Nov. 10, 1964 J. L. HARWOOD 3,156,387

COMBINED PACKAGE AND DISPENSING UNIT FOR PASTY MATERIALS

Filed April 4, 1961

Fig. 1.

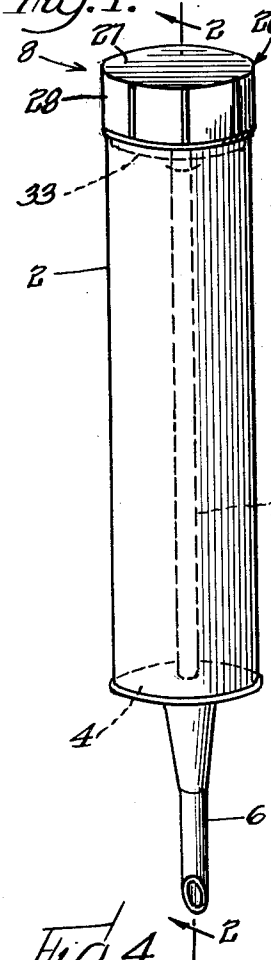


Fig. 2.

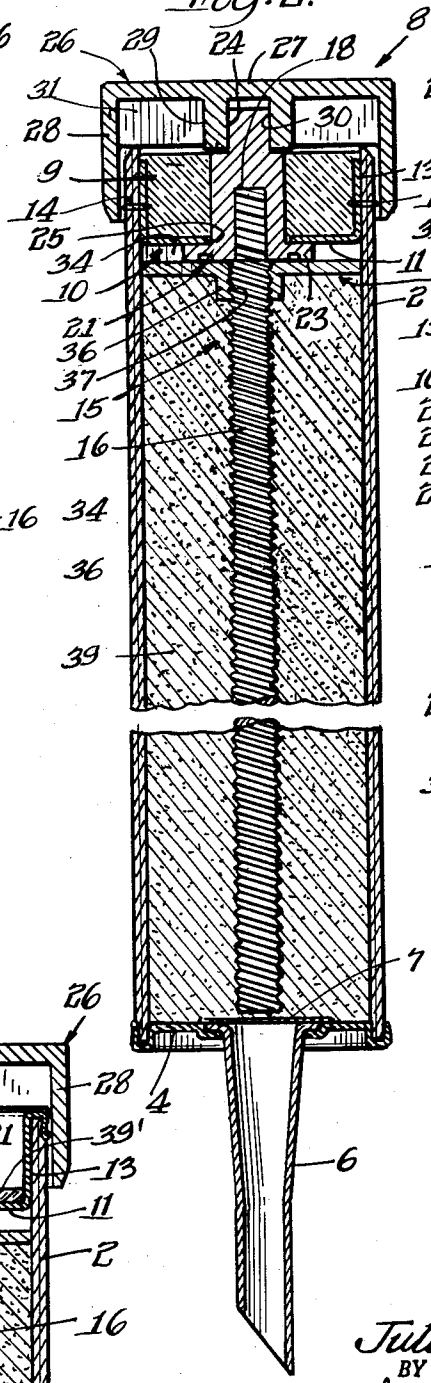


Fig. 3.

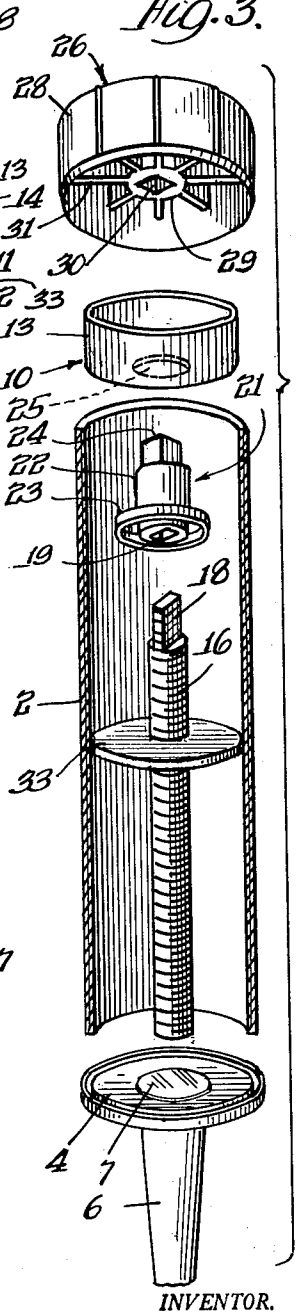
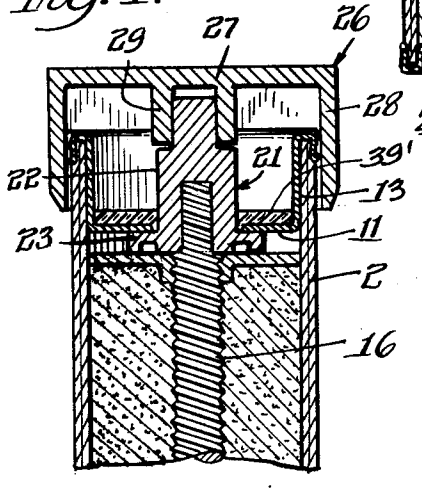


