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(54) Cartridge for polyurethane sealing materials.

(57) The invention relates to a cartridge of a non-metallic material, particularly of plastics material, or cardboard, for packaging polyurethane sealing materials.

The cartridge (1) consists of a cylindrical tubular body (11) with the rear end side and the fore end side thereof being respectively closed by a piston (3) of plastics material, and by a cover (101) integrally formed with the cylindrical tubular body (11) of cartridge (1). The said piston (3) has at least its active surface covered with a film (103) of polythene-covered aluminum, and the said cover (101) is centrally provided with a spigot-like member (201). A thin diaphragm (301) applied to the inner face of cover (101) should be broken open by piston (3), to allow the polyurethane sealing material to be dispensed from the spigot-like member (201).

The inner sidewall and the fore end side of the cylindrical tubular body (11) of cartridge (1) for holding polyurethane sealing materials, are lined with a tubular lining (5) of aluminum, preferably polythene-covered aluminum, and with a discoid lining (4) formed from a punched sheet of polythene-covered aluminum. The said discoid lining (4) is inserted into the cartridge body (11), and by its upturned border (104) is bonded by a welding operation, or by means of suitable glues or adhesives, to the tubular lining (5).

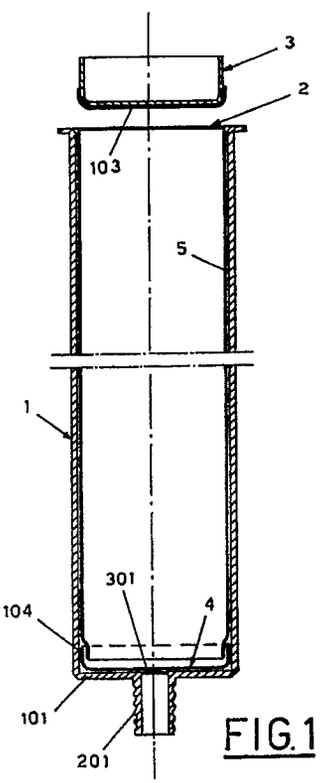

FIG.1

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CARTRIDGE FOR POLYURETHANE SEALING MATERIALS.

The invention relates to a cartridge for packaging polyurethane sealing materials.

Sealing materials are usually packaged into cartridges resembling to a syringe body, with their cylindrical tubular body being similarly closed by a piston at the rear end thereof. By acting upon the piston of a cartridge, the sealing material contained in the cartridge, will be ejected from the delivery end of the cartridge, through a suitable spigot-like member, once the thin diaphragm provided at the inner fore end side thereof, has been broken open by the said piston. The spigot-like member is provided with an external thread, such that an additional, internally threaded spout may be screwed thereon. Both the piston and the cylindrical tubular body of the said cartridges are usually made of plastics material.

However, plastics material cartridges cannot be used for the packaging of polyurethane sealing materials, since the polyurethane sealing materials would leak out through the plastics material from which the body of the cartridges is usually made, and would undergo a gradual polymerization.

In order to obviate such a drawback, aluminum cartridges are presently used for the packaging of polyurethane sealing materials, and the plastics material piston of such cartridges is, in this case, preferably covered with an aluminum film.

Considerable storage problems arise, both for the manufacturers and the users, from the present need of different cartridges having to be used for the packaging of polyurethane sealing materials, and the other sealing materials. Moreover, the cartridge manufactures have to face the problem arising from the fact that an adjustment of the packaging machines is required every time a different type of the said prior art cartridges has to be inserted into a packaging machine.

Therefore, it is desirable that the manufacturers of cartridges for packaging sealing materials, polyurethane sealing materials included, may manufacture only one type of cartridges of a non-metallic material, and may condition the said one type of cartridges, so as to make the same suitable for packaging polyurethane sealing materials.

The aforementioned problem is solved by the invention with the provision of a single type of cartridge of a non-metallic material, which can be made suitable for packaging polyurethane sealing materials.

