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CAULKING GUN

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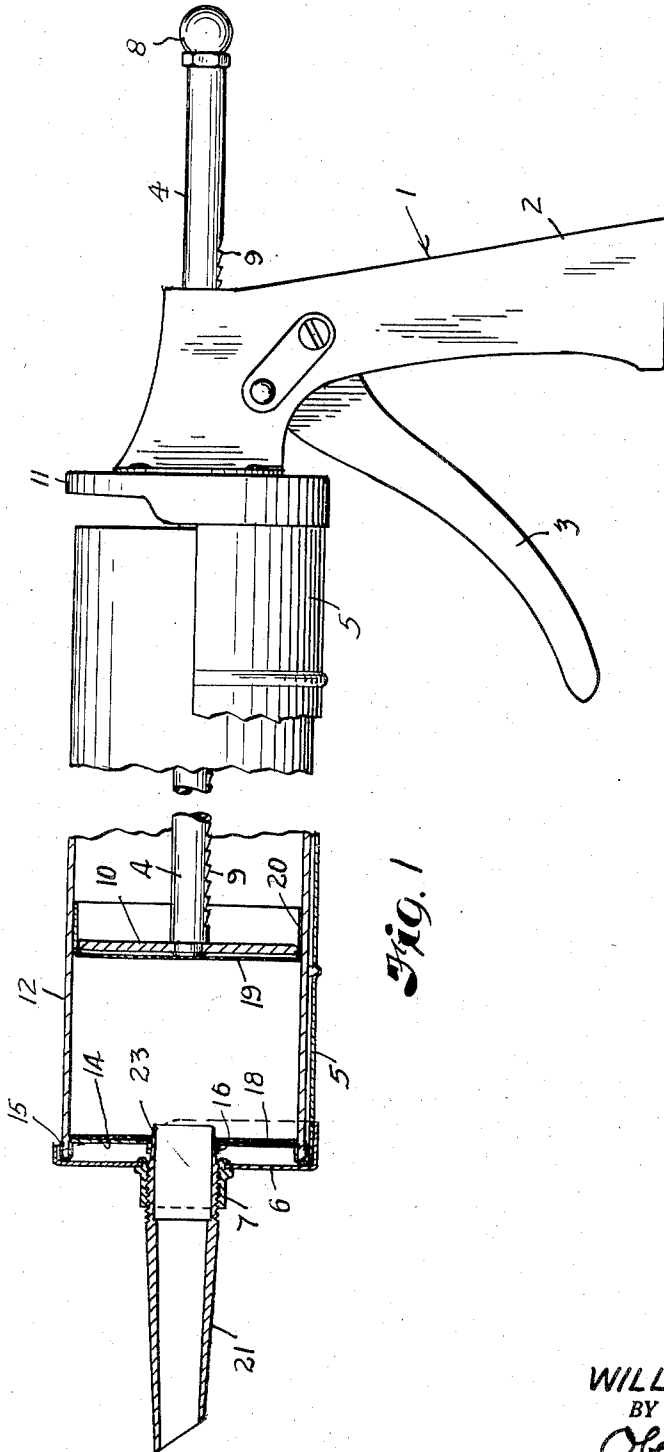


Fig. 1

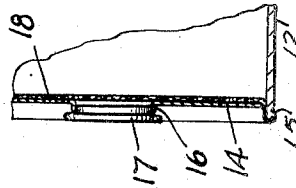


Fig. 3

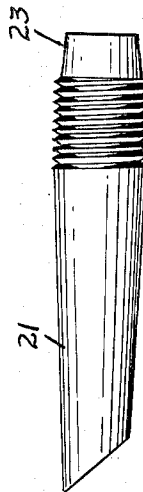


Fig. 2

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CAULKING GUN

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1 Claim. (Cl. 222—327)

The present invention relates generally as indicated to a caulking gun and more particularly to improvements in a caulking gun and cartridge assembly to insure a leaf-proof joint between the discharge opening of the cartridge and the dispensing spout of the gun.

