

June 11, 1963

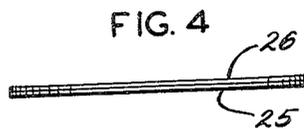
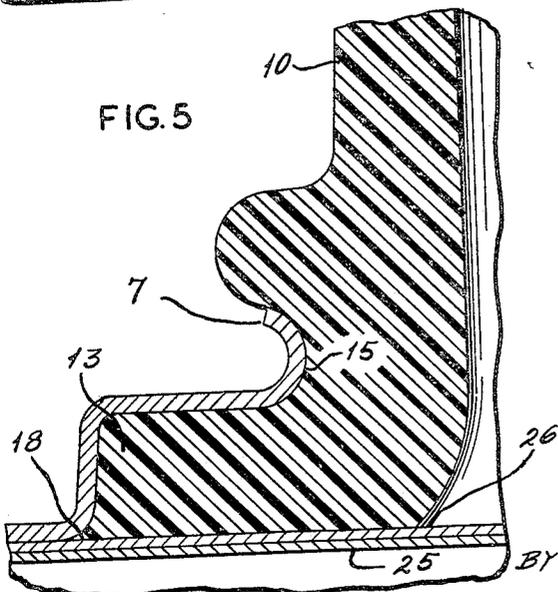
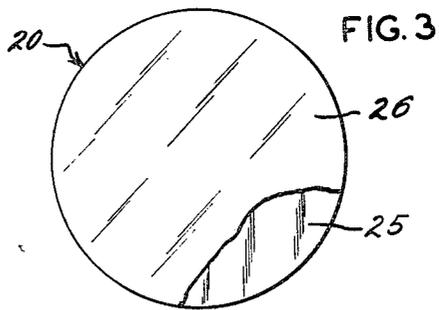
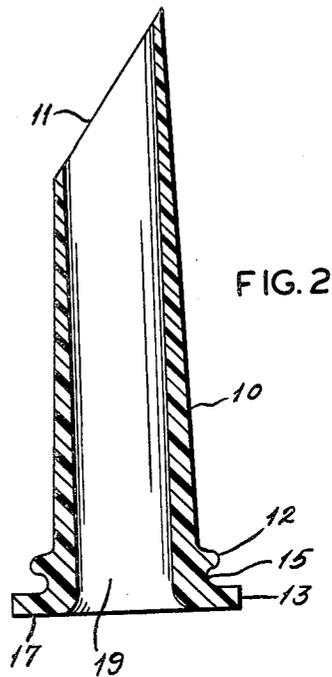
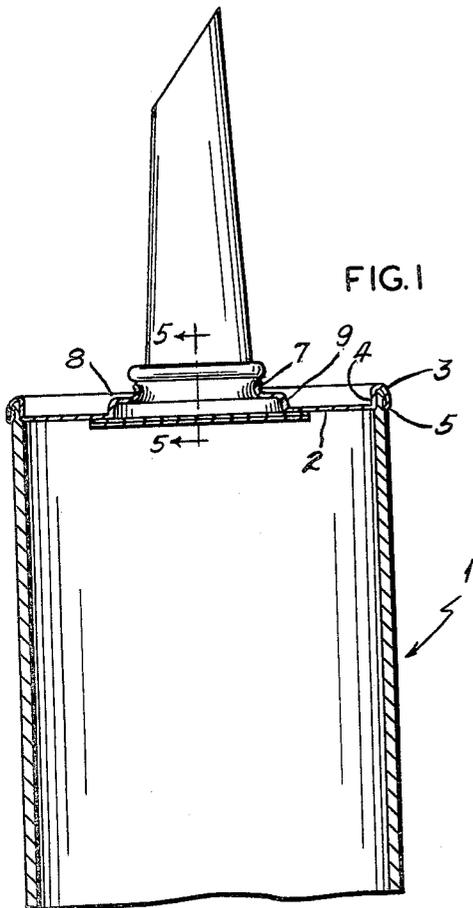
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3,093,274