When polyurethane sealing materials are to be packaged into the cartridges according to the invention, the cylindrical tubular body of said cartridges is provided with a lining for preventing polyuretane sealing materials from leaking out through the cartridge body, and from undergoing a gradual polymerization. The lining consists of a metallic film, preferably a tube of polythene-covered aluminum, which is closed at its fore end, and which by a welding operation or by using any other suitable means, such as glues or adhesives, is bonded at least to the inner sidewall of the cylindrical tubular body of a cartridge, so as to be caused to sufficiently stick thereon.

The cartridge for containing polyurethane sealing materials, according to the invention, is closed at its rear end by a piston of plastics material, which is covered with an aluminum film.

Further features of the invention, and the advantages arising therefrom will more clearly appear from the following description, which is made by referring to the Figures of the only sheet of drawing, in which:

Figure 1 is a longitudinal sectional view of a cartridge according to the invention, in which the piston and the cylindrical tubular body of the cartridge are shown in their disassembled condition.

Figure 2 is a longitudinal sectional view of the fore end section of the cylindrical tubular body of the cartridge according to Figure 1, showing a modified embodiment of the lining for the said cartridge body.

Figures 3 and 4 are longitudinal sectional views showing two alternative ways of closing at its fore end the lining for the inner sidewalls and the inner fore end side of the cylindrical tubular body of a cartridge according to the invention, before the said lining having been inserted into the cartridge body.

Figure 5 is a longitudinal sectional view showing still a different way of closing the fore end of the lining for the inner sidewall and the inner fore end side of the cylindrical tubular body of a cartridge according to the invention, without the aid of an additional insert.

Figures 6 and 7 show in a sectional view through their thickness, two different types of materials which are usable for making the lining for the inner sidewall and the inner fore end side of the cylindrical tubular body of a cartridge according to the invention.

Figure 8 is a longitudinal sectional view showing a further embodiment of the invention

Referring to Figure 1, there is shown a cartridge 1 for packaging sealing materials. The cylindrical tubular body 11 of cartridge 1, which is made of plastics material, has a round cross-section, is open at its rear end side 2, and is closed at its opposite fore end side by a cover 101 formed of

one piece with the cartridge body 11, and being centrally provided with a protruding spigot-like member 201, which is co-axial to the cartridge body 11, and is provided with an external thread, such that an internally threaded spout, not shown, may be screwed thereon. This spout may be useful for an easier dispensing of the sealing material packaged into the cartridge 1. The features of the cartridge as disclosed above, and the method of making same are known to those skilled in the art.

Numeral 3 denotes the piston of plastics material which is suitably associated with the cylindrical tubular body 11 of cartridge 1, in a tightly sealing relation with the sidewall of the said cartridge body 11. The said piston 3 is adapted for closing the rear end side 2 of the cartridge body 11 and for causing any sealing material, containted in cartridge 1, to be ejected from the fore end thereof, once the protective thin diaphragm 301 has been broken open

When polyurethane sealing materials are to be packaged into the above disclosed cartridge, this cartridge must be made capable of holding a polyurethane sealing material, so as to prevent the same from leaking out through the cartridge body, and from undergoing a gradual polymerization.

The invention attains this object by providing a lining to be laid on the inner fore end side and the inner sidewall of the cylindrical tubular body 11 of cartridge 1, which is thus made suitable for the packaging of polyurethane sealing materials.

Thus, as shown in Figure 1, the cylindrical tubular body 11 of the plastics material cartridge 1 for packaging poly urethane sealing materials, is provided at its inner fore end side with a discoid lining 4 having an upstanding peripheral border 104 which contacts the lower end portion of the inner sidewall of the cartridge body 11. The said discoid lining 4 is laid on the inner face of cover 101 closing the fore end side of the cartridge body 11. The lining 4 is made from a punched sheet of a known material, comprising at least one layer of aluminum having one or both of its sides covered with a layer of polythene or any like suitable material. This material is shown in Figures 6 and 7, wherein A denotes the aluminum layer, and B denotes the polythene layer or layers. The inner sidewall of the cylindrical tubular body 11 of cartridge 1 is provided with a tubular lining 5 made from the same material as the lining 4, and which is co-axially inserted into the cylindrical tubular body 11 of cartridge 1. The tubular lining 5 is of such a size that it can be caused to intimately adhere to the whole suface of the inner sidewall of the cylindrical tubular body 11 of cartridge 1, and one end thereof is fitted into the upstanding peripheral border 104 of the discoid lining 4.

