

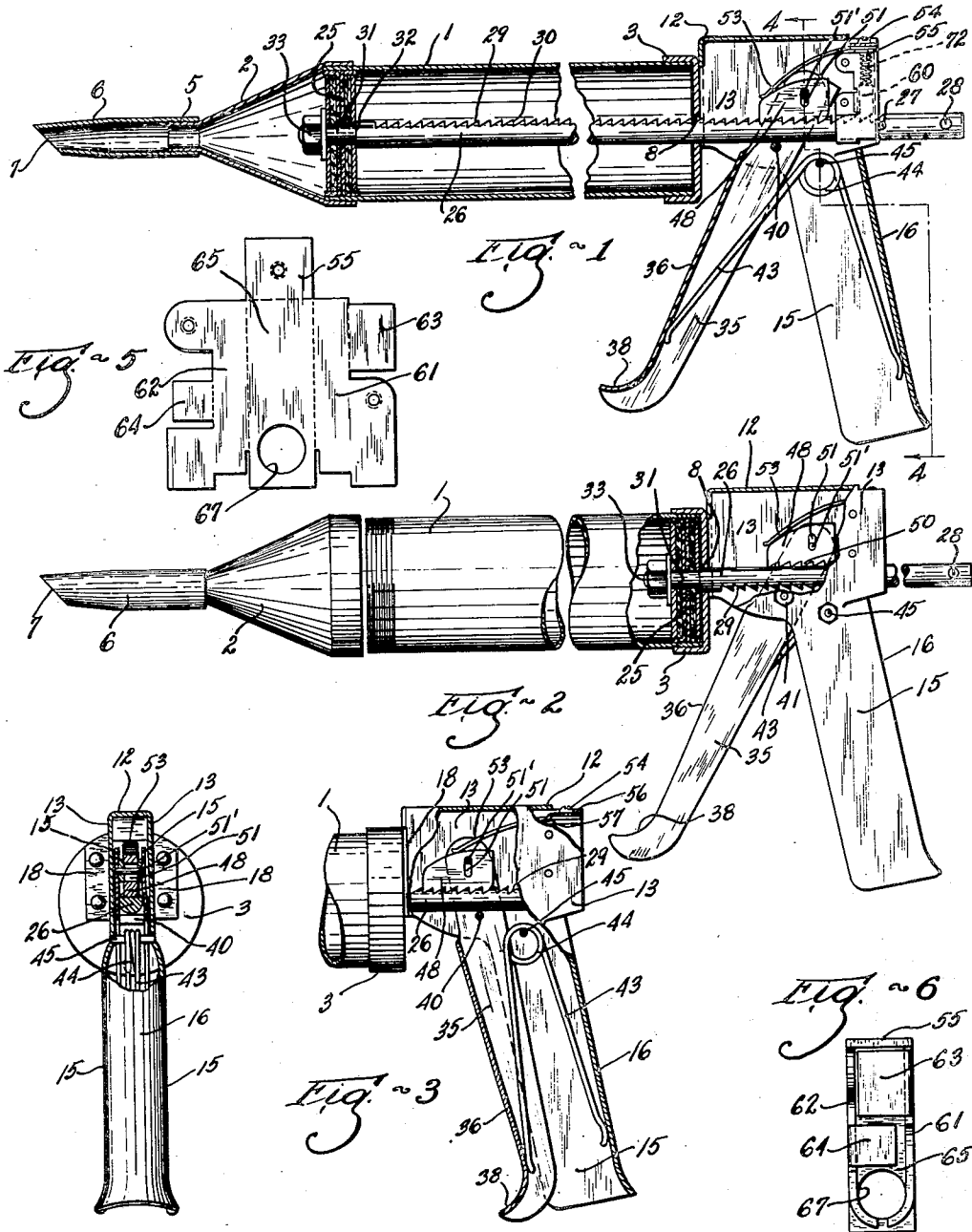
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PORTABLE CAULKING GUN

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PORTABLE CAULKING GUN

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This invention relates to improvements in caulking guns of the portable, hand operated type, and has for its general object the provision of a gun of this type which is of inexpensive construction, positive in its action, easy to handle and to operate, simple to load and reload, and of strong and sturdy character so that it is not likely to get out of order.

