(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 667 295 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **95100302.9**

(51) Int. Cl.[6]: **B65D 5/54**

(22) Date of filing: **11.01.95**

(30) Priority: **27.01.94 IT BO940026**

(43) Date of publication of application:
16.08.95 Bulletin 95/33

(84) Designated Contracting States:
AT BE CH DK ES FR GB IT LI NL PT SE

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(54) Composite packaging box and method of manufacturing same.

(57) The two parts which make up the packaging box are produced by die-cutting from a single sheet of cardboard, are joined together in order to form a single-piece box and are optionally divided by cut lines and weakened lines (16, 17, 18, 19). The top part (B) of the box has longitudinal slots (21, 22, 23, 24) cut into the corners of its bottom part (A), these slots suitably reducing the width of that portion of the side walls in which they are made. When it is to be used, the box is opened out, its side walls are positioned so as to form a rectangle, and the bottom flaps are closed, after which means act along the said cut and weakened lines in order to separate the two parts of the box from each other and to ensure that the size of the transverse section at the bottom of what is to be the top part (B), with the said slots cut into the corners, is reduced so that it can be inserted telescopically into the bottom part (A) of the said box. The box is thus ready to receive the product, and from this point on it can be used in the same way as a conventional packaging box.

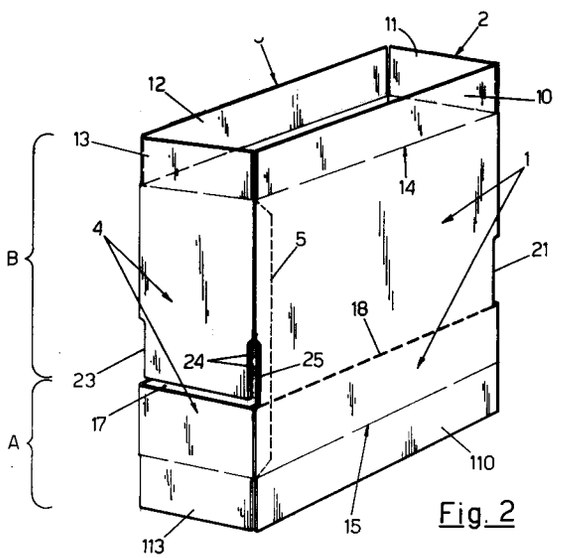

Fig. 2

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When packaging prepacked products which are then to be displayed on shelves at the retail outlet, for example bottles of products such as toiletries and household cleaners, it is known to use corrugated cardboard packaging boxes, formed of a bottom or so-called tray part, which is open at the top and all or part of which is shallower than the height of the product to be packaged, and of a top or so-called lid part, which is open at the bottom and is coupled to the bottom part in order to complete the sides of the box and to close it off at the top. Once the packaged product has reached the sales outlet, the top part of the box is removed while the bottom part, containing all the products arranged in it, is placed in a single operation on the shelves, where the products are clearly visible and can be easily picked up by the shoppers.

A packaging box of this type, produced according to current methods, is expensive to produce, transport and use, precisely because it is made of two individual, and initially separate, pieces which, when the box is to be used, have to be handled by separate feed magazines and by separate squaring-up means and then have to be assembled and closed.

The invention intends to overcome these and other disadvantages with a novel method according to which, at the time at which it is to be used, the packaging box is in the form of a conventional single-piece box. Contrary to the conventional packaging box, the box according to the invention is initially taller and has cut lines and optionally weakened lines down its side walls which theoretically divide the box into a bottom part and a top part. The top part additionally has longitudinal slots cut into its corners, beginning at its bottom edge and extending over a portion of its height, these slots suitably reducing the width of that portion of the side walls in which they are made. These slots and the said cut and weakened lines are made in the packaging box during the die-cutting stage of its production.