The discoid lining 4 and the tubular lining 5 are inserted and positioned into the cylindrical tubular body 11 of cartridge 1 with the aid of one or more suitable mandrels, which may be used also for bonding the linings 4 and 5, respectively to the inner face of the cartridge cover 101 and to the inner sidewall of the cylindrical tubular body 11 of cartridge 1, for example, by the known methods of heat welding, ultrasonic welding, or high frequency welding, or by means of suitable adhesives or glues. The said linings 4 and 5 may be separately applied to the inner fore end side and to the inner sidewall of the cylindrical tubular body 11 of cartridge 1, or they may be simultaneously applied to the cartridge body 11 with only one operation, by previously fitting them onto a single mandrel. A known expansible mandrel, not shown in the drawings, is used for inserting and positioning the tubular lining 5 into the cylindrical tubular body 11 of cartridge 1.

Referring to Figure 2, there is shown that differently from the embodiment according to Figure 1, the discoid lining 4 on the inner face of cover 101 of cartridge 1, has its border 104 surrounded by the fore end portion of the tubular lining 5 for the sidewall of the cylindrical tubular body 11 of cartridge 1

In Figures 3 and 4 there are shown two alternative ways of closing at is fore end the lining for the inner sidewalls and the inner fore end side of the tubular body 11 of cartridge 1. Accordingly, the lining 4 is bonded to the tubular lining 5 for the sidewall of the cylindrical tubular body 11 of cartridge 1, before the said linings 4 and 5 being inserted into the cartridge body 11, and the upstanding border 104 of this lining 4 may be internally or externally fitted, into or on the side end section of the tubular lining 5. The assembled linings 4, 5 are then inserted into the cylindrical tubular body 11 of cartridge 1, and the tubular lining 5 may even be the only lining which is bonded to the inner sidewall of the cartridge body 11. The same methods as disclosed above in relation to Figures 1 and 2, also apply here for bonding together the linings 4, 5, and for bonding these linings to the cylindrical tubular body 11 of cartridge 1.

In Figure 5 there is shown still a different way of closing at its fore end the lining for the inner sidewalls and the inner fore end side of the tubular body 11 of cartridge 1. The said lining consists of a tubular lining 5 which is closed at its fore end by a transversal welding 105, the inserted lining 4 being here omitted. The closed fore end of lining 5 is then bent down, to facilitate the insertion of this lining 5 into the cylindrical tubular body 11 of cartridge 1, and to allow the said closed fore end of lining 5 to be easily perforated, as the thin diaphragm 301 is being perforated.

The tubular lining 5 may consist of a one-piece tube of the material as per Figures 6 and 7, or the said lining 5 may be formed from a suitably rolled up and longitudinally welded sheet of the said material.

The piston 3 is provided with a covering formed by a film of polythene-covered aluminum. The said covering also guarantees a metallic seal between the piston 3 and the rear end section of the cylindrical tubular body 11 of cartridge 1.

Instead of being made of plastics material, the cartridge 1 according to the embodiment shown in Figure 8, consists of a cylindrical tubular body 11 of cardboard, such as, for example, a cylindrical tubular body 11 formed from a strip of cardboard being helically wound round itself. The tubular cardboard body 11 of cartridge 1 has its fore end side closed by a separate aluminum cover 101, which by means of a folded seam 12 is fastened to the said tubular body 11.

The rest of the cartridge body 11 is made as disclosed by referring to Figure 1, so that it is provided with a centrally located, threaded spigot-like member 201 which is initially closed by a thin diaphragm 301, to be perforated in known manner, whereby the sealing material contained in cartridge 1 can be dispensed therefrom.

The tubular cardboard body 11 of cartridge 1 may be lined with an aluminum lining 5, and a disc 4 is formed integrally with the said aluminum lining 5, or it is in form of an insert, and/or it is made according to any one of the embodiments as disclosed by referring to Figures 1 to 5.

