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DISPENSING DEVICE FOR CAULKING CARTRIDGES

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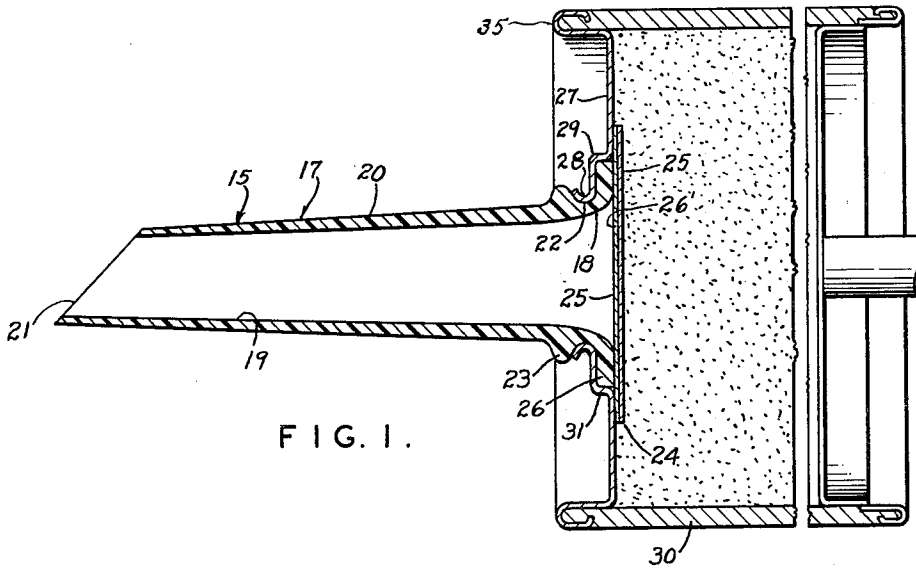


FIG. 1.

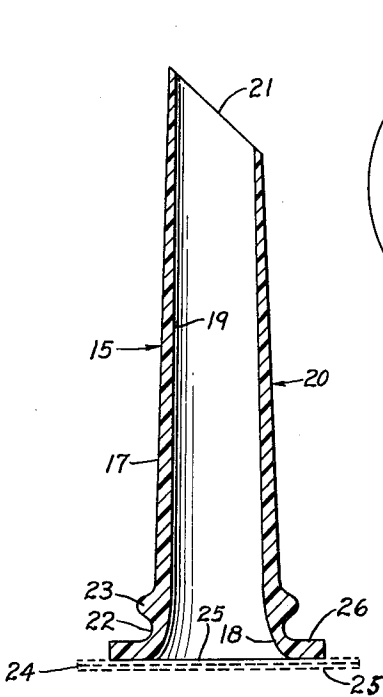


FIG. 2.

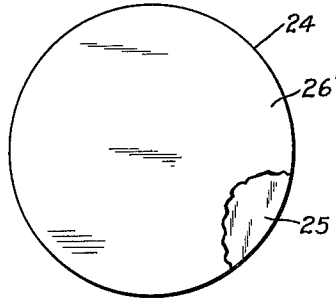


FIG. 3.

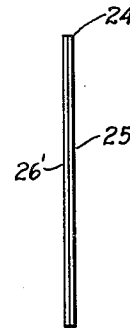


FIG. 4.

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3,071,294 DISPENSING DEVICE FOR CAULKING CARTRIDGES

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Continuation of application Ser. No. 593,788, June 25, 1956. This application Apr. 3, 1961, Ser. No. 100,285
4 Claims. (Cl. 222-327)

This invention relates to new and useful improvements in a dispensing device for use on cartridges containing materials like caulking compound and more particularly to a dispensing device which includes a spout mounted in an end closure secured to the cartridge and a frangible seal for closing the spout constructed and arranged to prevent leakage through the spout or seepage between the spout and the end closure. This invention is a continuation of a prior application disclosing the same invention, Serial No. 593,788, filed June 25, 1956, now forfeited, which application is in turn a continuation-in-part of a prior application disclosing the same invention, Serial No. 521,602, filed July 12, 1955, and now abandoned.