Fig. 4.



INVENTOR.

Julian L. Harwood

BY

Wallenstein Spangenberg & Hattis

Attys

United States Patent Office 3,156,387 Patented Nov. 10, 1964

3,156,387

COMBINED PACKAGE AND DISPENSING UNIT FOR PASTY MATERIALS

Julian L. Harwood, 2007 Brummel, Evanston, Ill.

Filed Apr. 4, 1961, Ser. No. 100,553
1 Claim. (Cl. 222—390)

This invention relates to the packaging of grouting or caulking compositions used, for example, for sealing cracks and crevices or for filling spaces between wall tiles and the like. The invention is an improvement upon the invention disclosed in application Serial No. 16,521, filed March 21, 1960, on a package for caulking compound, now abandoned.

Grouting or caulking compositions are relatively thick, pasty materials which are difficult to dispense in controlled amounts. In recent years, it has been conventional to package caulking compositions in cylindrical cardboard containers having a dispensing opening at one end which is normally sealed, and a plunger member press fitted in the other end and frequently sealed to the walls of the container, the sealing of the container being required to prevent hardening of the caulking composition by contact with air. These containers, or cartridges as they are often referred to, are designed for use with a device commonly referred to as a grout gun, which includes a pocket or chamber for holding the cartridge and a piston which is advanced by operating a trigger-like lever which easily moves the plunger in the end of the cartridge progressively in discrete controlled steps toward the dispensing end thereof, to force the caulking composition through the dispensing opening at the opposite end of the cartridge. The requirement of a grout gun for dispensing the caulking composition makes the cartridges unattractive to most home users because of the expense involved in purchasing the grout gun.

The present invention provides a relatively inexpensive caulking compound package including a self-contained dispensing unit which takes the place of the aforesaid cartridge and grout gun for dispensing relatively thick pasty materials in controlled amounts. In its most preferred form, the present invention utilizes standard components for most of the parts making up the caulking compound package, so that a small manufacturer may efficiently package the caulking compound in the manner to be described without a costly investment in special machinery.

The present invention also provides a simple and unique means for readily sealing the package against ingress of air in a manner which does not complicate or require the modification of the basic package. Such a seal becomes important when packaging a caulking composition which hardens into a solid block upon prolonged limited exposure to air. By providing a seal construction which can be simply added to a basic package when needed, the design of the basic package can be simplified and standardized for use with a variety of different caulking compositions.

In accordance with the most preferred form of the present invention, the caulking compound package includes a container body comprising a standard cardboard tube open at one end to receive the caulking compound and closed at the opposite end by an air-tight end wall and sealed dispensing nipple secured thereto. The package further includes a self-contained dispensing unit mounted in the initially open end of the container body after it has been filled with caulking compound. This dispensing unit preferably includes a cup-shaped, thrust bearing member. The thrust bearing member has an apertured central wall and a peripheral wall extending outwardly along the inside surface of the container body

and anchored to the container body by securing means, such as staples, passing through the container body and the peripheral wall of the thrust bearing member. The use of a cup-shaped member oriented in the manner described enables the staples readily to be applied through the container body and the peripheral wall of the thrust bearing member by positioning the anvil of a conventional stapling machine on one side thereof and applying the head of the machine to the opposite side thereof. This means of securing the thrust bearing member in place avoids the use of costly seam rolling machinery for securing the thrust bearing member to the container body.