However, since the cover 101 closing the cylindrical cardboard body 11 of cartridge 1, according to the embodiment shown in Figure 8, is just made of aluminum, the disc 4 for lining the inner face of said cover 101, may not be provided, and the lining 5 may line only the inner cylindrical sidewall of the said cardboard body 11.

Claims

1. A cartridge of a non-metallic material, particularly of plastics material, for packaging polyurethane sealing materials, characterized in that the inner sidewall and the inner fore end side of the cylindrical tubular body (11) of cartridge (1), are lined with at least one layer of any suitable metal, preferably aluminum, and the piston (3) which is adapted for closing the rear end side of the cylindrical tubular body (11) of cartridge (1), is covered on at least its wall or walls turned toward the interior of cartridge (1), with at least one metal layer, the said metal layers being provided for preventing the sealing material contained in cartridge (1) from coming into contact with the non-metallic material from which the cartridge (1) is made, which contact would result in the polyurethane sealing material leaking out through the said non-metallic material, and in the polyurethane sealing material undergoing a gradual polymerization.

2. The cartridge according to Claim 1, characterized in that the metal layer for lining the surface of the inner sidewall and the inner fore end side of the cylindrical tubular body (11) of cartridge (1), is in form of a tubular lining (5) of aluminum, preferably of polythene-covered aluminum, which is closed at its fore end in any suitable way, and is bonded in any suitable manner at least to the inner sidewall of the tubular body (11) of cartridge 1, and the piston (3) which is adapted for closing the rear end side of cartridge 1, also has its active surface covered with a layer of aluminum, preferably a layer of polythene-covered aluminum.

3. The cartridge according to Claim 2, in which the lining for the inner sidewall and the inner fore end side of the cylindrical tubular body (11) of cartridge (1), is in form of a tubular lining (5) of aluminum, preferably of polythene-covered aluminum, which is closed at its fore end by a disc-shaped insert (4) peripherally provided with an upstanding border (104), which may be internally or externally fitted into or on the fore end section of the said tubular lining (5).

4. The cartridge according to Claim 3, characterized in that the lining (4) and the tubular lining (5) forming the lining for the inner fore end side and the inner sidewall of the cylindrical tubular body (11) of cartridge (1), are inserted and positioned into a cartridge (1) and are bonded to the inner surface of the cartridge body (11) by one, or more than one successive operations.

5. The cartridge according to Claim 3, characterized in that the linings (4, 5) forming the lining for the inner fore end side and the inner sidewall of the tubular body (11) of cartridge (1), are bonded together before being inserted into a cartridge (1), so that the thus assembled linings (4, 5) will be simultaneously inserted into a cartridge (1) by only one operation, and only the tubular lining (5,) or both linings (4, 5), may be bonded to the inner surface of the cartridge body (11).

6. The cartridge according to Claim 2, characterized in that only one tubular lining (5) of aluminum, preferably of polythene-covered aluminum, is provided for lining the inner inner fore end side and the inner sidewall of the cylindrical tubular body (11) of cartridge (1), the said tubular lining (5) being closed at its fore end by a transversal welding (105) which is then suitably bent down, to allow the tubular lining (5) to be easily inserted into the tubular body 11 of cartridge (1), and to be easily perforated, whereby the sealing material packaged into a cartridge (1) can be dipensed therefrom.

7. The cartridge according to Claims 2 and 6, in which the tubular lining (5) consists of a one-piece tube, or is formed from a rolled up, longitudinally welded sheet.

8. The cartridge according to Claim 2, in which the material forming the lining for the inner fore end side and the inner sidewall of the tubular body (11) of cartridge (1), consists of at least one aluminum sheet which is covered on one or both of its sides with a layer of polythene, or any like suitable material.

9. The cartridge according to Claim 2, in which the lining (4, 5) for lining the inner fore end side and the inner sidewall of the tubular body (11) of cartridge (1), is bonded to the cartridge body (11) by heat welding, by ultrasonic or high frequency welding, or by using glues or adhesives.

