Jan. 28, 1958 W. A. SHERBONDY 2,821,332

DISPENSING RECEPTACLE FOR PLASTIC MATERIALS

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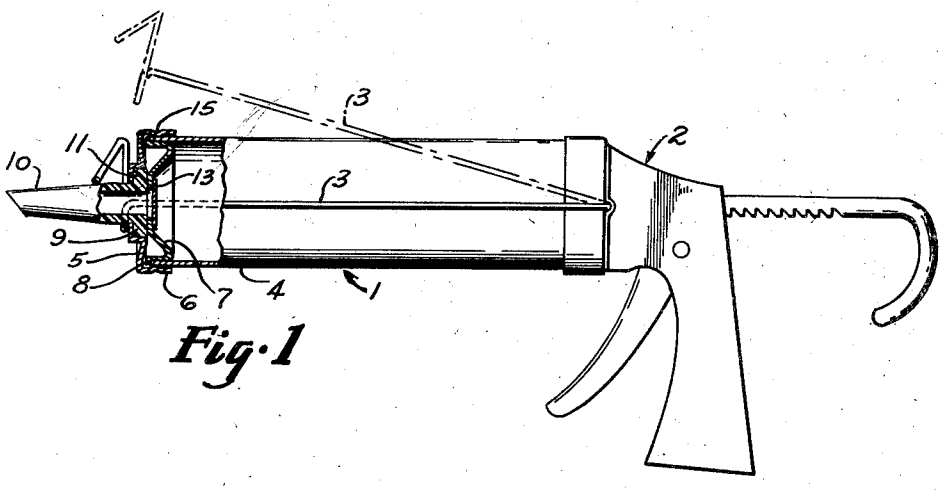


