

June 2, 1959

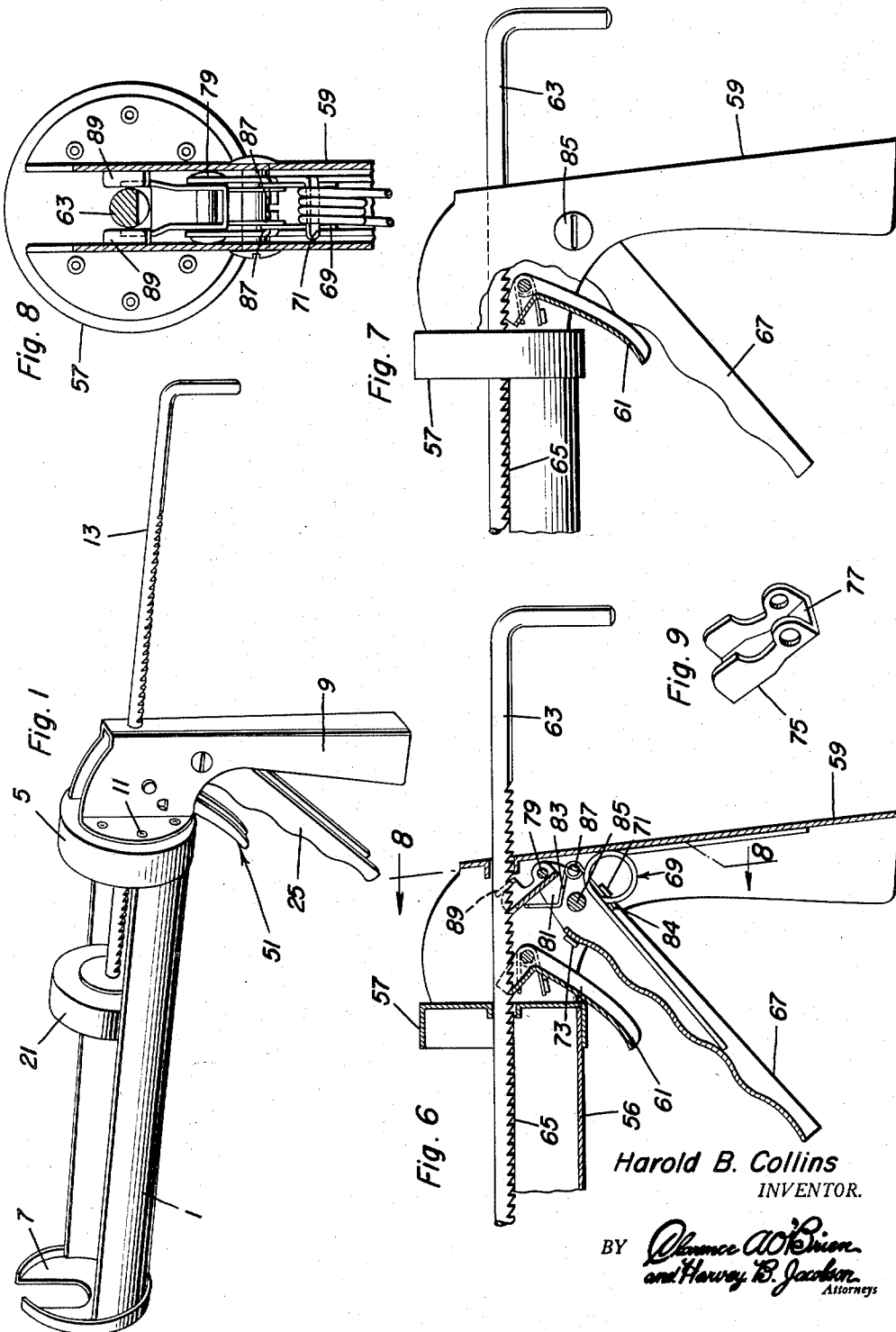
H. B. COLLINS

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DRIVE MEANS FOR CALKING GUN PLUNGERS

