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SLIP COVER AND PLUNGER FOR CARTRIDGE-CONTAINER

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2 Sheets-Sheet 1

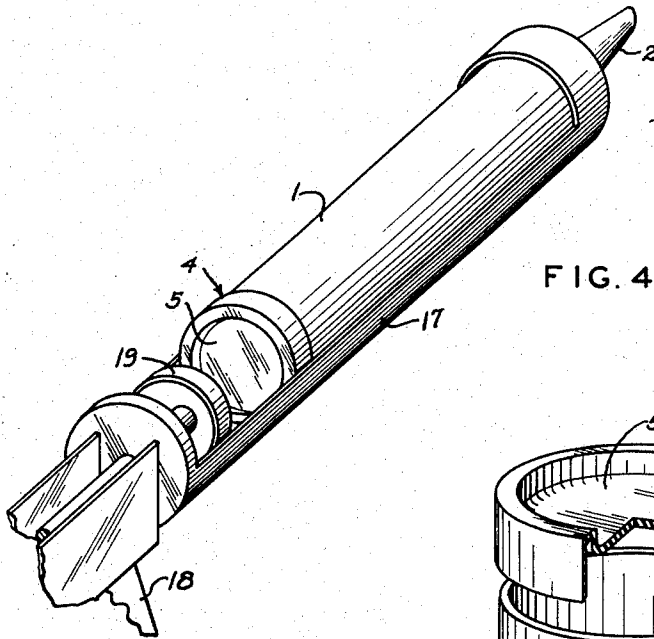


FIG. 4.

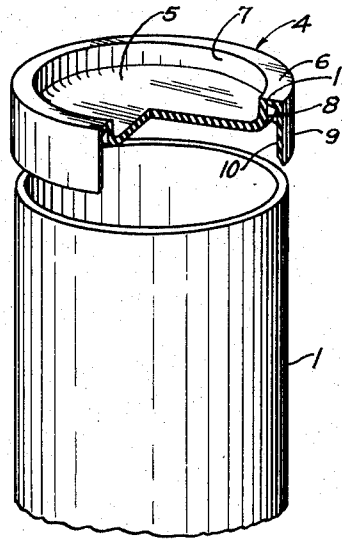


FIG. 1.

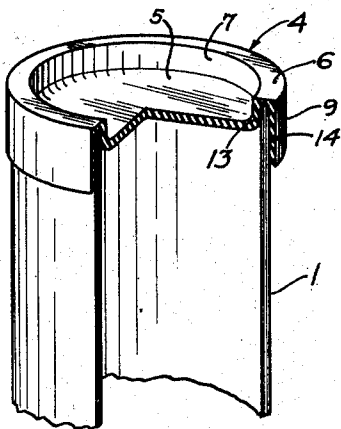


FIG. 2

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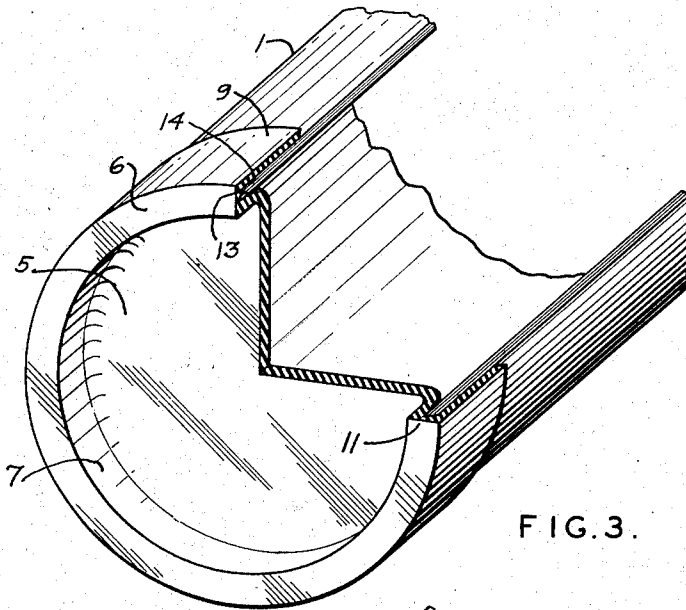


FIG. 3.