SPOUTS FOR CAULKING CARTRIDGES

Filed June 27, 1960

2 Sheets-Sheet 1



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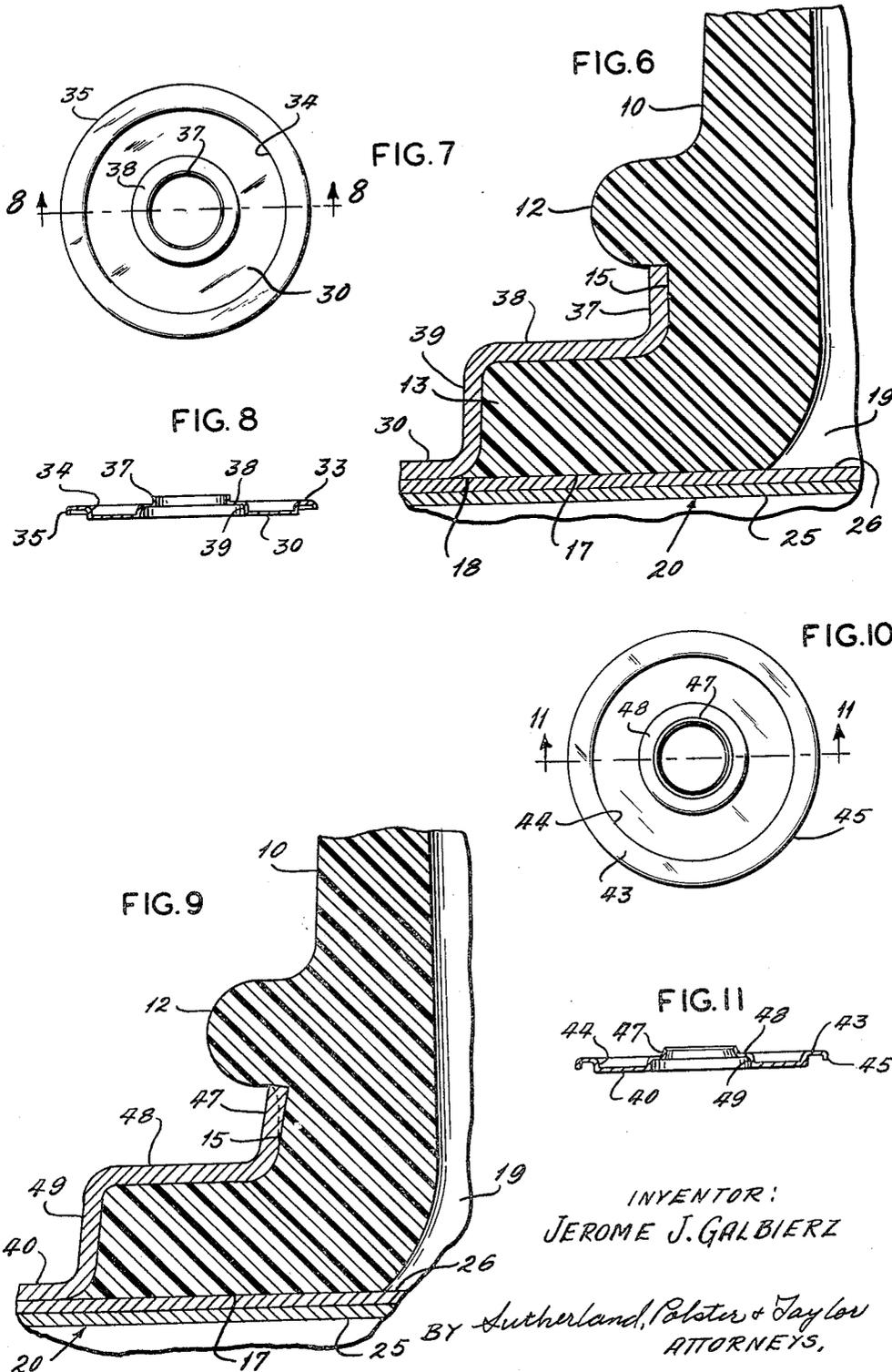
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SPOUTS FOR CAULKING CARTRIDGES

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SPOUTS FOR CAULKING CARTRIDGES

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8 Claims. (Cl. 222-541)

This invention relates to disposable cartridges containing caulking compound, or grease, for use in a dispensing gun. More specifically the invention is limited to a dispensing type of spout mounted in an end closure for the cartridge and means to provide an effective seal between the spout and the closure, and the closure and the container, which will eliminate the possibilities of seepage of oils and solvents at the joints between the spout and the end closure and from the spout itself during storage and during use, respectively. Such seepage can detract from the saleability of the product, and, of course, changes the original consistency of the contents charged into the cartridge. This application is a continuation-in-part of my prior application Serial No. 593,788, filed June 25, 1956, and now abandoned, which is in turn a continuation-in-part of my prior application Serial No. 521,602, filed July 12, 1955 and now abandoned.