At the present time, it is a prevalent practice to package caulking material in a paper or metal container which is closed at one end by a tight-fitting piston or plunger therein and at the other end by a sheet metal stopper or plug removably fitted in the central discharge opening formed in a thin sheet metal end wall member secured to the cartridge. In addition to the closing of the opening by means of a removable plug, there is usually cemented on the inside of said end wall member a paper or other frangible seal that extends across said opening. When it is desired to use the cartridge, the plug is first removed, as with a screw driver, pliers, or the like; and then the paper or like seal is punctured, whereupon the cartridge is ready for installation in a caulking gun with the discharge opening thereof in register with the opening through the spout of the caulking gun. The caulking material is discharged from the cartridge under the influence of a ratchet feed rod, the head of which bears on and moves the piston in said cartridge.

For the sake of economy of manufacture, the aforesaid cartridge is usually made of cardboard or thin sheet metal having secured thereto, as aforesaid, a thin sheet metal end wall member formed with a tubular lip for receiving the closure plug. Therefore, in use, such end wall member is subject to alternate deflection or "breathing" action as the pressure on the caulking material is alternately increased and released during the incremental advance of the piston therein. Such "breathing" of the cartridge end wall results in leakage of caulk between the spout and the tubular lip of the cartridge end wall, unless a joint of the character herein disclosed is employed.

In order to preclude such leakage and, in addition, to provide a convenient means for automatically rupturing the paper or like seal in the cartridge, it is a principal object of this invention to provide a gun which has a screw-in discharge spout, the latter being formed with a frusto-conical inner end portion that is adapted to be tightly wedged in the lip of the cartridge opening and that is provided with a relatively sharp inner end adapted to sever or rupture said seal.

It is another object of this invention to provide a caulking gun of the character indicated, in which the wedged engagement between the tapered end of the discharge spout and the cartridge is of a character such that no leakage gaps are created even though the end wall of the cartridge may "breathe" or flex as the pressure on the caulking material varies.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related

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ends, the invention, then, comprises the features herein after fully described and particularly pointed out in the claim, the following description and the annexed drawings setting forth in detail an illustrative embodiment of the invention, this being indicative, however, of but one of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

Fig. 1 is a side elevation view, partly in cross-section, showing a preferred form of caulking gun and cartridge assembly;

Fig. 2 is an elevation view of the discharge spout constituting the present invention; and

Fig. 3 is fragmentary cross-section view of the end of the cartridge showing the paper or like seal across the discharge opening and the closure plug therein.

Referring now more particularly to the drawings, the caulking gun 1 here shown is of conventional form including a handle 2 to which a lever 3 is pivotally mounted and which lever, in known manner, actuates a ratchet feed mechanism (not shown) to axially advance the rod 4 toward the left each time that the lever 3 is drawn toward the handle 2. Secured to the handle 2 is a forwardly extending, semi-circular cartridge holder 5.

The cartridge holder 5 is provided with a flanged end plate 6 to which is secured a threaded bushing 7 coaxial with the ratchet feed rod 4. The ratchet feed rod 4 aforesaid is provided with a handle 8 at its right hand end so that when said rod is turned about its axis to position the ratchet teeth 9 at the top said rod may be pulled to the right to position the head 10 thereon adjacent to end plate 11 of the handle 2.

The cylindrical cartridge body 12 is usually made of cardboard, or thin sheet metal, and when made of cardboard, it is usually provided with a coating or liner to prevent leakage of the caulking material and especially to prevent the absorption in the paper of the greases or oils contained in the caulking material. One end wall of the cartridge 12 is in the form of an apertured sheet metal ring 14 having a peripheral flange 15 which is spun or crimped over the end of the cartridge body. Said ring 14 is provided with a central opening in the form of a tubular lip 16 in which a plug 17 also made of thin sheet metal is adapted to be inserted as shown in Fig. 3. It is also common practice to employ a paper or plastic seal 18 cemented or otherwise secured on the inside face of said ring so as to prevent leakage of caulking material while the cartridge 12 is on display and before it is opened for use.