The dispensing unit further includes screw means passing through the aperture in the central wall of the thrust bearing member. The screw means has a threaded portion within and extending for most of the length of the container body and a rotatable knob portion on the outside of the container body fixedly connected to the threaded portion through the thrust bearing member. The screw means has a shoulder formed, for example, by a lateral extension, which bears against the inner surface of the thrust bearing member. A plunger member is mounted for longitudinal sliding movement within the container body and threads around the threaded portion of the screw means. As the rotatable knob portion of the screw means is rotated, the plunger member is advanced longitudinally toward the dispensing end of the container body. The thrust imparted to the plunger member as the plunger member pushes against the caulking composition is taken up by the aforesaid thrust bearing member against which bears the aforesaid shoulder of the screw means.

In accordance with another feature of the present invention, where the caulking compound is one which hardens into a solid block upon prolonged limited exposure to air, an air-tight seal is formed at the end of the container body in which the dispensing unit is mounted by using the thrust bearing member as a receptacle or well defining member for a plastic sealing material, such as wax. The sealing material is poured in a plastic state into thet end of the container body with the latter oriented in a vertical position with the dispensing spout extending downwardly. Where a cup-shaped thrust bearing member is used and anchored in place in the manner above described, it is positioned so that the end of the peripheral wall thereof is spaced a small distance from the end of the container body. The sealing material is then poured above the level of the peripheral wall of the cup-shaped thrust bearing member, so that upon hardening of the material an air-tight seal is formed over the small crack or spaced between the thrust bearing member and the container body as well as the space between the thrust bearing member and the screw means passing therethrough.

In accordance with a broader aspect of the invention, the thrust bearing member less desirably in some instances may be connected and sealed to the container body by crimping the peripheral wall thereof around the edge of the container body using seam rolling machinery. In such case, the well defined by the cup-shaped thrust bearing member need only be supplied with a thin layer of wax to seal the space between the thrust bearing member and the screw means.

Other features of the invention relate to other specific structural details and relationships between the various parts of the dispensing unit to be described later on in this specification and as illustrated in the drawings wherein:

FIG. 1 is a perspective view of a sealed caulking compound package constructed in accordance with the present invention;

FIG. 2 is an enlarged longitudinal sectional view

through the caulking compound package of FIG. 1, taken substantially along the line 2—2 of FIG. 1;

FIG. 3 is an exploded view of the component parts making up the package of FIGS. 1 and 2; and

FIG. 4 is a fragmentary longitudinal sectional view through a modified form of the present invention.

Referring now to the drawings, the form of the invention illustrated therein comprises a relatively rigid open-ended cylindrical container body 2 which may comprise a cardboard tube. Where the container body is to be air-tight, it may be lined with aluminum foil or may be coated with lard, wax or other material which is air and water-tight and is compatible with the caulking composition, if the cardboard material itself does not have these properties. One end of the container body 2 has a suitable metal end wall 4 carrying a dispensing spout 6. The dispensing spout 6 is an open-ended member sealed at its upper end by a sealing disc 7 made of tin foil or the like adhesively or otherwise secured to the inner surface of the end wall 4. The end wall 4 together with the spout 6 form an air-tight closure for one end of the container body. The container body 2 with the end wall 4 and spout 6 secured thereto is a product which is offered for sale by one or more manufacturers for use by packagers of caulking or other plastic compositions.

Mounted in the opposite open end of the container body is a sealing and dispensing unit generally indicated by reference number 8. This unit serves as a means for retaining a sealing compound 9 and dispensing caulking composition 39 from the container body. The dispensing unit includes a thrust bearing member 10 which, in the most advantageous form of the present invention, is a thin cup-shaped metal or molded plastic member having a central wall 11 and a peripheral wall 13. The peripheral wall 13 is preferably sized to make a snug fit with the inside surface of the container body 2. The thrust bearing member is positioned within the container body with the peripheral wall 13 thereof facing outwardly and, in the form of the invention illustrated in FIGS. 1 through 3, the outer end edge of the peripheral wall is spaced a small distance inwardly from the end of the container body. The thrust bearing member is anchored to the walls of the container body 2 by staples 14 passing through the peripheral wall 13 and the container body.