According to this invention, the cartridge end closure is preferably made of metal, which can be spun onto the end of a paper container by the usual manufacturing methods, so as to form an effective seal. Since to form the end closure and the spout in one piece would require a relatively expensive metal drawing operation, or operations, the spout and end closure are separate articles of manufacture. This follows general practice heretofore in the art, which practices incurred certain disadvantages since it was necessary to seal the spout against leakage during shipment or storage of the cartridges. The prior art has made several suggestions for the solution of the problem. Stoppers have been provided for the spouts; or the spouts and containers have been sold separately, and when so merchandised the hole for the spout has been sealed with tape. Stoppers, however, did not prevent leakage and the sale of the parts separated required a special type of gun to support the spout separately from the cartridge.

This invention contemplates a spout so constructed that it will snap into an aperture in the metal end closure in such a way as to provide a joint between the two, which is highly effective as a seal. In addition, this mechanical connection between the spout and the end closure is arranged to provide a centrally apertured planar surface on the inside of the end closure so that a seal may be applied which has a frangible portion in alignment with the aperture on the inside planar surface of the end closure, and a sealing portion which extends outwardly at least beyond the spout portion exposed on the inner surface of the end closure so as to adhere, or be adhered, to the metal surface on the inside of the end closure to close the aperture through the spout and the joint between the spout and the metal end closure exposed to the contents in the cartridge. Of course, this seal, applied to the inside surface of the metal end closure and exposed surfaces of the spout therein, may extend over the entire inner surface, but at least it is of sufficient size to cover the aforementioned joint.

Such a seal has a two-fold purpose, it prevents leakage from the spout during storage and shipment, and leakage through the joint between the end closure and spout at the same time. When the cartridge is desired to be used, it is inserted in the gun and the seal broken with a pencil or other sharp instruments allow the contents to flow out of the spout. When so used, the seal remains effective to prevent leakage at the joint between the spout and the end closure even at high pressures.

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It is an object of this invention to provide a spout in an end closure for a caulking cartridge.

Another object of this invention is to provide a spout which can be easily assembled within an apertured end closure for a caulking cartridge.

It is still a further object of the invention to provide a spout, which can be easily assembled with an aperture in a metal end closure of a caulking cartridge with a sealing means at the outer rim of the aperture in the end closure.

It is still a further object of this invention to provide a spout, which can be readily assembled in an aperture of an end closure for a caulking cartridge with a seal which is effective on the inside of the end closure and spout.

Further objects and advantages will appear in the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a fragmentary view in elevation of the discharge end of a caulking cartridge with parts of the cartridge in section;

FIG. 2 is a sectional elevation of the spout shown in FIG. 1;

FIG. 3 is a top plan view of the sealing member shown in FIG. 1;

FIG. 4 is a side elevation of the sealing member shown in FIG. 3;

FIG. 5 is a sectional view taken on the line 5-5 of FIG. 1 showing the joint between the spout and the container on an enlarged scale;

FIG. 6 is a sectional view corresponding to FIG. 5, but illustrating a slightly modified form of connection between the spout and the end closure;

FIG. 7 is a top plan view of the end closure shown in FIG. 6 with the spout removed;

FIG. 8 is a side elevation in section of the end closure shown in FIG. 7 taken on the line 8-8 thereof;

FIG. 9 is a view similar to FIG. 5 taken at the same location showing another slightly modified form of the connection between the end closure and the spout on an enlarged scale;

FIG. 10 is a top plan view of the end closure shown in section in FIG. 9; and

FIG. 11 is a vertical section taken on the line 11-11 of FIG. 10.

Turning now to FIG. 1, the container for the caulking cartridge is indicated as 1, and since this invention is primarily concerned with only the dispensing end of the cartridge, the description and illustrations in the drawings are limited to a disclosure of the construction of this end only. Spun onto the end of the container 1 is an end closure part 2, which may be formed of metal. During the spinning operation, a roll edge 3 is formed compressing the open edge of the container body 1 between an inner flange 4 and an outer rolled edge 5. Formed centrally of the end closure part 2 is an aperture for receiving the spout. This aperture is defined by the rolled edge 7. Inwardly of the rolled edge is a socket having an offset flange 8 substantially parallel to the end wall 2 of the end closure. This socket is surrounded by an axially extending wall 9.