The dispensing device, according to this invention, is applied to the open end of a cartridge of the kind used as a refill in portable guns. The gun supplies the force necessary to discharge the contents of the cartridge through the dispensing device, and, when the cartridge is empty, it is thrown away. Both refill cartridges and guns are well-known. Usually a cartridge is a paper tube made in a tube winding machine which winds several paper tapes having an adhesive coating into a paper cylinder. The cylinder is cut into lengths about eight and one-half inches long to form the cartridge bodies. Subsequently, in the manufacturing process, an end closure is applied to one end of the cartridge body which usually has a projecting spout. The cartridge body is then filled with compound by the packer and, subsequently, closed with a piston type cap or the like. The gun in which the cartridges are used usually has a socket at one end acting as an abutment for the spout end of the cartridge and a plunger at its opposite end which is movable into contact with the piston type cap. A pistol type grip on the gun contains a ratchet-like mechanism engaging a toothed rack on the plunger and is actuated by a pivoted trigger on the pistol grip to force the plunger against the cartridge piston and expel the contents of the cartridge under pressure through the spout.

The material with which the cartridge is charged contains a mixture of ingredients including oils, and, since the cartridges may be in stock for a considerable period before being sold, the cartridge should be leak proof otherwise seepage will destroy its saleability, or in extreme cases the compound may dry out adjacent one end or the other and the contents cannot then be discharged through the spout. It has been recognized that seepage of oils or solvents from the cartridge is very difficult to prevent.

This invention has as its primary object to provide a novel seal for the dispensing device or spout end of the cartridge which will prevent this seepage.

It is a still further object of this invention to provide a novel construction for a dispensing device of this kind whereby the spout is sealed against leakage both through the spout and between the spout and its connection with the cartridge.

It is still a further object of this invention to provide the dispensing device with a frangible seal which can be easily broken to dispense the cartridge contents through the spout of the dispensing device.

It is still another object of this invention to provide a seal for a dispensing device which will prevent any seepage at the connection between the spout and the car-

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tridge after the seal is broken and during discharge of the contents of the cartridge under pressure.

According to this invention, the dispensing device secured to the open end of the cartridge is constructed of two pieces. One is a spout with a flange surrounding its inlet end and the other is an end closure with an aperture surrounded by a recess. The end closure has its edges rolled onto or otherwise secured to the open end of the cartridge body. The spout is mounted to project through the aperture in the end closure with its flange in the recess. The spout and end closure are interconnected in a way to prevent separation. A disk-like frangible seal, preferably of laminated sheets of plastic and metal foil, big enough to cover the inlet of the spout and extend over the surface of the end closure all around the spout flange, is secured completely around the inlet of the spout to seal the spout inlet. The disk-like frangible seal, when secured in this manner, is held against the inner surface of both the end closure and the inner surface of the flange during storage and during use so that oil or solvents cannot penetrate under the outer edges of the disk-like seal to reach either the spout inlet or the joint at the connection between the spout and the end closure. Before being used, the part of the frangible seal over the inlet to the spout must be broken, but the remaining parts of the seal are still operative to prevent seepage at the joint between the spout and closure.

Further objects and advantages will appear from the following detailed description which is in such clear, concise and exact terms as to enable anyone skilled in the art to make and use the invention when taken with the accompanying drawings, forming a part thereof, and in which:

FIG. 1 is a longitudinal sectional view taken through the body of a cartridge and a dispensing device constructed according to this invention secured to the open end thereof. The center section of the cartridge is broken away so as to show the opposite end with the plunger of the gun positioned to force out the content of the cartridge;

FIG. 2 is a vertical section through the spout used in the dispensing device;

FIG. 3 is a plan view of a sealing disk with a portion broken away to illustrate its laminated construction; and

FIG. 4 is a side view of the disk shown in FIG. 3.

Referring by way of example to FIG. 1, a tubular cartridge body 30 is closed at its discharge end by a dispensing device secured to the open end of the cartridge body 30. This dispensing device includes a metal end closure 27 which is rolled or crimped to the open end of the cartridge body 30 as shown at 35. End closure 27 is die punched to form an aperture with a rolled edge 28. This same operation may also form a recess 29 concentric with the opening formed by the rolled edge 28. Spout 15 has a flange inlet end 26 and a nozzle discharge end 21 and is mounted with its discharge end 21 projecting through the aperture or opening 28 in end closure 27. When mounted in this manner, the flange 26 surrounding the inlet 18 of the spout 15 is seated in the recess 29 surrounding the rolled edge forming the aperture 28 in the end closure 27. The flange 26 on the spout 15 fills the recess 29 so that the inner face of the flange and the inner face of the end closure 27 are substantially coplanar. When the two pieces are assembled, the flange 26 may be held in the recess 29 by first dipping its flange end in some kind of fast drying cement before inserting the spout 15 through the rolled edge of the aperture 28. The cement will temporarily hold the spout flange 26 in place in the recess 29 of the end closure 27.