Further and more specific objects of the invention are in part obvious and in part will appear more in detail hereinafter.

The invention will be readily understood from the following description of one embodiment thereof, reference being had to the accompanying drawing in which

Fig. 1 is a longitudinal vertical sectional view of the present caulking gun; Fig. 2 is a side elevation thereof, with the front end cap detached and with other parts of the gun in different positions than in Fig. 1, a part of the rear end portion of the gun being broken away to show interior parts; Fig. 3 is a detail side elevation of the rear end portion of the gun, the parts being in ejecting position, a part of the gun handle being broken away for clearness of illustration; Fig. 4 is a rear view of the gun handle, partly in elevation and partly in section on the line 4—4, Fig. 1; Fig. 5 is a plan view of the sheet metal blank of which the pawl casing is made; and Fig. 6 is a front elevation of said pawl casing in completed form.

The present improved caulking gun comprises a cylindrical metal container 1 for the plastic caulking material, said container being provided with suitable end caps, at least one of which is removably connected to said container so as to provide ready access to the chamber of the container for loading purposes. In the embodiment of the invention here shown, both the front end cap 2 and the rear end cap 3 are threaded onto and therefore removably connected to the container, the front end cap being the one which is usually removed when it is desired to fill the container with the caulking material.

This front end cap 2 has a forwardly extending, generally conical portion terminating in a centrally disposed nipple 5 which may constitute the discharge end of the gun but which, in the present instance, has threaded or otherwise suitably attached thereto a nozzle tube 6 having a beveled discharge end 7, the beveling of said end permitting the ejected caulking material to be better applied to the work. The rear end cap 3 of the container is provided in its rear wall with a centrally disposed aperture 8

adapted to have extended therethrough and to support the hereinafter described piston feed bar 26.

At the rear end of the container 1 is the handle by means of which the gun is supported, said handle having associated therewith the means by which the gun is operated. The handle here shown is of the "pistol grip" type and is made of a one-piece sheet metal member bent to form an upper body portion and a lower, depending hand-gripping portion. Said body portion is of channel shape in vertical cross section, having a top part 12 and two depending, generally parallel and generally rectangular side parts 13. The hand-gripping portion of the handle is of generally channel shape in horizontal cross section with the opening toward the front of the gun. Said hand-gripping portion therefore includes two generally parallel side parts 15, each provided at its rear edge with an inwardly extending flange part 16, the inner edges of which parts abut and are welded or otherwise suitably connected, said parts forming the rear wall of the handle hand-gripping portion. As clearly shown in Figs. 1, 2 and 3, the handle hand-gripping portion extends downwardly and slightly rearwardly from the lower edges of the two side parts 13 of the handle body portion.

The handle body portion also includes means by which the handle is secured to the container 1 or to its rear end cap 3. In the present embodiment of the invention, the handle body portion is provided with a pair of flanges 18, which extend outwardly in opposite direction from the front edges of the side parts 13 and spot-welded or otherwise suitably secured to the rear surfaces of the container rear end cap 3, as best shown in Fig. 4.

Longitudinally movable within the container 1 is a suitable piston 25 made up of the necessary metal part or parts to provide the necessary strength and rigidity and of the necessary flexible non-metallic part or parts to provide the necessary seal between the piston and the container. Said piston is mounted upon the front end of a suitable feed bar 26 extending through the aperture 8 of the container end cap 3 and through the body portion of the gun handle, the projecting rear end portion of said bar being provided with a transverse stop pin 27 for limiting forward movement of said feed bar and being also provided to the rear of said pin with a larger and longer cross pin 28 to enable the bar to be more readily turned over and withdrawn by the operator in the reloading operation, as will later

appear. On its top and throughout substantially its entire length, said feed bar is provided with transverse teeth 29 having non-inclined or vertically disposed rear faces 30, as clearly shown in Figs. 1, 2 and 3. The front end portion 31 of the present feed bar is reduced and threaded, and the piston 25 is maintained on said reduced end portion, back against the annular shoulder 32 thereof formed by said reduction, by means of a nut 33 threaded upon the front end of said bar end portion and engaging said piston.