The sealing and dispensing unit 8 further includes a manually turnable screw means generally indicated by reference numeral 15. The manually turnable screw means 15 as illustrated comprises a cylindrical rod 16 threaded for its full length and flattened at its upper end 18. The flattened upper end 18 is force fitted within a central oval shaped socket 19 formed in a coupling member 21 which may be made of a molded synthetic plastic material. The coupling member 21 has a main cylindrical body portion 22 having an outwardly extending flange 23 at the bottom thereof and a square neck 24 projecting upwardly from the top thereof. The cylindrical body portion 22 loosely fits within a central circular opening 25 formed in the central wall 11 of the thrust bearing member 10.

The screw means further includes a rotatable knob member 26 which may be made of a molded synthetic plastic material. The twist knob member 26 has a circular top wall 27 from the perimeter of which depends a cylindrical skirt 28. A boss 29 depends from the bottom of the top wall 26 for a distance substantially less than the height of the skirt 28, the boss having a square socket 30 therein into which the square neck 24 of the coupling member 21 is press fitted. A number of radially extending reinforcement ribs 31 extend between the skirt 28 and the boss 29. The unobstructed cylindrical space is encompassed by the skirt 28 inwardly of the boss 29 and the ribs 31. This space loosely receives the end portion of the container body 2, the rotatable knob member 16 thereby circumscribing the end portion of the container body to form an attractive and compact caulking compound package. The screw means 15, comprising the interfitting assembly of the threaded rod 16, coupling member 21 and rotatable knob member 26, is constrained against substantial longitudinal movement by the abutment of the flange 23 of the coupling member against the inner surface of the central wall 11 of the thrust bearing member 10 and the abutment of the ribs 31 of the knob member 26 against the end of the container body 2. The screw means 15 can be rotated by simply grasping the skirt 28 of the knob member 26 and rotating the same.

A plunger member 33 is provided for forcing the caulking compound 39 within the container body 2 toward the dispensing end thereof when the screw means is rotated in a clockwise direction. The plunger member as illustrated has a thin cylindrical body portion 34 from which depends a central cylindrical boss 36. The plunger member has a central threaded bore 37 extending through the cylindrical body portion 34 and the boss 36, the threaded bore 37 threadingly receiving the threaded rod 16 forming part of the screw means 15. The periphery of the cylindrical body portion 34 of the plunger member 33 slidably engages the inner surface of the container body 2. The latter surface is preferably a slippery surface formed by impregnating the cardboard material with wax or similar material, or by lining the container body with aluminum foil or similar smooth material. To use the package of the present invention, the sealing disc is broken by pushing a pencil, nail or other pointed object through the spout 6. Then, as the screw means 15 is rotated, the plunger member 33 is advanced toward the dispensing spout-carrying end of the container body 2, to force the caulking compound 39 through the dispensing nipple 6.

In the exemplary form of the invention now being described, the container body 2, the end wall 4 and the spout 6 initially form an integral unit to be filled with caulking compound by the packager thereof. In completing the caulking compound package in accordance with this form of the invention, the container body 2 may be initially substantially filled with caulking compound before the dispensing unit is mounted therein, sufficient clearance space being allowed within the container body for the insertion of the threaded rod 16 and the thrust bearing member 10 into the container body.

In assembling the caulking compound package, the assembly of the threaded rod 16, plunger member 33, coupling member 21 and the thrust bearing member 10 is inserted within the substantially filled container body 2 before the rotatable knob member 26 has been attached to the coupling member 21. The peripheral wall 13 of the thrust bearing member is then stapled in the position shown in FIG. 2, there being plenty of clearance on opposite sides of the container body and peripheral wall 13 for application of the anvil and staple applying head of a staple applying machine. When the stapling operation is completed, the central wall 11 of the thrust bearing member 10 defines the fixed bottom of a shallow annular well between the cylindrical body portion 22 of the coupling member 21 and the peripheral wall 13 of the thrust bearing member. When an air-tight package is desired, this well is filled with a sealing material, such as wax 9, which is poured to a level slightly above the top edge of the peripheral wall 13 which, as above explained, is positioned a small distance inwardly or below the outer end of the container body 2. When the wax 9 or other sealing material has hardened, an air-tight seal is provided over the narrow space between the peripheral wall 13 and the container body, on the one hand, and the defining walls of the opening 25 of the thrust bearing member 10 and the cylindrical body portion 22 of the coupling member 21 on the other hand. The last step in the assembly of the caulking compound package comprises the force fitting of the rotatable knob member 26 over the square neck 24 at the top of the coupling member 21.