On the outside wall 20 of the nozzle 15 is an integral convex bead 23 located adjacent to the flange 26. A fillet 22 forms an annular groove between the bead 23

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and flange 26 into which the rolled edge 28 of end closure 27 projects to hold the spout 15 in the end closure 27. The spout has an enlarged inlet end 18 and is tapered internally at 19 within the nozzle part 17.

After the spout 15 has been assembled in the end closure 28, the inlet end of the spout 15 indicated as 18 is closed by a frangible seal 24 in the form of a circular disk which extends across the inlet 18, across the flange 26 and onto the inner surface of the end closure 27 completely around the flange 26 so as to cover the joint between the outer edge of the flange 26 and the outer edge of the recess 29. This disk-like seal 24 is applied after the spout is mounted in the end closure and is sealed to the inner face of the dispensing device completely around the inlet 18 of the spout 15 so as to be held against the inner surface of the end closure 27 and flange 26 to prevent seepage of the solvents and oils contained in the cartridge through or around the inlet end of the spout during storage of the cartridge.

The frangible seal 24 is a strip of material formed of a layer of metal foil 25 adhesively connected to a layer of polyethylene material 26'. The foil strip may be about seven-ten-thousandths of an inch thick and the plastic strip one or two mils in thickness. The metal foil used is preferably aluminum, and this foil is superimposed upon and suitably bonded to the polyethylene strip 26'. In the preferred form of this invention, the spout 15 and its flange are constructed of plastic material and this makes it possible to heat seal the polyethylene plastic facing on the frangible seal to the inner surface of the dispensing device so that the seal will bond to the flange 26 and will not separate from the inner face of the end closure 27.

To use the cartridge, it is first mounted in the gun and then the seal 24 is broken by actuating the gun to develop internal pressure in the cartridge or otherwise breaking the portion of the seal over the inlet 18 of the spout 15. The remainder of the seal, however, will remain intact in sealing relation with the joint between the edge of the flange 26 and the edge of the recess 29 to prevent leakage between the end closure 27 and spout 15.

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 dispensing device for a refill type caulking compound cartridge wherein the compound is discharged under pressure comprising a substantially tubular dispensing spout and a centrally apertured end closure for the cartridge, said tubular spout having a radially extending flange formed integral therewith at the inlet end of

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said spout, said end closure being formed with a recess surrounding the central aperture therein, said spout being secured to said closure with said flange in said recess and said spout being concentric with the central aperture therein, and a sealing disk of thin frangible material substantially concentrically arranged with respect to the central aperture in said closure and sealingly secured to the inner surface thereof radially outwardly of said recess and covering the central aperture in said closure to prevent leakage into said recess and between the contacting surfaces on said flange and in said recess.

2. The combination as defined in claim 1 in which said disk of frangible material comprises laminated plies of plastic sheet and metal foil.

3. The combination as defined in claim 1 in which said disk of frangible material is heat sealed to said spout and said closure.

4. In a refill type of cartridge for use in a caulking gun, said cartridge having a dispensing device secured at one end thereof through which the contents of the cartridge is discharged under pressure, said dispensing device including in combination a substantially tubular dispensing spout and an apertured end closure for the cartridge, said tubular spout having a radially extending flange at the inlet end of said spout, said end closure being formed with a recess at its inner side surrounding the aperture therein, and said tubular spout being secured in said end closure with said flange in said recess and said tubular spout projecting through the aperture in said closure, the improvement in the combination of said spout and said closure of a frangible seal comprising a sealing disk of thin frangible material extending over the inlet end of said spout onto the surrounding surface of said end closure and secured in sealed relation completely around the inlet at the flanged end of the spout and held thereby to the inner surface of said end closure and over the joint between the spout and end closure radially outwardly of said spout to thereby cover and seal the inlet end of the spout and also cover the joint between said flange and said closure to prevent leakage between the spout and the end closure.

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