Forward longitudinal movement of the piston 25 within the container 1 to eject caulking material from said container through the nozzle 6 thereof, is produced by means acting upon or through the rear end portion of the piston feed bar 26. Said means includes a suitable trigger lever pivotally mounted intermediate its ends at 40 between the generally rectangular side parts 13 of the handle body portion. The trigger lever of the present gun is a one-piece sheet metal member of generally channel shape in horizontal cross section, opening toward the rear. Said lever therefore includes two generally parallel side parts 35 and a connecting front part 36, said parts terminating at their lower ends in a forwardly curved extension 38 which forms a stop for the operator's hand and therefore facilitates the handling of the gun, as will be readily understood. The pin 40, upon which the trigger lever is pivotally mounted, has its end portions extending through suitable apertures in the lever side parts 35 and through suitable apertures in the side parts 13 of the handle body portion, the projecting ends of said pivot pin being provided with suitable securing nuts 41.

As clearly shown in the drawing, the upper end portion of the trigger lever extends into and is movable back and forth within the body portion of the gun handle, between the side parts 13 thereof. The lower end portion of said lever, which extends downwardly almost as far as the hand-gripping portion of the gun handle, is movable back and forth into and out of the space between the side parts 15 of said handle portion. In order to normally maintain said lever in its operative position, a position in which the lever upper end portion is to the rear and the lever lower end portion is to the front, suitable yielding means is provided. The means here shown is a spring wire 43 arranged between and engaging said lever and said handle hand-gripping portion. The middle portion of said wire is coiled at 44 around a cross pin 45 extending between the side parts 13 of the handle body portion and located to the rear and slightly below the level of the cross pin 41 upon which the trigger lever is pivotally mounted. The two end portions of the spring wire 43, which end portions normally tend to diverge, extend downwardly along and engage at their lower ends the rear flanged part 16 of the handle hand-gripping portion and the lever front part 36.

As best shown in Figs. 1 and 3, the connecting front part 36 of the trigger lever terminates short of the upper end thereof, so that the feed bar 26 is free to extend between the upper end portions of the side parts 35 of said lever. Suitably mounted between the upper ends of said lever side parts, just above the feed bar 26, is a generally rectangular metal block 48 by means of which said lever is operatively and positively connected to or made effective upon the piston feed bar 26. Said block is provided on its lower surface and throughout its entire length with transverse teeth

50, said teeth corresponding to and meshing with the teeth 29 of the piston feed bar. In the embodiment of the invention here shown, said block is loosely mounted upon a cross pin 51 having its ends suitably mounted in apertures in the lever side parts 35, said block being provided intermediate its ends with a vertically disposed slot 51 to receive said pin. This slot permits said block to have some vertical movement relative to said lever and in order to yieldingly and firmly normally maintain said block down against the piston feed bar 26, with the teeth of said block in engagement with the teeth of said bar, suitable yielding means is provided. The means here shown comprises a resilient spring strip 53 having its front end bearing down upon the top surface of the block 48 and having its rear end suitably secured, such as by a screw 54, to the top portion 55 of a hereinafter described pawl casing.

In the present embodiment of the invention, the rear end portion of the top part 12 of the handle body portion is cut away, as best shown in Figs. 1, 2 and 3, for convenient assembly and disassembly of the spring strip 53. For appearance purposes, a small metal closure plate 56, of substantially the size of the portion cut away, is provided, said plate being arranged above the rear end of said spring strip 53, being held in place by the screw 54. Preferably and as shown, said closure plate at its front end is provided with two depending tongues 57 lying on opposite sides of the spring strip 53 and serving to prevent turning of said strip, as will be readily understood.