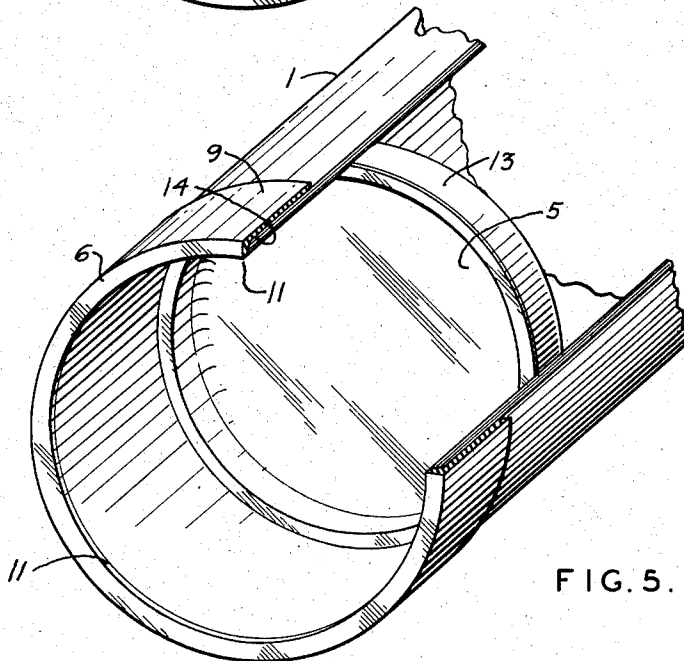


FIG. 5.

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## SLIP COVER AND PLUNGER FOR CARTRIDGE-CONTAINER

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3 Claims. (Cl. 222—327)

This invention relates to an end closure for sealing one end of a disposable type of cartridge-container used in dispensing guns for grease, oil, caulking compounds, and the like. More specifically, the invention is an end closure comprising a slip cover with a flanged rim for sealing an end of the container tube against the leakage of oils or solvents contained therein. The slip cover which forms the end closure is so constructed that, when the container is used in the gun, movement of the ram of the gun will cause fracture adjacent or within the rim along predetermined lines because of the manner and material of which the closure is formed, so that the cover part becomes a movable plunger or piston when separated from the rim or flange.

It will be understood from the following description that both the material itself and the manner of construction of the slip cover enter into the operation of the device as a practical article of manufacture. It is contemplated, however, that other materials can be used in the slip cover when certain changes are made to concentrate the stress along predetermined lines.

Heretofore it has been the practice to provide caps or covers for the same purpose formed of paper or metal and usually in two pieces, one piece forming a flanged plunger and the other piece forming a sealing ring around the joint between the plunger flange and the tube of the container body. This type of seal has been found generally satisfactory except for minor leakage in storage. In certain instances, the oils or solvents in the compounds enclosed within the tube have found their way out through the multiple joints around the ring and plunger cover, spoiling the attractive appearance of the package and decreasing its sales appeal.

The present invention is a slip cover formed in such a manner that, when placed upon the container tube end, it frictionally grips the tube between opposite inside surfaces of a reversible flange. The joint between cover and tube has two distinct seals formed with the tube, instead of two joints, each with a single seal. This reduces the chance of leakage by one to four. The flange is formed of a material sufficiently flexible to conform with any irregularities in the tube surface, and is flexible to provide a gripping action with the walls of the tube. The coaction of the surfaces of the reversible flange with the tube forms a double joint sufficiently tight to permanently seal in solvents and greases.

The accompanying drawings illustrate one form of the invention, in which

Fig. 1 illustrates the container and cap before assembly, with parts of the cover in section;

Fig. 2 illustrates the container and cover assembled, with parts of the container and cover in section to illustrate the double joint;

Fig. 3 is a view similar to Fig. 2, showing the container and cap on an enlarged scale;

Fig. 4 shows the cartridge position within the caulking gun; and

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Fig. 5 illustrates the position of the cover after fracture by the action of the ram in the caulking gun.

The body 1 of the cartridge-container is usually formed of spirally-wound fibre strips bonded together.

5 The process of manufacture is a continuous one, and the tubes are cut off at a uniform length to form the individual container or cartridge. One end of the tube is closed by a suitable cover having a dispensing spout 2 as illustrated in Fig. 4, for example.

10 The instant invention, however, is concerned with sealing the opposite end of the container 1 with a suitable cover which is frangible to form a plunger for forcing the material sealed in the container out of the spout 2. This cover and its operation are illustrated in Figs. 1 and 2.