During storage and transportation, the box according to the invention may be treated in the same way as a conventional single-piece box of prestuck type. Even when it is to be used, the box is stacked together with other boxes in a single feed magazine from which it is extracted using conventional means. The box is opened out and squared up by conventional means and is sealed at the bottom using means which are also known, after which novel means act along the cut and weakened lines in order to separate the box into two parts and to ensure that the size of the transverse section at the bottom of what is to be the top part, which has the slots cut into the corners, is reduced so that it can be inserted telescopically into the bottom part of the said box. From this point on, the box is treated in an entirely conventional manner.

Further features of the invention, and the advantages which derive therefrom, will be made clearer in the following description of a preferred embodiment of the invention, which embodiment is illustrated, purely by way of nonlimiting example, in the figures of the two attached sheets of drawings in which:

- Fig. 1 illustrates the flat packaging box, as it appears when it emerges from the die-cutting stage;
- Fig. 2 illustrates a perspective view of the prestuck and squared-up box at an intermediate stage of the manufacturing cycle;
- Fig. 3 illustrates the box in longitudinal section, with its bottom end closed up and during a stage of the manufacturing cycle to which it is subjected before it is filled;
- Fig. 4 illustrates a perspective view of the box, after the stage shown in Figure 3, in which the two parts which make up the box have already been telescopically coupled together, and before the products are inserted into the said box;
- Fig. 5 illustrates a side view of a box at the same stage as that shown in Figure 4, but which differs from it in that it is formed, by way of example, of two differently shaped parts.

From Figures 1 and 2 it may be seen that, in a known manner, the box according to the invention has four side walls 1, 2, 3, 4, with an end tab or attachment seam 5, these walls being separated by parallel fold lines 6, 7, 8, 9 and having opposite closure flaps 10, 110, 11, 111, 12, 112, 13, 113 to which the said walls are connected via additional fold lines 14 and 15 which are parallel with each other and perpendicular to the said fold lines 6, 7, 8, 9. The box is usually supplied by the paper manufacturer in the stage shown in Figure 2, with the attachment seam 5 stuck, or secured in some other way, to the internal face of the wall 1 and with the tube formed by the side walls in the flattened position i.e. with the side walls 1 and 4 lying in the same plane, in which the corresponding flaps 10, 110, 13, 113 also lie, and superimposed on the other plane in which the side walls 2 and 3 with their associated flaps 11, 111 and 12, 112 lie. In this state the box can be stacked together with other similar boxes and can be stowed and transported taking up very little space.

The packaging box according to the invention differs from a conventional packing box in that its side walls are suitably taller than the height of the product to be packed and in that during its production by means of die-cutting, weakened lines, for example perforated lines, and cut lines are made in

the said side walls 1, 2, 3, 4, 5. As shown in the nonlimiting example of Figure 1, these lines are mutually aligned and parallel with the fold lines 14 and 15, but are closer to the line 15 than the line 14. In particular the smaller side walls 2 and 4 are provided with the cut lines 16 and 17 respectively, while the larger walls 1 and 3 and optionally also the attachment seam 5, are provided with weakened lines 18, 19, 20 formed by a succession of small cuts or perforations.

During the die-cutting of the box, longitudinal slots 21, 22, 23, 24 of equal length, with one end abutting on the cut and weakened lines 16, 17, 18, 19, 20, are made over the fold lines 6, 7, 8, 9, in the side walls of what will be the top part B of the box. In a corresponding position opposite that of the slot 21, the wall 1 may optionally have a recess 25 which repeats one half of the shape of the said slot 21 and which is designed to be superimposed over the portion of the slot 24 which is made in the attachment seam 5, when the box is prestuck as shown in Figure 2. The portion of the side walls of the box in which the slots 21, 22, 23, 24 are made, has a width which is suitably narrower than that of the other walls and more specifically, has a width approximately equal to or slightly narrower than the internal width of the box once it has been formed into a tube and opened up as shown in Figure 2.

The box's ability to be stacked during storage and transport stages is not in the least affected by the presence of the cut and weakened lines and of the slots referred to above. It goes without saying that, in contrast to the description given, the cut lines 16 and 17 may in part be interrupted by a small connection part in the intermediate zone. Similarly, the optional weakened lines 19 and 20 may be confined to the intermediate part of the side walls 1 and 3 while the remaining part may have cut lines.