It should be noted that the air-tight caulking compound

package just described is one which can be fabricated from relatively simple and inexpensive parts which can be readily assembled and sealed in the manner explained without any costly machinery. The orientation and shape of the thrust bearing member 10 is such that it can be readily stapled to the container body 2 if desired, and it forms a shallow well for reception of a sealing material to provide an air-tight seal at the end of the container body 2 where desired. Certain caulking compositions, such as vegetable oil based compositions used for caulking windows, etc., do not harden into a solid block upon limited exposure to air through the small clearance spaces between the thrust bearing member 10 and the contiguous parts of the package, as in the case of many latex based caulking compositions. With the former composition wax is not required.

Where seam rolling machinery is available, the peripheral wall 13 of the thrust bearing member 10 can be secured and sealed to the container body 2 by crimping the upper end portion of the peripheral wall tightly around the upper edge of the container body 2, as illustrated in FIG. 4. Where a complete air-tight seal is desired, a small layer of wax 39' is poured into the bottom of the well defined by the thrust bearing member 10, which small amount of wax is all that is required to seal adequately the clearance space between the cylindrical body portion 22 of the coupling member 21 and the defining walls of the central opening 25 of the thrust bearing member.

It should be further noted that the broader aspects of the present invention are not limited to other details of construction described above. For example, the threaded rod 16 and the coupling member 21 could be made as a single integral molded plastic unit. Also, the construction of the dispensing spout 6 and the end wall 4 constitute no part of the present invention and could be attached to the container body 2 after the dispensing unit 8 and the caulking composition 9 have been placed within the container body 2.

What I claim as new and desire to protect by Letters Patent of the United States is:

A self-contained package and dispensing unit for dispensing relatively thick, flowable materials comprising: a rigid container body having at least one fully open end and a supply space therein substantially filled with said material, said container body having an end wall closing off the other end thereof, said end wall including a spout for dispensing said material, a dispensing unit anchored in and closing off said fully open end of the container body for dispensing said material in controlled amounts

through said spout, said dispensing unit comprising a rotatable screw means having a threaded portion extending longitudinally within said container body for substantially most of the length thereof, a plunger member fixed against rotation and slidably mounted for longitudinal movement within said container body and threaded over said threaded portion of said screw means so as to be moved toward the dispensing end of said container body upon rotation of said screw means, a synthetic plastic coupling member extending from the end of said screw means adjacent said fully opened end of said container body, said coupling member having an axially extending body portion spaced substantially inwardly from the walls of the container body and a flange extending transversely from the inner end of said body portion at a point within and spaced from the open end of said container body, a separate thin-walled cup-shaped thrust bearing member mounted within said open end of said container body and adapted to be filled with sealing compound, said thrust bearing member having a transversely extending central wall at the inner end thereof which is positioned on the outer side of said flange of said coupling member whereby said flange transfers the thrust on said screw means to said central wall, said transversely extending central wall having a central opening through which said body portion of said coupling member outwardly extends, said thrust bearing member having an outwardly extending peripheral wall engaging the inner surface of said container body and anchored directly to said body to prevent movement thereof in any direction, and a separate rotatable knob member having a transverse outer wall overlying the open end of said container body and solely engaging and non-rotatably connected to the outer end of the body portion of said coupling member, said outer wall being spaced from said central wall of said thrust bearing member to leave an appreciable space which can be filled with sealing compound and which space is covered by said transverse outer wall, said rotatable knob member being attached to the coupling member subsequent to the connection of said thrust bearing member to the container body where there is full access to the inside of the cup-shaped thrust bearing member prior to connection of the rotatable knob member to the coupling member.

References Cited in the file of this patent

UNITED STATES PATENTS

1,254,667	Fesler	Jan. 29, 1918
1,458,281	Everett	June 12, 1923
1,728,298	McLaughlin	Sept. 17, 1929