15 Referring to Fig. 1, the slip cover, generally indicated as 4, has a central plunger portion 5 and an integrally formed surrounding rim 6. The inner side of the rim 6 has a flange 7 with an inner surface 8 dimensioned to tightly fit the internal surface of the container 1. The 20 outer lip 9 of the rim 6 has an outer surface 10 dimensioned to snugly engage the outer surface of the container tube 1. The slot between surface 8 and lip surface 10 may be tapered to wedgingly engage on the tube body 1.

25 As shown in Fig. 1, the rim 6 may be formed with its thinnest section at the circumference 11, although this is not absolutely necessary. The slip cover 4 is preferably formed of a plastic material, such as polystyrene, which is flexible and resilient.

30 Fig. 2 shows the slip cover assembled with the container tube 1, and illustrates the sealing action. When the cover 4 is slipped onto the end of the tube 1, the parts of the rim 6 grip the walls of the tube 1 on the inner surface of the tube at 13, and on the outer surface 35 of the tube at 14, forming a double seal for retaining the container charge against any leakage.

Fig. 3 illustrates the container with the slip cover in place, on an enlarged scale, and illustrates the clamping action at 13 and 14 which takes place automatically due 40 to the shape of rim 6, as well as the material of the cap 4. The material of which the cap is formed is important in performing the self-locking function of the sealing cover on the container. If desired, however, an adhesive may be used for the seal 14 as an added precaution 45 against leakage. This would have the dual function of also preventing separation of the lip 9 from the container 1 after the slip cover is fractured.

### Operation

50 When the container 1 is used in the caulking gun, it is placed within the gun barrel 17 as shown in Fig. 4. Actuation of the grip 18 forces the ram 19 into contact with the outer surface 5 of the slip cover 4. The pressure of the ram 19 fractures the cover 4, as shown in 55 Fig. 5, so that the cover part 5 and the inner surface of flange 7 form a plunger for forcing the charge out of the container 1 through the spout 2. The material suggested for the cover 4 is inherently weak in shear. Consequently, the fracture occurs along the circumference 11, 60 where the shear force is concentrated. This circumference, incidentally, as designed, is actually the weakest section. The clean break at this point forms a smooth outer surface between the flange 7 and the inner side of the container 1 so as to prevent any leakage of the 65 charge between the flange 7 and the inner container surface as the cover performs its function as a plunger or piston.

70 A construction has been described which will form an ideal seal and plunger for a cartridge for a caulking gun, but it is contemplated that obvious modifications of this invention will occur to those skilled in the art which come within the scope of the appended claims.

I claim:

1. An end closure for sealing one end of a tube for a disposable type of cartridge used in dispensing guns, said end closure being frangible to form a movable plunger for forcibly dispensing the contents of said cartridge, said closure comprising a unitary cover member of plastic, a rim on said cover including a flange extending axially of the cover, an inner surface on said flange having a substantial area dimensioned for sliding contact with the inner surface of the cartridge tube, a sealing lip on said rim gripping the outer surface of said tube for concentrating the force on the cover produced by actuation of the plunger of the gun along a circumferential line in the rim so that, when fracture takes place, part of said closure is separated from said lip to form a plunger for said cartridge.

2. An end closure for sealing one end of a tube for a disposable type of cartridge used in dispensing guns, said end closure being frangible to form a movable plunger for forcibly dispensing the contents of said cartridge, said closure comprising a unitary cover member of plastic material, a rim on said cover including a flange extending axially of the cover, an inner surface on said flange having a substantial area dimensioned for sliding contact with the inner surface of the cartridge tube, a sealing lip on said rim extending along and gripping the outer surface of said tube for concentrating the force on the cover produced by actuation of the plunger of the gun along a circumferential line in the rim, so that when

fracture takes place the closure flange is separated from said lip and forms a seal between said cover and tube during the dispensing operation of the gun.

3. An end closure for alternatively forming a frangible seal and a plunger in one end of a tube for a disposable type of cartridge used in dispensing guns, comprising a unitary cover of plastic material, a rim in said cover including a flange extending axially of the cover, an inner surface on said flange having a substantial area dimensioned for sliding contact with the inner surface of the cartridge tube, a sealing lip on said rim spaced from and coextensive with said flange forming a slot for gripping the outer and inner surface of said tube and acting to concentrate the force on the cover produced by actuation of the plunger of the gun along a circumferential line in the rim, so that when fracture takes place the cover is separated from said lip along with said flange, to form a plunger for said cartridge, and the lip remains as a reinforcement on the tube to resist distortion.

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