Fig. 1

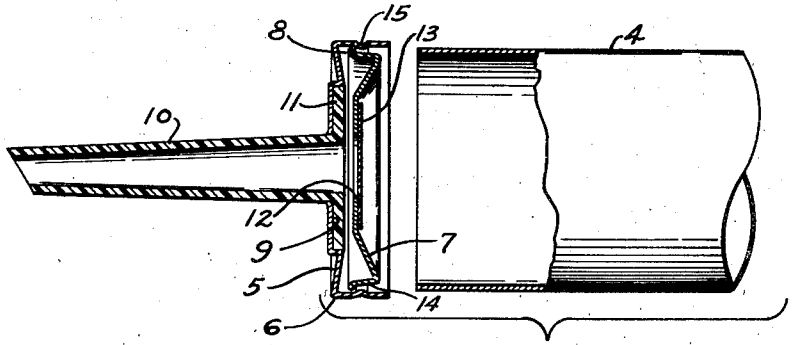


Fig. 2

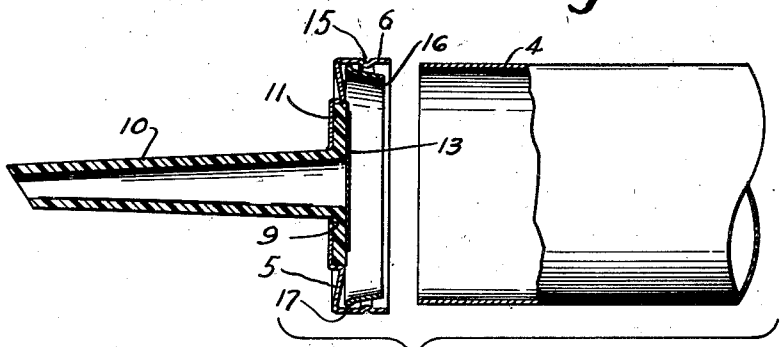


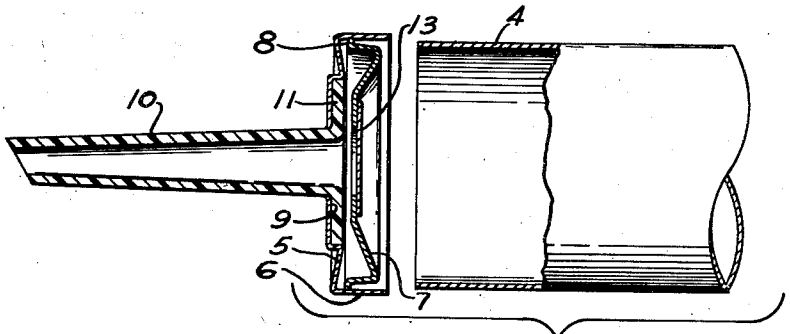
Fig. 3

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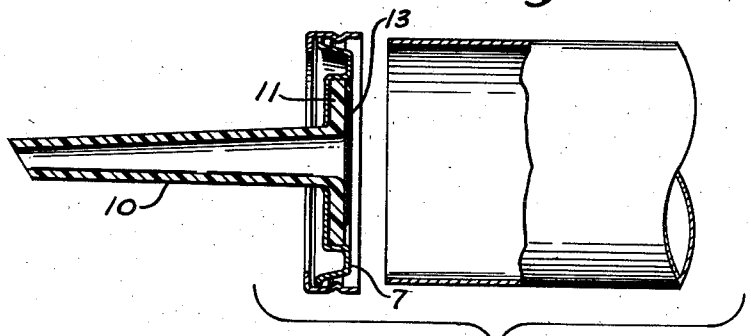
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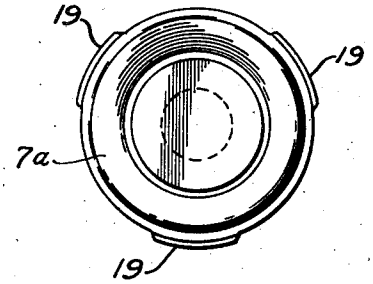
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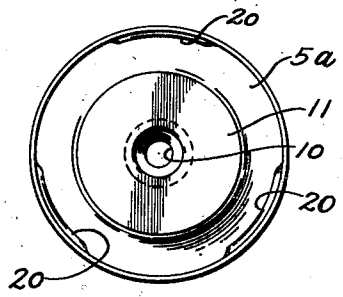
Fig·4



Fig·5



Fig·6



Fig·7

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DISPENSING RECEPTACLE FOR PLASTIC MATERIALS

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4 Claims. (Cl. 222—569)

While this invention relates as indicated to dispensing receptacles for plastic materials, it has more specifically to do with discharging end closures for tubes such as are used for disposable cartridges for caulking compounds and the like. However, certain features of the invention may be found useful in end closures for tubular containers, generally.

In a type of end closure heretofore widely employed in disposable cartridges and the like and with which we are here particularly concerned, two separate parts are employed. Thus, as disclosed in U. S. Patent No. 2,106,577 to W. E. Sherbondy, dated January 25, 1938, one such part comprises an apertured, disk-like member designed to fit within and reinforce the tube end and the other part comprises a cup-shaped cover designed to fit over such end, such cover having a discharge opening and ordinarily a discharge spout or nozzle extending from such opening. There is also associated with one or the other such member a frangible seal of paper or the like that normally closes the opening therein.

The closure has been applied to the tube end, usually by hand, by inserting such cup-shaped reinforcing member into the end of the tube and then installing the cup-shaped slip cover over the end of the tube, following which the cylindrical flange of the cup is forced down upon the tube so as to pinch the tube between the reinforcing member and such flange. However, difficulty has been encountered in positioning the internal member correctly, the closing of the flange on the cover member requires an extra step, and all in all the operation has been troublesome and time consuming.

One object of the invention is to provide an internal reinforcing member which will position itself automatically when inserted in the end of the tube.

Another object is to provide an external or closure member which will cooperate with such internal member to exert pressure completely around the outside circumference of the tube or cartridge end, thereby squeezing or compressing the wall of such tube or cartridge so as effectively to exclude outside air as well as permanently to retain the parts in perfect alignment.

A further object of the invention is to provide an arrangement wherein both the internal and external members are formed and constructed so that they may be preassembled and the assembled members thereafter installed as a single unit on the tube end by a single seating operation.

A still further object is to provide an arrangement whereby a seal may be effected between the tube and the closure parts without employing a subsequent crimping operation.

To the accomplishment of the foregoing and related ends, said invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however,

of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

Fig. 1 is a side elevation of a caulking gun in which a cartridge embodying my present improvement is fitted, a section at the end of the cartridge being broken away to reveal its inner structure;

Fig. 2 is a similar section of such cartridge end on a larger scale and showing the parts before they are fully assembled;

Figs. 3, 4 and 5 are views similar to Fig. 2 but respectively showing modified forms of the invention; and

Figs. 6 and 7 are plan views of the two principal parts of the device as illustrated in Fig. 5 but showing still another modification in construction.

Referring now to Fig. 1, a disposable cartridge, generally indicated by the numeral 1, is shown positioned for use in a typical caulking gun 2, for example, may be of the construction shown in my Patent No. 2,602,571, dated July 8, 1952, the cartridge being held in place therein by a wire bail 3. It will be understood that when a cartridge is to be inserted in or removed from the gun the bail is swung into dotted position; also that the gun includes a piston rod or plunger (not shown) that may be advanced step-by-step through the cartridge 1 by suitable operation of the gun. The cartridge, with which alone the present invention is concerned, comprises an inexpensive tube 4 which may be formed of paperboard such as commonly used in mailing tubes, and has fitted in its one end, that adjacent the gun 2, a flanged metal disk adapted to be forced longitudinally of the tube as such piston rod or plunger is advanced. After the tube has been loaded with caulking or other material, the device of present interest is fitted to the opposite end, such device being designed to seal off the contents of the tube until the latter is put to use in the gun.

In the constructional form of the device illustrated in Figs. 1 and 2, such device will be seen to comprise an outer cap member 5 having a side wall 6 adapted to fit over the end of tube 4, and an annular reinforcing member 7 adapted to fit within such tube end and having an outwardly directed flange 8 adapted to telescope within such side wall of the cap member, the width of such flange being approximately the same as the wall thickness of the tube end.