The spout part, which fits into the aperture in the end wall 2, is shown generally in FIG. 2 as a tubular body 10. The spout end of the tubular body is preferably cut on the bias, as shown at 11, and the inner end of the spout is provided with a convex flange or rib 12 and a radially extending flange 13. Between the rib or flange 12 and the flange 13 on the exterior of the spout 10 is a fillet 15. The spout is preferably made of some rubber-like material, such as polyethylene, so that the rib 12 is compressible. This facilitates the assembly of the end closure part 2 and the spout part 10. The assembly

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is then a simple matter of snapping the rib 12 past the rolled edge 7, and since the rib 12 is flexible in the sense that it is compressible, this operation can be very simple and rapid. It should not be overlooked that the metal in the rolled edge 7 is also slightly flexible, which itself facilitates assembly. Turning now to FIG. 5, it will be at once apparent that there is a snug fit between the rolled edge 7 and the fillet 15, which will form an outer seal between the spout 10 and the end closure 2. In order to enhance the effectiveness of this seal, the formed radius on the rolled edge 7 may be made larger than the radius of the fillet 15, so that there is a wedging action between the rolled edge and the rib 12 on one side and flange 13 on the other. In any event, the edge of the lip 7 is pressed against the rib 12 at one side thereof, and since the spout is constructed of a rubber-like material there will be continuous pressure exerted between the rib 12 and the lip 7, which will form an effective seal at the exterior of the closure 2.

When the spout is so assembled with the closure 2, the inside surface 17 of the flange 13 forms a continuation of the inner surface of the closure part from the edge of the opening 19 in the spout outwardly to the wall of the container. Over these surfaces is suitably affixed a frangible seal strip 20, such as shown in FIG. 3. The diameter of the seal 20 is not critical, so long as it is large enough to cover the joint 18 and extend outwardly thereof on the inner surface of the metal closure 2. If desired, it can extend to or into rolled edge 3. Seal 20 is formed of superimposed strips of foil, designated 25, which is a metal foil, and a strip of plastic material, such as 26. The metal foil is preferably .0007 of an inch in thickness approximately, and the thickness of the plastic strip 26 may be 1 or 2 mils. One strip is bonded to the other, and both are preferably heat sealed to the end closure as shown in FIG. 5.

The embodiment of the invention, shown in FIG. 6, is very similar to that above described, and this description will be confined to point out the differences. In FIG. 6, the spout 10 is of the same construction as that heretofore described, and similar parts thereof will be indicated by like reference characters. FIGS. 7 and 8 show an end closure part 30 before it is applied to a container body end. The periphery of the end closure part 30 has a flange 34, a bead 33 and an edge 35, which is subsequently crimped into firm engagement with the container body. A central aperture in the end closure 30 is surrounded by a rectilinear lip, or flange, 37. Inwardly of the lip 37 is an offset flange 38 formed by angularly related walls 38 and 39 which form the socket for the flange portion 13 of the spout part 10. The spout part is assembled within the end closure 30 in the same manner as described for the previous embodiment, and when so assembled the lip 37 distorts the shape of the fillet 15 in the plastic, or rubber-like, material of the spout part 10, so as to form an effective seal at the outer edge of the lip and the adjacent portion of the cylindrical external rib or flange 12 on the spout part 10. This forms the outer seal between the end closure 30 and the spout part 10. The inner seal is formed by a frangible sealing strip 25, 26 as heretofore described.

Referring now to FIGS. 9, 10 and 11, in this modification the spout is constructed exactly as above described, and the sole difference between this embodiment and the previous two, is the shape of the lip at the edge of the end closure surrounding the aperture therein. For this reason, the same reference characters will be used to indicate the same parts of the spout, and the description will be confined to the differences in the end closure part which affect the differences in the external seal between the edge of the aperture in the end closure and the spout, or the rib on the spout. In FIG. 11, the end closure 40 is provided with the flange 44 inside of the bead 43, which has an outer edge 45, which can be crimped into engagement with the open end of the con-

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tainer. A central aperture in the end closure 40 is surrounded by tapered lip 47, and the adjoining offset flange 48 and wall 49 form the cavity, or socket, for reception of the flange 13 on the spout part 10. Assembly of the spout 10 in the end closure 40 is performed in the same manner as above described, the spout being forced into the aperture until the rib 12 passes the tapered edge 47. The edge 47 then engages in the fillet 15 in such a manner as to distort its shape, so that the inside corner of the lip 47 is tightly pressed into the rubber-like material of the spout 10. The length of the tapered lip 47 is subject to variation with respect to the width of the fillet 15. If so desired, the length of the lip 47 may be so chosen as to bring both the inside and outside edges of the metal at the end of the lip into line contact with the rubber-like material adjacent the rib 12, and in the side of the rib 12 in the same manner as shown and heretofore described with respect to FIG. 6. Thus, the outer seal between the spout part 10 and the end closure part 40 is effected adjacent the edges of the lips 47 surrounding the aperture in the end closure, the same as heretofore described with respect to FIG. 6. The inner seal is effected by the sealing disk 25, 26 over the inner side of the spout which covers the joint 18 between the spout part and the end closure part. Only the minimum size of the disk or strip is critical to this invention. So long as it is large enough to cover the joint it will act as a seal for the inside joint between spout part 10 and closure part 40. All modifications contemplate a sealing disk at least this big. The sealing disk or strip may extend out to the periphery of the end closure part or alternatively into the rolled edge between the end closure part and the end of the container in which case it need not be heat sealed to the end closure part but only to the flange 13 of the spout part.

