March 12, 1957 H. B. COLLINS 2,784,603

HOLDING MEANS FOR CALKING GUN PLUNGER RODS

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Fig. 1

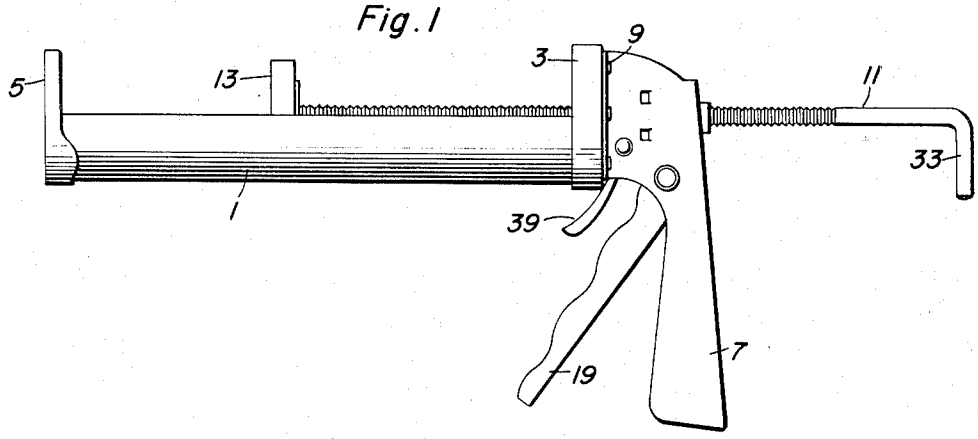


Fig. 2

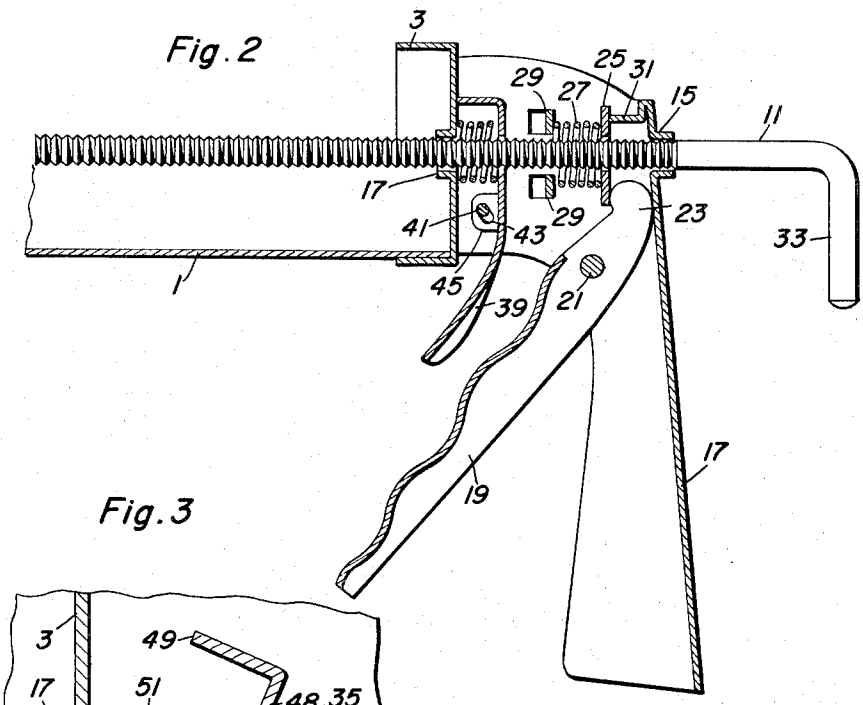
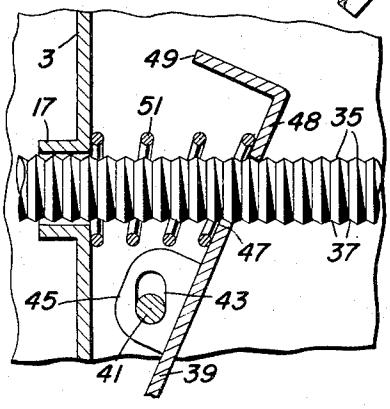


Fig. 3



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HOLDING MEANS FOR CALKING GUN PLUNGER RODS

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4 Claims. (Cl. 74—169)

My invention relates to improvements in holding means for the plunger rods of calking guns of the general type forming the subject matter of my copending application Serial No. 476,675 over which the instant invention is designed as an improvement.