The other end of the cartridge body 12 is closed as by means of the snug-fitting plunger 19 which also preferably is made of relatively thin sheet metal having a cylindrical skirt 20 snugly engaging the inside wall of the cartridge body 12. Said piston 19 initially will be disposed close to the right hand end of the cartridge as viewed in Fig. 1.

When it is desired to use the caulking gun, the ratchet feed rod 4 is moved to its extreme right position and the discharge spout 21 which has threaded engagement in the bushing 7 is screwed outwardly so that the tapered, tubular end portion 23 thereof is disposed within the flange of end plate 6, or even nearly flush with the inside surface of said end plate. In fact, said discharge spout 21 may be removed altogether, if desired. The cartridge 12 may then be laterally slipped into place on holder 5 whereupon the discharge spout 21 is tightly screwed in. The inner end of said spout is relatively sharp, as shown, and therefore is effective to cut through the seal 18. The tapered portion 23 being of relatively small angle of taper snugly engages within the tubular lip 16 and will, in fact, deform the same to generally the same taper as said inner end portion 23.

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The rod 4 is then turned to the operating position with the teeth 9 at the bottom whereupon each time that the lever 3 is moved toward the handle 2, the rod 4 and its head 10 will be urged toward the left to correspondingly move plunger 19 to exert pressure on the caulking material in the cartridge 12. The caulking material will thus be displaced through the discharge spout 21. However, each time that the lever 3 is released, the pressure on the caulking material reduces and, therefore, there is a tendency for the end wall 14 of the cartridge to flex back and forth or "breathe" owing to such pressure variations.

In the present case, such "breathing" of the cartridge end wall 14, will not result in any leakage of the material between the lip 16 and the end portion 23 of the spout, because of the tight wedged engagement between the spout 21 and the lip 16. Such breathing may be especially noticeable in the larger one-quart size cartridges which are of diameter exceeding 2½", whereby the central portion of the end wall member 14 is quite flexible and would otherwise move back and forth with respect to the spout 21, except for the fact, that, in this case, such end wall member 14 is tightly wedged around the slow tapered end portion 23 of the discharge spout 21. The angle of taper is a self-locking taper and in one specific embodiment, the taper was about 5 to 10° with respect to the longitudinal axis of the spout 21.

When initially screwing in the spout 21, the inner end thereof will enter the lip 16 and, to some extent, the wall 14 will be deformed inwardly. Then, when pressure is applied on the caulk, the lip 16 tends to "climb up" on the taper 23 to effectively resist leakage. On the other hand, when the pressure on the caulk is released, the tight wedged fit of the lip 16 on taper 23 also is effective to prevent leakage.

Other modes of applying the principle of the inven-

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tion may be employed, change being made as regards the details described, provided the features stated in any of the following claim, or the equivalent of such, be employed.

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

In combination, a caulking gun cartridge comprising a tubular body having a relatively thin end wall at one end provided with a central discharge opening, and a tubular lip surrounding said opening and extending axially from one side and beyond said end wall, and a snug fitting plunger in the other end, and a caulking gun having spaced apart end plates between which said cartridge is positioned with its ends adjacent the respective plates and incrementally axially movable means engageable with said plunger to incrementally move the latter in said body toward such end wall to displace caulk from within said body through such discharge opening, and a discharge spout having threaded engagement with that end plate which is adjacent to said end wall and having an inner tapered end which wedges within said tubular lip to inwardly bow said end wall while pressing such other end of the cartridge body against the other end plate, and to make wedge seating engagement within said tubular lip so as to form a leakproof joint therewith and avoid loss of caulk despite breathing of said end wall under the influence of pressure exerted on the caulk by said plunger and upon release of such pressure during periods of non-use of said gun.

References Cited in the file of this patent

UNITED STATES PATENTS

1,484,331	Hopkins	Feb. 19, 1924
1,567,950	Hughes	Dec. 29, 1925
1,795,430	Howie et al.	Mar. 10, 1931
2,421,711	Moots et al.	June 3, 1947