The packaging box designed in this way can be inserted into the conventional magazine of a packaging machine provided with known means which take the boxes from the said magazine one at a time, open them up and close them off at the bottom. For this final stage a presser 26 as shown in Figure 3 is normally used. This presser is inserted into the open box and cooperates with a fixed or movable external abutment member 27 in order to fold the flaps 110, 111, 112, 113 which are superimposed on one another and are secured together by means of adhesives or glues. During this stage the box is firmly held between the parts 26 and 27 so that it is quite simple to attach means to the presser 26, which are diagrammatically indicated by the arrows 28, and which act as abutment elements for additional external means, indicated diagrammatically by the arrows 29, which act on the weakened and cut lines 16, 17, 18, 19, 20 and/or close to them, in order to separate the larger part B of the box from the part A held between the devices 26, 27, in order to cause the ends of the side walls of this part B which are provided with the longitudinal slots 21, 22, 23, 24 to converge towards the centre, and in order to insert the said part B of the box telescopically into the other part, as indicated by the arrows 30. Needless to say, this insertion can be carried out by axially displacing the part B or the part A, or both the parts A and B of the box.

Once the parts A and B of the box have been coupled together, the devices 28 and 29 and 26, 27 are withdrawn into the rest position and the box is in the form illustrated in Figure 4. The top ends of the slots 21, 22, 23, 24 of the part B, which represent a ribbed part which is extremely compression-resistant, rest on the corners of the side walls of the part A which constitute a similarly ribbed and compression-resistant part, while the bottom ends of the side walls of the said part B may or may not rest on the bottom of the part A. It is self-evident that with this sort of arrangement the box will have excellent strength with respect to stacking.

The product is inserted into the packaging box thus modified, after which the said box is closed at the top and is treated just like any other composite closed box. When the packaging box containing the product reaches the sales outlet, the part B is removed from the part A, leaving the product arranged on the part A which can then be displayed on the shelves in this condition.

Figure 5 illustrates a packaging box of the type in question which differs from that previously discussed by the fact that the weakened and cut lines 16, 17, 18, 19, 20 shown in Figure 1 are not mutually aligned and parallel with the fold lines 14, 15, but are in the form of a broken line, so that the top edge of the bottom part A of the box is not horizontal but oblique. Needless to say, by virtue of the same concept, the top edge of the part A of the box may have any suitable shape.

Finally it goes without saying that the description refers to a preferred embodiment of the invention to which numerous variations and modifications, especially with regards to construction, may be made, without thereby departing from the underlying principle of the invention as set out above, as illustrated and as claimed below.

The reference numerals within brackets contained in the following claims have the sole purpose of making the said claims easier to read and should not therefore be interpreted as in any way limiting the scope of protection of the claims.

Claims

1. Method for manufacturing a cardboard packaging box of composite type, including a bottom part (A) which is closed at the bottom and whose sides terminate at a certain height so as to leave it open at the top and a top part (B) which completes the sides of the box and which is provided with top closure flaps, characterized in that:
   - the bottom part (A) is initially made in a single piece together with the top part (B) and is connected to it in a detachable manner;
   - the said two parts are detached from each other before filling the box, and
   - the top part (B) is telescopically inserted for a predetermined length into the bottom part (A).

2. Method according to claim 1, characterized in that the top part (A) and the bottom part (B) are connected in a detachable manner by means of cut lines (16, 17) and weakened lines (18, 19, 20).

