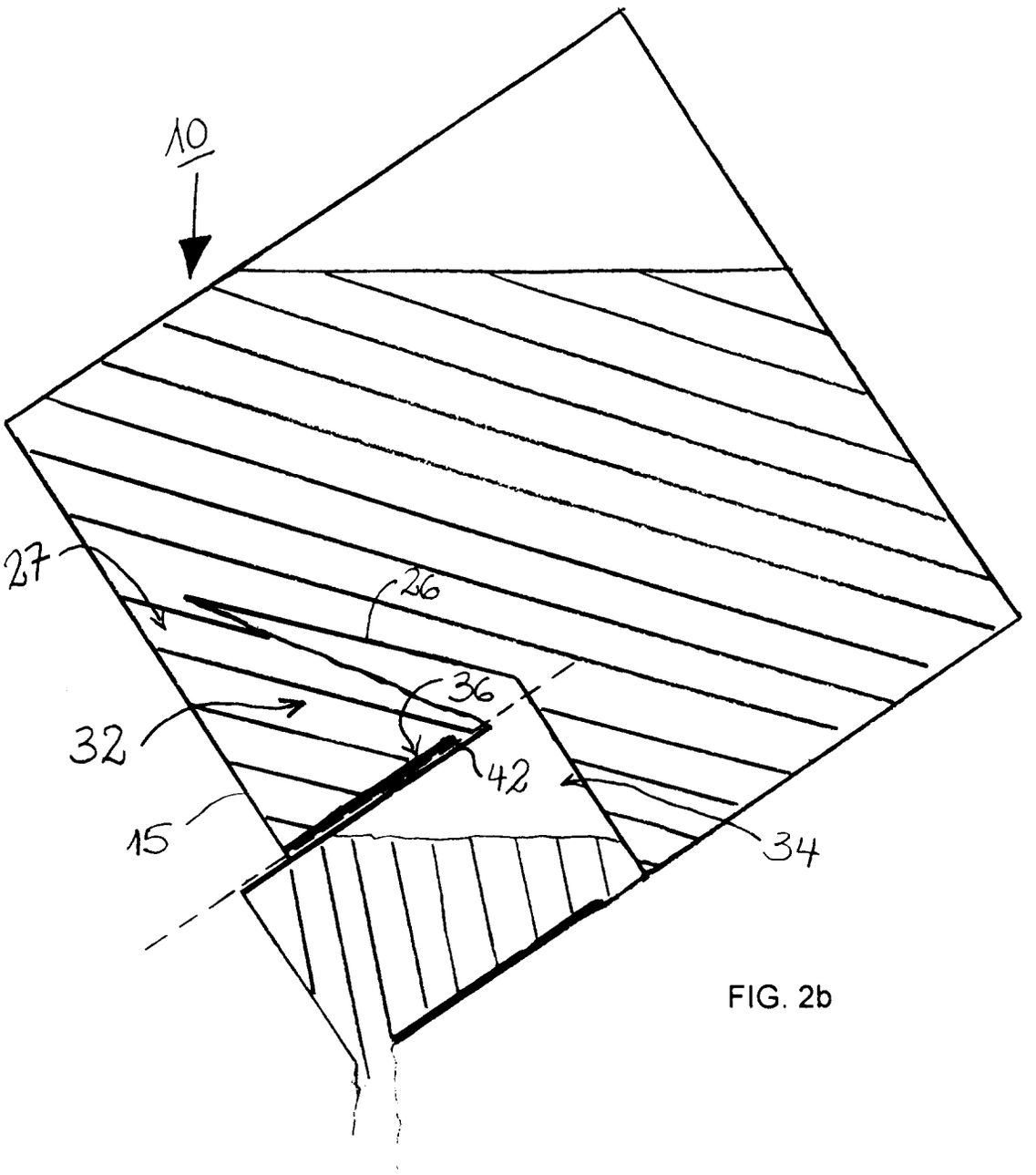

FIG. 2b

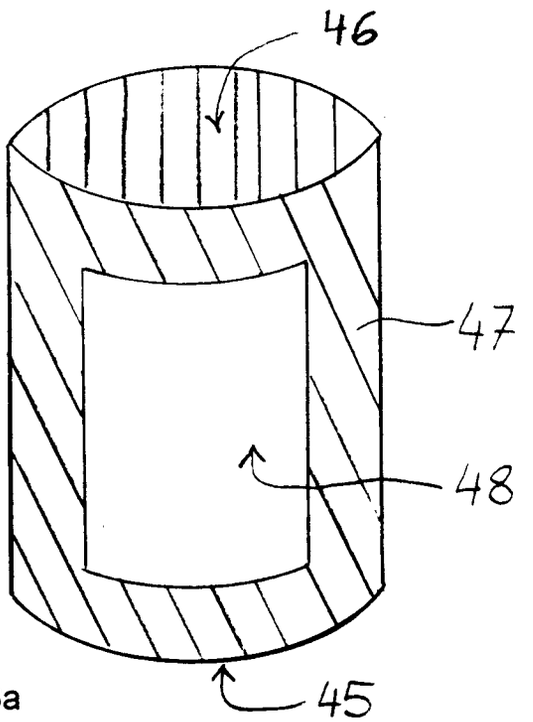

FIG. 3a

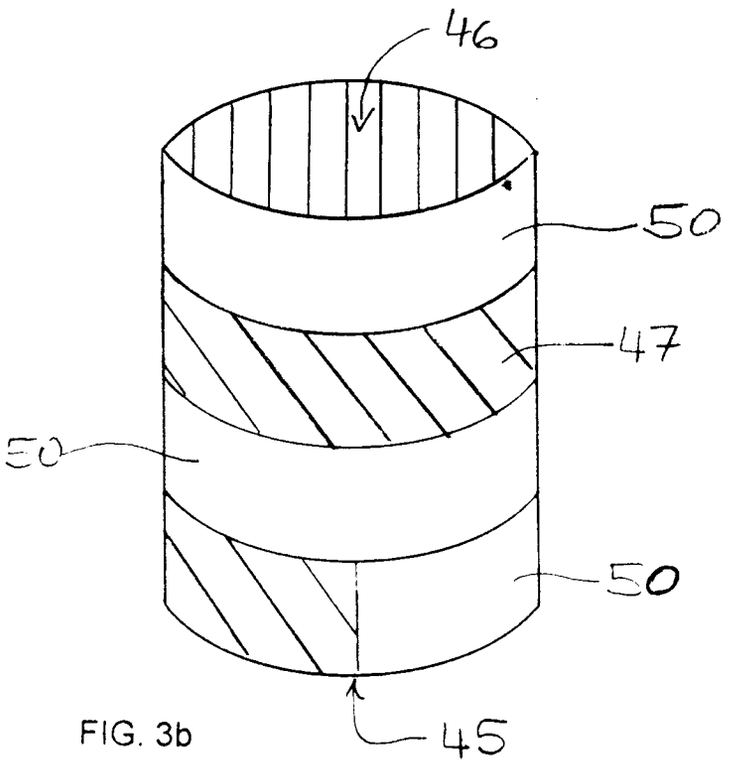

FIG. 3b

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 30 5965

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.6)
D,X	US-A-2 896 826 (MATTER) * the whole document *	1,4	B65D5/76 B65D25/52
X Y	US-A-2 799 436 (BERNHARDT) * column 4, line 34 - column 6, line 71 * * column 7, line 37 - column 8, line 67 * * figures 1-3,5-8 *	1-4,6,8 5,7	
Y	DE-A-26 11 738 (BOES) * page 8, line 9 - page 10, line 13; figures 1-3 *	5	
Y	FR-A-1 077 021 (PASQUET) * the whole document *	7	
X Y	CH-A-681 293 (BARTHA) * column 2, line 41 - column 4, line 43; figures 1-4 *	1,2,4 3,6,8	
Y	DE-A-26 27 496 (BOES) * page 6, line 7 - page 7, line 34; figures 1-4 *	3,8	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
Y	DE-A-35 44 748 (KOHN) * column 5, line 19 - line 50 * * column 7, line 58 - column 8, line 18 * * figures 3,9 *	6	B65D G01F
X	GB-A-2 220 919 (SEIKOSHA) * page 9, line 9 - page 10, line 8; figure 7 *	1-4	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	23 January 1995	Martens, L

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
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E : earlier patent document, but published on, or after the filing date
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