Cap member 5 is formed with a central circular depression 9 adapted to receive the inner flanged end of a discharge spout or nozzle 10, through which the contents of the tube or cartridge 1 may be expelled when the gun is being operated. Such spout will be desirably made of molded plastic material and the two members 5 and 6 of sheet metal stampings, but the invention is not limited to the use of any particular material. In any event, the flange 11 on the spout 10 will be firmly secured, as by a suitable adhesive, in the circular depression 9 of the cap member so as in effect to be integral therewith.

Reinforcing member 7 is formed with a central portion that is axially displaced from the rest of the member and is provided with an aperture 12 aligned with the passage in spout 10, such aperture being normally sealed over by a disk or web 13 of paper or like frangible material which may be fractured in any suitable manner just prior to use of the receptacle for dispensing the contents thereof. When the members 5 and 6 are assembled in place on the tube end the apertured portion of said member 6 thus sealed off is designed to have sealing contact with the flange 11 on spout 10. It will be noted that the outer portion 14 of member 7 which carries radially outwardly directed flange 8 is itself an axially directed flange that flares slightly outward; also that the side wall 6 of member 5 is formed with an inwardly directed encircling bead

15, the internal diameter of which is slightly less than the diameter of said flange 8.

As a result of the foregoing construction of the parts of the device it will be seen that upon pressing the outer cap member and annular reinforcing member toward each other, they may be snap fitted together, as shown in Fig. 2, and that when in such pre-assembled condition the end of the tube 4 upon being inserted between the wall 6 of the outer member and wall 14 of the inner member will have wedging engagement therewith, not only due to the flare of such last-mentioned wall, but also to the action of bead 15 which supplements such wedging action.

It will thus be seen that attachment of my present improved device to the tube end involves but a single operation which under certain conditions may be performed wholly by hand or by means of a simple form of press. Nevertheless, due to the wedging engagement of the tube end with the angular friction closure cap unit, the latter is not only very firmly secured in place, but the contents of the tube are effectively sealed off, as is highly desirable where, as in the case of a caulking compound, such contents require to be kept out of contact with the air. It should be explained that while the parts of the device will be preferably pre-assembled and thus attached to the tube end, it may in some cases be found preferably to initially attach only the annular reinforcing member to the tube end and then subsequently press such end, equipped with such reinforcing member, into the outer cap member.

The modification in construction of the device illustrated in Fig. 3 involves first the reinforcing member which here takes the form of a simple annulus or ring 16, the wall of such annulus flaring outwardly just as does the axial flange 14 in the first described construction, and such wall terminating in a radially outwardly directed flange 17 that corresponds with flange 8 of the previously described construction. An additional change consists in attaching the frangible web 13 to the flange on the inner end of spout 10.

The only difference in construction presented in Fig. 4 over that shown in Figs. 1 and 2 consists in the omission of the inwardly directed encircling bead in the side wall of the outer cap member. In other words, the wedging of the tube end wall between the parts of the device is obtained solely by the outward flare of the flange 14 on the annular reinforcing member 7.

Instead of attaching the discharge spout 10 to the outer cap member, it may, if desired, be attached to the inner reinforcing member by seating the flange 11 of such spout in the central depressed portion of the inner reinforcing member 7. In such case the frangible seal 13 will be applied to the spout flange 11 just as in the modification illustrated in Fig. 3. The construction and mode of assembly otherwise is the same as that of the construction shown in Figs. 1 and 2. While in each of the foregoing several modifications wherein the side wall of the cap member is formed with a radially inwardly directed bead and the inner reinforcing member 7 with a radially outwardly directed flange adapted to cooperate with such bead, such bead and flange will preferably be continuous, they may if desired be interrupted or discontinuous as shown in Figs. 6 and 7. In other words, such rib may take the form of a plurality of inwardly directed projections 20 on the side wall of the cap and such flange may comprise a series of curved outwardly directed projections 19 of such extent that they may pass between projections 20, and then upon relative rotative movement of the members the former will be interlocked behind the latter.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regard the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. An end cap assembly for a tubular paperboard container comprising an outer sheet metal cap member having an outer end and having a cylindrical side wall adapted to slip over the end portion of such container, such wall, between its ends, being formed with an inwardly directed bead to deform the end portion of such container as said cap member is slipped thereover, an annular sheet metal reinforcing member telescoped within said cap member and adapted to fit within such container end portion, said reinforcing member having a generally axially directed peripheral flange against which the container end portion is gripped by such side wall and bead and having a radially outwardly directed flange that is disposed between such bead and such outer end of said cap member and that is adapted to be positioned against the end of such container and against such outer end of said cap in axially spaced relation to such bead.

2. An end cap assembly according to claim 1 characterized in that the generally axially directed flange of said reinforcing member flares slightly outward to facilitate assembly on such container.

3. An end cap assembly according to claim 1 characterized in that such bead and such outwardly directed flange are dimensioned to hold said cap member and reinforcing member together for only limited relative axial movement of such outwardly directed flange between such outer end and such bead.

4. An end cap assembly according to claim 1 characterized in that a dispensing spout is secured to one of said members to extend outwardly and coaxially from said assembly.

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