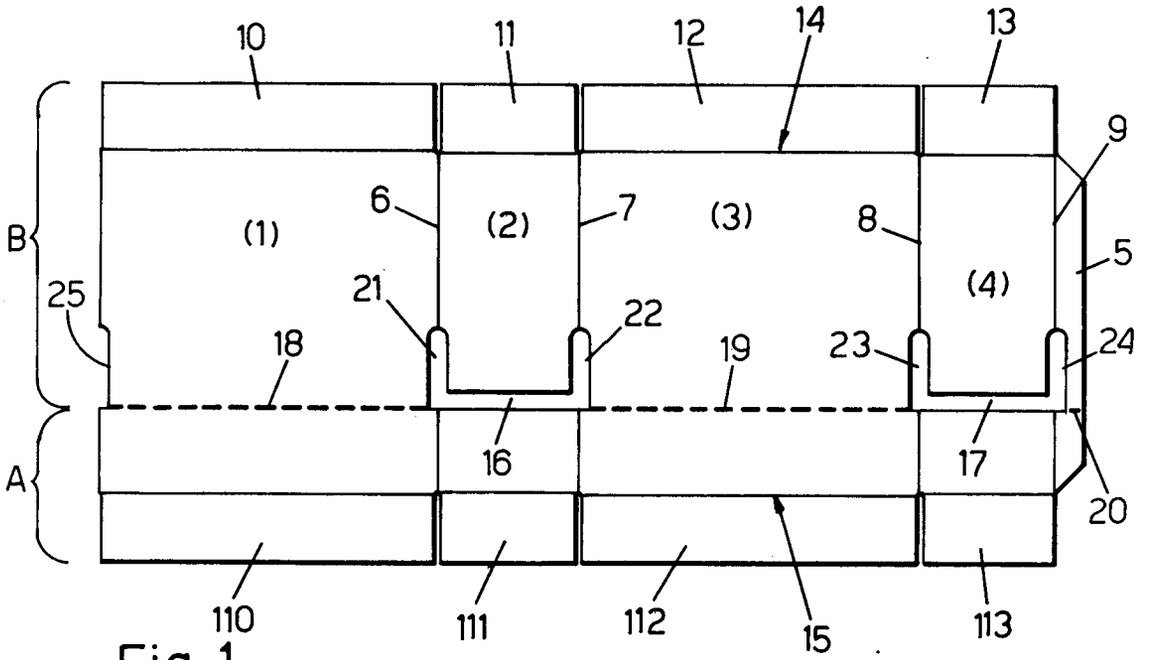
3. Method according to the preceding claims, characterized in that in order to insert the bottom section of the top part (B) into the bottom part (A), the said section of top part (B) is provided with longitudinal cuts which allow a suitable reduction in the size of its transverse section.

4. Method according to Claim 3, characterized in that longitudinal slots and a recess slot (21, 22, 23, 24, 25) are made along the corners of that section of the top part (B) which will subsequently be inserted into the bottom part (A), these slots suitably reducing the width of the side walls of the said section of the top part (B) and being such that when this top part is inserted into the bottom part, the corners of the emerging section of the top part (B) of the box, at the point corresponding to the top end of the said slots, rest on the corners of the bottom part (A).

5. Method according to the preceding claims, characterized in that the packaging boy is supplied with its side walls already secured together, being prestuck, so as to form a flattened tube, it being provided that the said, box is filled by carrying out the following operational stages in succession:
   - opening up the box and squaring up its side walls;
   - closing and securing the bottom flaps (110, 111, 112, 113) of the box;
   - separating the two parts (A, B) which make up the box from one another by pushing inwards the side walls of the section of the top part (B) which will then be inserted into the bottom part (A);
   - telescopically coupling together the two parts of the box;
   - inserting the product into the box;
   - closing the top flaps (10, 11, 12, 13).

6. Packaging box manufactured according to the method of the preceding claims, characterized in gnat the said box is manufactured in the form of a single-piece box whose height is suitably greater than that of the product to be packaged, and with its side walls secured together so as to form a flattened tube, it being provided that on the side walls of the box there are cut lines and weakened lines (16, 17, 18, 19, 20) which abut with one end of slots (21, 22, 23, 24) cut longitudinally into the corners of the top part (B) of the box, the length of these slots defining the portion of that part of the box which is designed to be inserted into the bottom part (A) of the said box.