10. The cartridge according to any one or more of the preceding Claims, characterized in that the cartridge (1) has a cilindrical tubular body (11) of cardboard, with the fore end side thereof being closed by an inserted aluminum cover (101) provided with a spigot-like dispensing member (201), which is preferably formed of one piece with the said aluminum cover (101), and the said cardboard body (11) has at least its inner sidewall provided with a lining (4, 5) of aluminum, preferably of polythene-covered aluminum.

11. The cartridge according to Claim 10, characterized in that by a folded seam (12) the inserted aluminum cover (101) is connected to the body (11) of cartridge (1).

12. The cartridge according to Claim 10, characterized in that the aluminum lining (5) lines only the inner side-wall of the cartridge cardboard body (11).

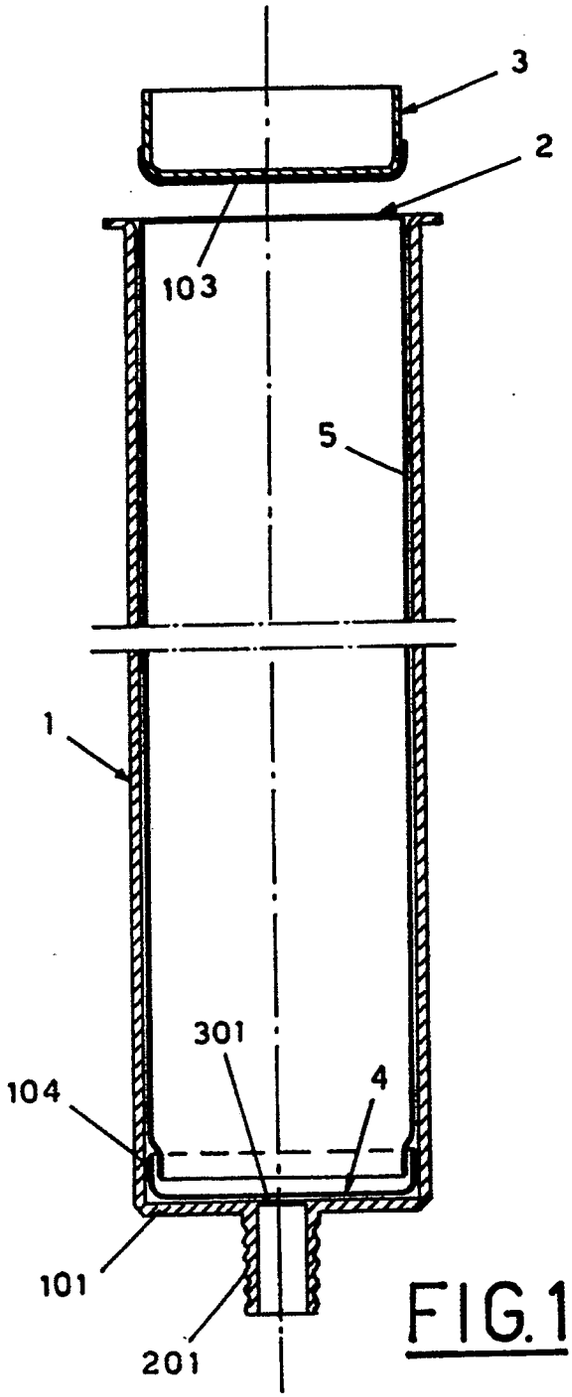

FIG.1

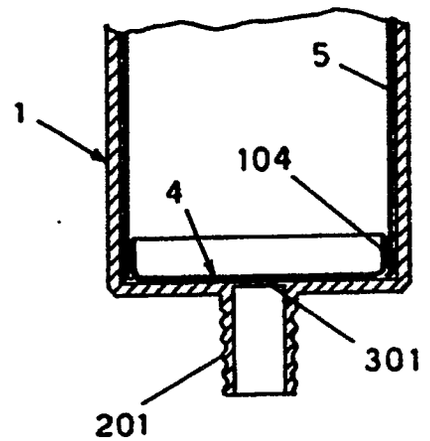

FIG.2

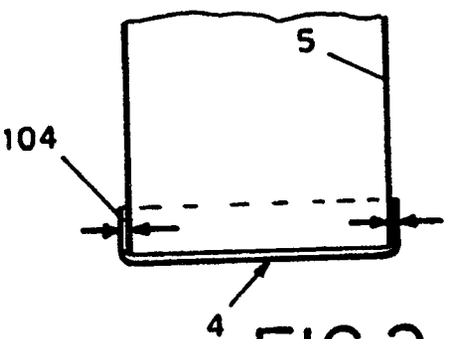

FIG.3

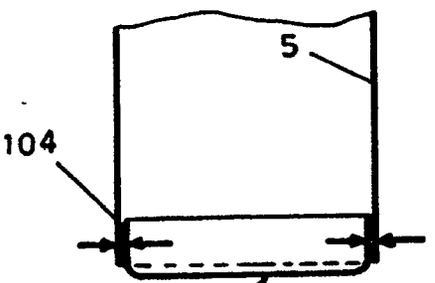

FIG.4