In such guns a plunger on a plunger rod is driven forwardly step by step to discharge calking compound from the gun by a driving clutch operatively engaged with said rod by an intermittently operated hand lever. At the end of each step of operation of the plunger the plunger rod is held against rearward movement, under back pressure of compound in the gun, by holding means releasable to permit the plunger rod to be manually pulled back to retract the plunger into initial starting position.

The primary object of my invention is to provide highly efficient pawl and ratchet means for holding the rod against rearward movement and which will not slip in response to back pressure against the plunger and is adapted for quick action to release the plunger rod as required.

Another object is to provide pawl and ratchet means for the above purpose which will oppose minimum resistance to operation of the plunger rod.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a view in side elevation of the calking gun with my improved holding means embodied therein;

Figure 2 is an enlarged fragmentary view in longitudinal section partly in side elevation illustrating the holding means in releasing position, and

Figure 3 is a further enlarged fragmentary view similar to Figure 2 illustrating the holding means in holding position.

Referring to the drawing by numerals the type of calking gun illustrated as embodying improved holding means comprises a trough-like magazine 1 for holding a cartridge, not shown, of calking compound between a rear cap 3 on said magazine and a stop plate 5 on the front end of the magazine, said cap having a channeled pistol grip 7 riveted thereto as at 9. The cap 3 is carried at the front of the channeled pistol grip.

The plunger rod 11 carrying the plunger 13 on its front end in the magazine 1 is slidable through and rotatable in a rear bushing 15 on the pistol grip 7 and a front bushing 17 on the cap 3.

The hand lever 19 is pivoted, as at 21, adjacent its upper end in the pistol grip 7 for operation rearwardly below the pivot 21 from a normal position established, in this instance, by engagement of its upper end 23 with the back of the pistol grip 7.

The driving clutch comprises the conventional apertured clutch plate 25 on the plunger rod 11 in front of

the upper end of the hand lever 19 the upper end 23 of which when said lever is pulled rearwardly below its pivot 21 tilts said plate 25 on the rod 11 from a clutch disengaging position in which it is perpendicular to said rod into a clutch engaging position on which said plate grips said rod. A coil spring 27 on said rod 11 is interposed between the clutch plate 25 and vertically spaced cross lugs 29 in the pistol grip 7 bent out of the sides of said grip above and below said rod. The coil spring urges the clutch plate 25 rearwardly against the upper end 23 of the hand lever 7 and a forwardly extending stop lip 31 on said grip 7 and said plate urges the upper end 23 of the hand lever 19 against the pistol grip 7, said lip 31 and said upper end 23 holding said plate 25 in clutch disengaging position under the urge of the spring 27 when the hand lever is in normal position.

Coming now to my improved holding means the plunger rod 11 which has the usual right angled rear end hand grip and stop 33 thereon for retracting the same and rotating it for convenient retraction is circumferentially corrugated to provide equidistantly spaced concentric, encircling ratchet teeth 35 thereon which are obtuse angled in cross-section to provide therebetween shallow circumferential grooves 37 around said rod all as best shown in Figure 3.

A combined trigger and pawl member 39 is pivotally and slidably mounted, by means presently described, in the hand grip 7 forwardly of the hand lever 19 and between the cap 3, and the lugs 29 for swinging and sliding into rearwardly inclined plunger rod holding position and into plunger rod releasing position. For mounting the combined trigger and pawl member 39 a pivot pin 41 extends through the pistol grip 7 and through a slot 43 in a front lug 45 on said member 39 all below the plunger rod 11.

A circular opening 47 through which the plunger rod extends is provided in the upper end 48 of the combined trigger and pawl member 39 above its axis of movement and a forwardly extending stop lip 49 on its upper end 48 above the plunger rod. A coil spring 51 on the plunger rod 11 interposed between the cap 3 and said member 39 urges said member 39 into its rod holding position.

The opening 47 is larger in diameter than that of the plunger rod 11 and the upper end 48 of said member 39 in the holding position of said member 39 is oblique to said rod so that in the holding position of said member 39 an edge portion of the opening 47 engages behind one of the teeth 35 of said rod 11 to hold the rod against retraction as shown in Figure 3, while permitting said rod 11 to ratchet forwardly through said opening.

In the releasing position of the combined trigger and pawl member 39, best shown in Figure 2, the stop lip 49 engages the cap 3 to establish that position, the upper end 48 of said member 39 and the opening 47 are perpendicular to the plunger rod 11 and the edge of the opening 47 clears said rod 11.