7. Packaging box according to claim 6, in which the width of the portion of the side walls (1, 2, 3, 4) of the top part (B) of the box in which the slots (21, 22, 23, 24) are made, is approximately equal to or slightly narrower than the corresponding internal width of the said box.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7
8
5
(1)
(2)
(3)
(4)
B
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A
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17
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110
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112
15
113

Fig. 1

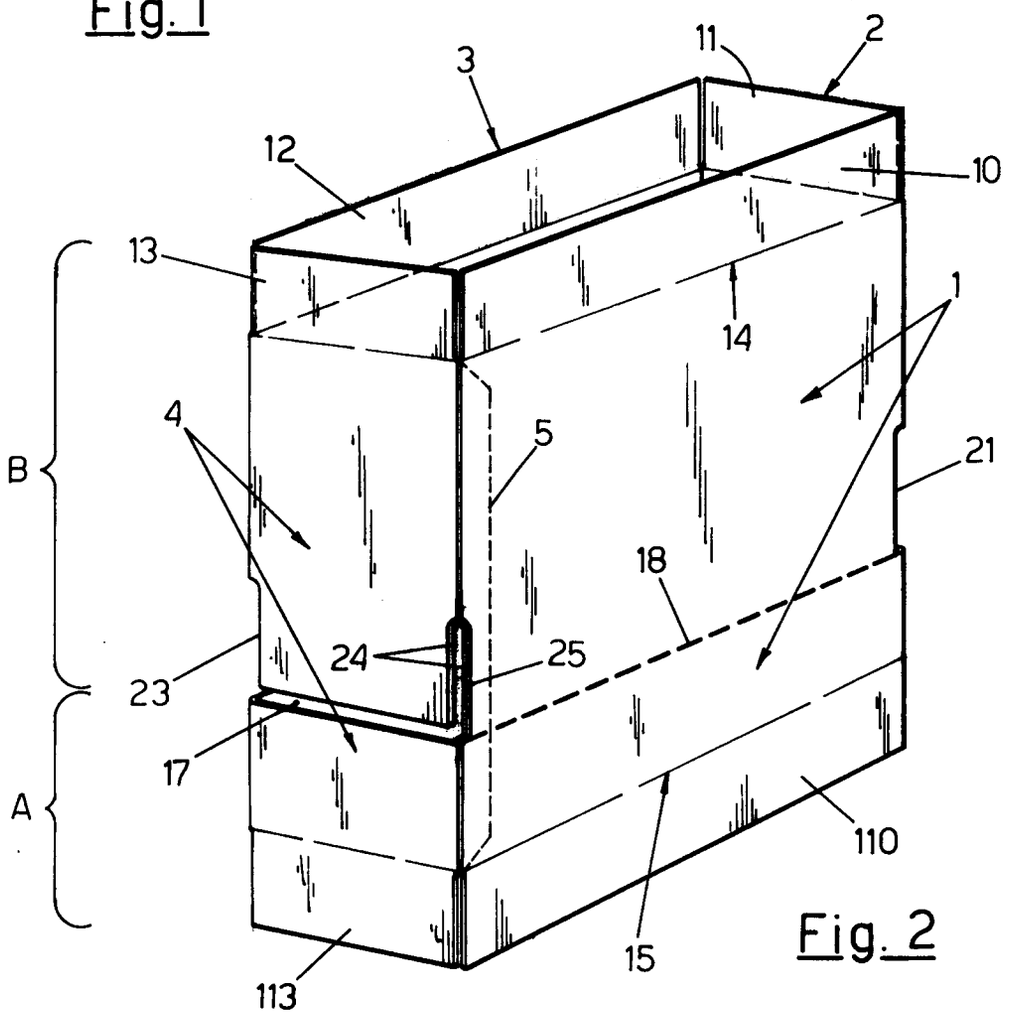
11
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Fig. 2