To eject the caulking material from the container 1, the trigger lever is moved in a counter-clockwise direction, the lower end portion of said lever moving rearwardly against the tension of the spring wire 43. The upper end portion of said lever, and hence the driving block 48 carried thereby, moves forwardly and, due to the connection of said block with the piston feed bar 26, such forward movement is also imparted to said feed bar, and, of course, to the piston 25 mounted on the front end thereof. Upon release of the trigger lever by the operator, the spring wire 43 automatically and quickly returns said lever from such inoperative position (a fully inoperative position being shown in Fig. 3) to its operative position, shown in Figs. 1 and 2, in which operative position said lever is again ready for another operation to again move the piston forwardly in the container 1. The engagement of the teeth of the block 48 with the teeth of the piston feed bar 26 does not appreciably retard rearward movement of said block, said block moving upwardly against the tension of its spring 53 during such rearward movement.

To prevent the piston feed bar from moving rearwardly with the block 48, due to the engagement of the teeth of said bar and said block, upon the return of the trigger lever to its operative position, suitable detent means is provided. In the present embodiment of the invention, said means includes a pawl or detent 60 yieldingly engaging from above the teeth of the piston feed bar 26 and vertically disposed within a suitable casing arranged at and closing the rear end of the handle body portion.

In Fig. 5 is shown the one-piece sheet metal blank from which the pawl casing is made and in Fig. 6 is shown the completed casing. As best shown in Fig. 5, said casing includes two generally parallel side portions 61 and 62 which are adapted to engage and be riveted or otherwise suitably secured to the inner surfaces of the side

parts 13 of the handle body portion. The front of the casing is formed by two portions, an upper portion 63 carried by the side wall portion 61 and a lower portion 64 carried by the side wall portion 62, said lower portion extending just above the piston feed bar 26. The generally rectangular back portion 65 of the casing closes the rear end of the handle body portion and is, of course, provided near its lower end with an opening 67 through which extends the piston feed bar 26. The top of the casing comprises a portion 55 hereinbefore referred to, said portion being the part to which is secured the rear end of the spring strip 53 which yieldingly maintains the driving block 48 in engagement with the piston feed bar. Between this casing top portion 55 and the pawl or detent 60 is a coiled spring 72, the effect of which is to yieldingly maintain the pawl or detent 60 down in engagement with the present feed bar 26. Said pawl or detent readily moves upwardly against the tension of the spring 72, permitting forward movement of the piston feed bar, but effectively preventing rearward movement thereof, unless said bar is turned over, as shown in Fig. 2. When thus turned over, the piston feed bar and, of course, the piston 25 carried thereby can be readily moved rearwardly or retracted, as they must be when the gun is reloaded, all as will be readily understood.

What I claim is:

1. A portable caulking gun, comprising a generally cylindrical container structure for the caulking material and having a discharge opening therefor at its front end, a supporting handle structure for said casing structure and located

adjacent the rear end thereof, a piston in said container structure for discharging caulking material therefrom by forward movement thereof, a feed bar connected to said piston and provided with transverse teeth along substantially the entire length of its top, a multiple tooth actuator slidably mounted above said feed bar for cooperation with the teeth thereof, spring means engaging said actuator and normally urging it downwardly so as to effect engagement of its teeth with the teeth of said feed bar, and a lever mounted on said handle structure for operating said actuator.

2. A portable caulking gun, comprising a generally cylindrical container structure for the caulking material and having the discharge opening therefor at its front end, a supporting handle structure for said casing structure and located adjacent the rear end thereof, a piston in said container structure for discharging caulking material therefrom by forward movement thereof, a feed bar connected to said piston and provided with transverse teeth along substantially the entire length of its top, a multiple tooth actuator for said feed bar, a lever mounted on said handle structure for operating said actuator, said actuator being mounted on said lever above said feed bar by a pin and slot connection, whereby said actuator is slidable vertically to effect engagement and disengagement of its teeth with the teeth of said feed bar, and spring means engaging said actuator and normally urging it downwardly to effect engagement of its teeth with the teeth of said feed bar.

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