The slot 43 is oblique to the plane of the upper end 48 and of the opening 47 so that the combined trigger and pawl member 39 can slide on the pin 41 to compensate for arcuate throw of said opening 47 as said member 39 swings from one position to the other. Also said slot 43 coacts with the pin 41 to cam said member 39 downwardly in the releasing position of the member so that the entire edge of the opening 47 will clear and disengage the teeth 35 in the releasing position of said member, downward camming being limited by engagement of the pin 41 with the upper end of the slot 43 as shown in Figure 2.

As will be readily understood, upon operation of the hand lever 19 rearwardly the driving clutch plate 25 will be tilted to clutch teeth 35 of the plunger rod 11 and

drive said rod forwardly one step and upon release of said lever the spring 27 will return the plate 25 and lever to normal position and cause said plate to release said rod. During forward movement of the plunger 11 the teeth 35 will ratchet through the combined trigger and pawl member 39 which is being urged by the spring 51 into holding position and thereby prevents retraction of said rod and the plunger 13. To release the plunger rod 11 for retraction the combined trigger and pawl member 39 is swung on the pin 41 by pressure of a finger on said member 39 below the pin 41 to move the upper end 48 forwardly in opposition to the spring 51. As said end 48 swings forwardly it disengages the upper edge of the opening 47 from the previously engaged tooth 35 and is cammed downwardly by the pin 41 and slot 43 so that the entire edge of the opening 47 clears the teeth 35. Upon release of the combined trigger and pawl member 39 it is returned to holding position by the spring 51. During the latter part of its return said member 39 ratchets rearwardly over the teeth 35 and is lifted on the pin 41 until said pin engages the lower end of the slot 43. As will be seen the teeth 35 being circular the combined trigger and pawl member 39 will be effective in holding the rod 11 in any position in which said rod is rotated.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a calking gun having a chambered hand grip attached to the back of a magazine and having a back wall spaced from and opposed to the back of the magazine, a plunger rod extending slidably through the back of said magazine and said back wall for advancing and retracting motion, holding means for preventing retraction of said rod comprising a combined trigger and pawl member arranged in a plane transverse to said rod and having a circular opening therein larger in diameter than that of said rod and through which said rod extends and depending below said rod, said member being positioned in the chamber of said grip and depending below the grip and having an upper end engageable with the back of said magazine in the upright position of the member, a cross pin extending between the sides of said grip, said member having an angled portion below said rod extending parallel to the rod with a slot therein receiving said pin to pivotally and slidably support the member, said slot extending upwardly and forwardly in the upright position of said member whereby rearward pressure on the bottom of the member cams the member downwardly and rearward pressure on the top of the member cams the member upwardly, said pin engaging the top of said slot and said upper end engaging said magazine when the hole in said member is centered with respect to said rod, ratchet teeth on said rod behind which an edge portion of said opening engages in the holding position of said member, and a spring coiled around said rod between the back of said magazine and said member and urging said member into inclined holding position relative to said rod, said slot being in an upright position and said member being urged upwardly till said pin is in the bottom of the slot in the holding position of said member.

2. In a calking gun as in claim 1, said rod being rotatable and said teeth being circular and encircling said rod for engagement by said edge portion of the opening in any rotated position of said rod.

3. In a calking gun according to claim 1, a driving clutch plate having a hole therein through which said rod extends, said plate being positioned behind said member, an abutment on said grip located between said member and said plate, a second spring positioned between said abutment and said plate to urge said plate rearwardly, and a drive lever pivoted on said grip and having a drive end engaged with the back of said plate and abutting against the inside of said grip in the retracted position of said plate, said plate and grip having coacting engageable portions abutting on the opposite side of said rod from said drive end in the retracted position of said plate to hold said plate in rod disengaged position.

4. In a calking gun having a chambered hand grip attached to the back of a magazine and having a back wall spaced from and opposed to the back of the magazine, a plunger rod extending slidably through the back of said magazine and said back wall for advancing and retracting motion, holding means for preventing retraction of said rod comprising a combined trigger and pawl member arranged in a plane transverse to said rod and having a circular opening therein larger in diameter than that of said rod and through which said rod extends and depending below said rod, said member being positioned in the chamber of said grip and depending below the grip and having a portion engageable with a fixed stop on said magazine in the upright position of the member, means forming a pin and slot pivotal and sliding connection between said member and said grip with the slot extending forwardly and upwardly in the upright released position of said member whereby rearward releasing pressure on the lower end of said member cams the member downwardly to compensate for the upward swinging motion of the opening about the pin, said pin engaging the end of said slot and said portion engaging said stop when the hole in said member is centered with respect to said rod, ratchet teeth on said rod behind which an edge portion of said opening engages in the holding position of said member, and a spring coiled around said rod between the back of said magazine and said member and urging said member into inclined holding position relative to said rod.

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