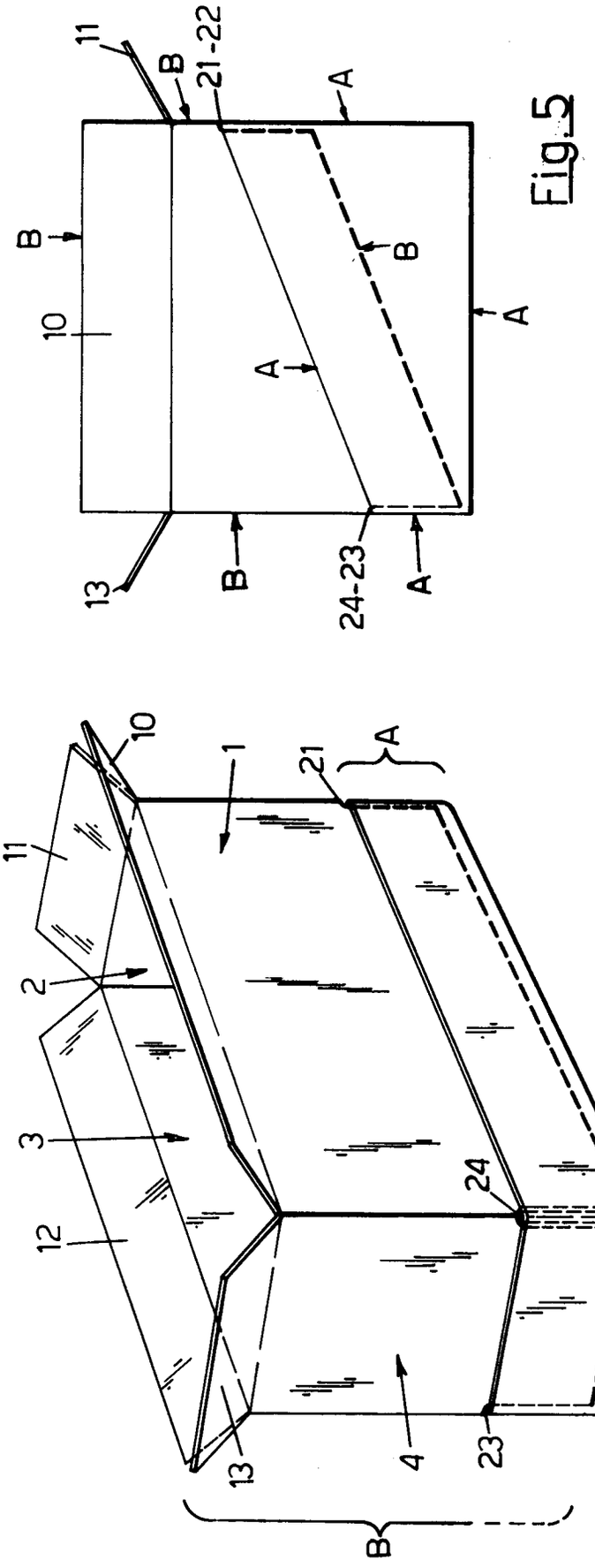

Fig.5

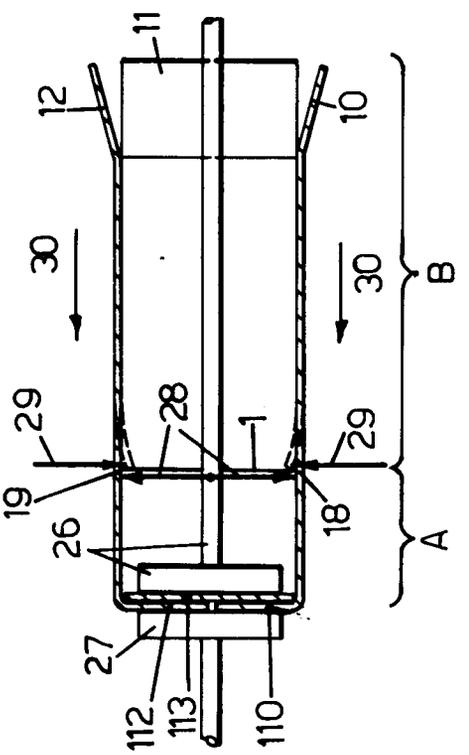

Fig.3

Fig.4