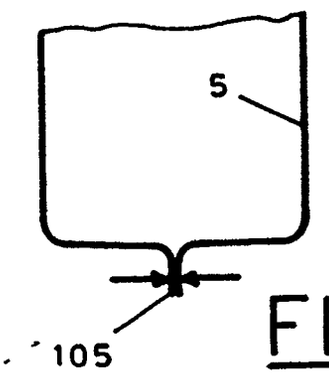

FIG.5

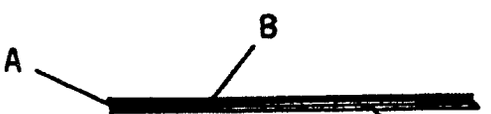

FIG.6

FIG.7

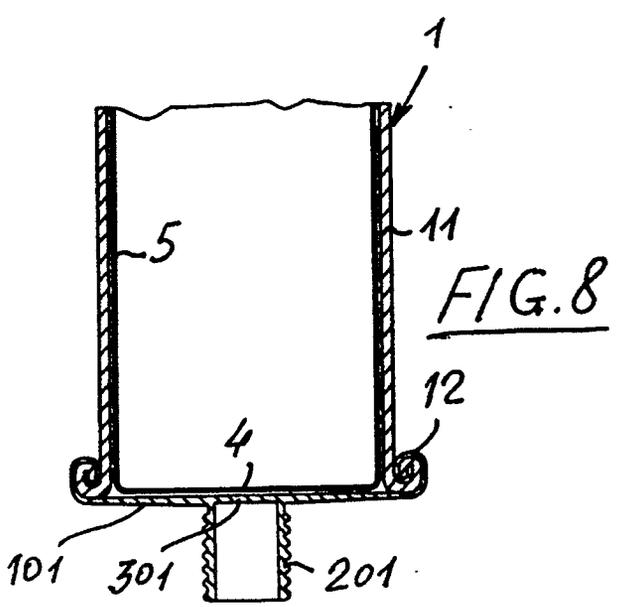

FIG.8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 11 5245

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)
X	FR-A- 904 628 (HOHL) * Page 1, lines 29-33; page 1, line 49 - page 2, line 57; figures 1,2 *	1	B 65 D 83/00 B 65 D 25/14
A	EP-A-0 316 102 (DOW CORNING CORP.) * Column 1, lines 4-12; column 6, lines 14-34; figure 5 *	1	
A	CH-A- 670 233 (SANDHERE PACKUNGEN AG) * Page 2, right-hand column, lines 8-15; page 3, left-hand column, line 6 - page 3, right-hand column, line 15; figures 1,3-5 *	2-5,8,9	
A	GB-A-1 538 442 (EGREMONT TUBES) * Page 1, lines 65-76; page 2, lines 7-19; figure 2 *	10-12	
A	US-A-4 027 810 (VAN MANEN) * Figure 1 *	2	
A	US-A-1 341 403 (WILKINSON)		TECHNICAL FIELDS SEARCHED (Int. Cl.5) B 65 D A 61 M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04-04-1990	BERRINGTON N.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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