Changes in and modifications of the construction described may be made without departing from the spirit of my invention or sacrificing its advantages.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. A combined spout and end closure for a disposable type of cartridge for a dispensing gun having an apertured closure part adapted to be secured to the open end of a cartridge body, a hollow spout part of rubber-like material assembled in the aperture of the closure part and means for securing the spout part in the aperture of the end closure part comprising a flange at the inner open end of said hollow spout part, an integral rib around said spout part spaced from said flange, a fillet formed in said spout part between said rib and said flange, a flange integral with and offset from said closure part to form a socket around the aperture in said closure part to receive said first flange and project between said first flange and said rib and an angular lip at the periphery of the aperture in the flange on said closure part directed into said fillet and so constructed as to deform the material in the spout part adjacent said fillet to form a seal after said spout part is forced through the aperture in said closure part to seat the flange on said spout part in said socket and a sealing strip secured over the flange on said spout part and over a portion of the adjacent inside surface of said end closure to prevent leakage therebetween.

2. The combination as defined in claim 1 in which said lip is curved on a radius larger than said fillet.

3. The combination in claim 1 in which said lip projects angularly into said fillet and is so constructed as to deform the material of said spout part adjacent said fillet and said rib.

4. A combined spout and end closure for a disposable type of cartridge for a dispensing gun having an apertured closure part adapted to be secured to the open end of a cartridge body, a hollow spout of rubber-like material assembled in the aperture of the closure, and means for securing the spout part in the aperture of the end closure and forming a seal therewith comprising a flange

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around the opening in one of said parts, an integral rib around said same part and spaced from said flange, an annular lip extending completely around the other of said parts and disposed in the space between said rib and said flange on said first-named part with said annular lip wedged between said rib and said flange to press the edge of said lip onto the material of said first-mentioned part to form a seal between said parts and a sealing strip secured over the inner end of said spout part and apertured closure part to prevent leakage therebetween.

5. A combined spout and end closure for a disposable type of cartridge for a dispensing gun having an apertured metal end closure part secured to an open end of the cartridge, and an open hollow spout part of rubber-like material assembled projecting outwardly of said cartridge through the aperture of the metal closure part and means for securing said spout part in the aperture of said closure part comprising a flange formed integral with one of said parts, a pair of spaced apart flanges on the other of said parts between which said first flange is held under pressure to form a joint between contacting portions of said flanges, said joint terminating on the inside of said closure part at meeting surfaces between said flanges surrounding the opening in the hollow spout part, and a sealing strip secured across the inside of said closure part and completely covering the joint terminating on the inside of said closure part.

6. A combined spout and end closure for a disposable type of cartridge for a dispensing gun having an apertured metal end closure part secured to an open end of the cartridge, a hollow spout part of rubber-like material assembled projecting outwardly of said cartridge through the aperture of the metal closure part and means for securing said spout part in the aperture of said end closure part comprising an integrally formed radial flange

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at the inner open end of said hollow spout part and an integrally formed radial rib around said spout part spaced from said flange, a flange formed integral with said metal closure part around the aperture therein and offset from said closure part to form a socket to completely receive said first flange and form a smooth surface internally of said closure part, a lip projecting angularly from said offset flange surrounding the aperture in said end closure and wedged between the radial flange and rib on said spout to form an outside seal for the joint between contacting portions of said flanges and rib, said joint terminating on the inside surface of said closure part at meeting surfaces between said end closure and the flange on said spout around the opening in the hollow spout part, and a sealing strip secured across the inside of said closure part and said first flange to prevent leakage therebetween.

7. A combined spout and end closure as defined in claim 6 in which said lip is curved on a radius larger than the distance between said radial flange and said radial rib on said spout part.

8. The combination as defined in claim 6 in which said lip projects angularly into said radial rib on said spout part and is so constructed as to deform the material of said spout part.

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