Filed July 19, 1955

2 Sheets-Sheet 1



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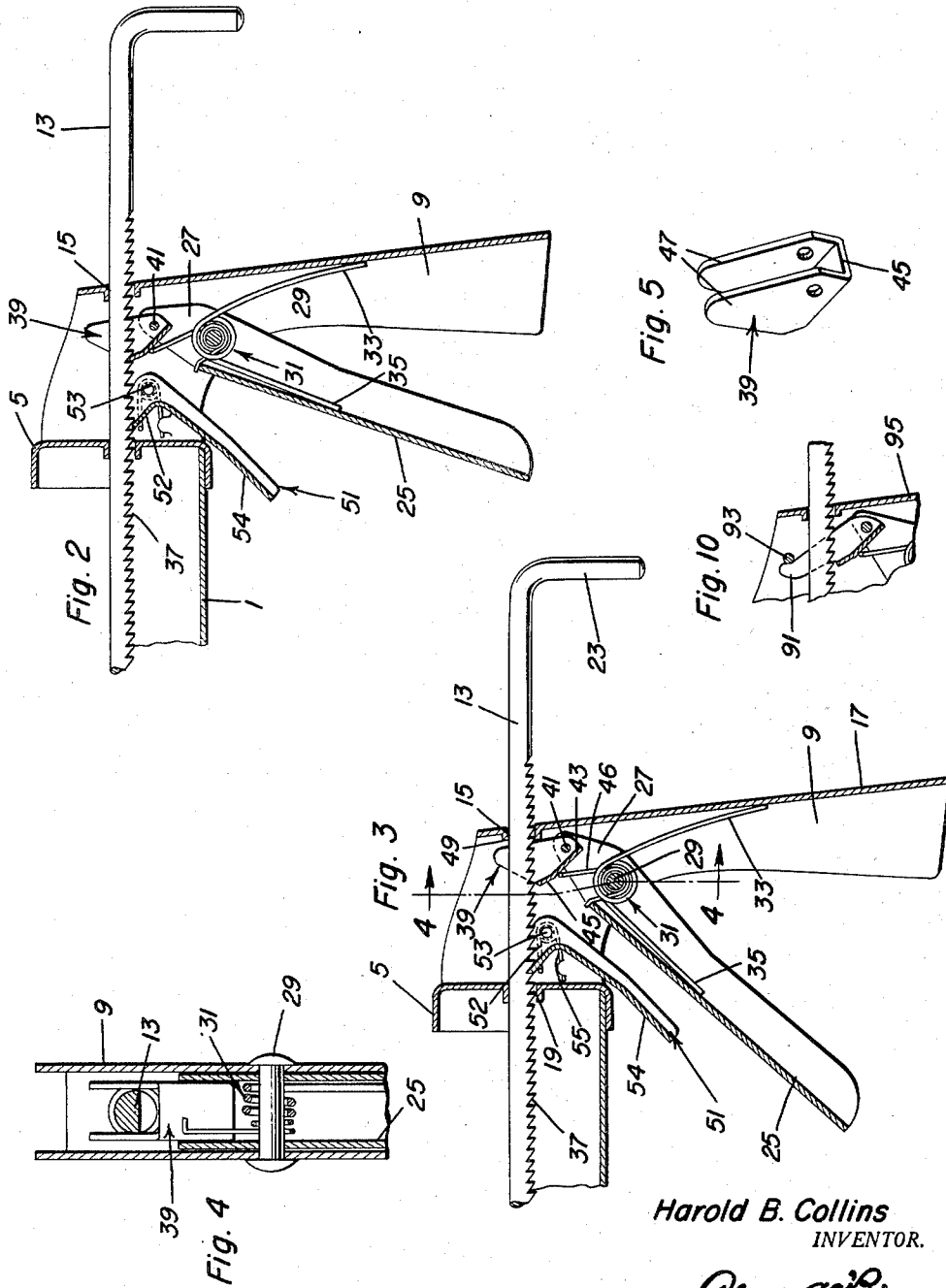
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DRIVE MEANS FOR CALKING GUN PLUNGERS

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Application July 19, 1955, Serial No. 523,067

6 Claims. (Cl. 222—391)

My invention relates to drive means for the plunger rods of calking guns of the type forming the subject matter of my copending application Serial No. 476,675, filed December 21, 1954, now Patent No. 2,786,604 dated March 26, 1957 and over which the instant invention is designed as an improvement.

The primary object of my invention is to provide a simply constructed positive drive means for the plunger rod of such calking guns and which is quick acting and obviates slipping in the drive.

Another object is to accomplish the above by a ratchet and pawl drive means for positive action and to provide for releasing the pawl at the end of each driving operation by means reducing the cost of manufacture of the gun and which is not liable to get out of order through wear.

Other and subordinate objects together with the precise nature of my improvements and the advantages thereof will become apparent when the following description and claims are read with reference to the accompanying drawings in which:

Figure 1 is a perspective view of the calking gun embodying my improved drive means in the preferred form thereof;

Figure 2 is an enlarged fragmentary view in vertical longitudinal section illustrating the drive means in driving position;

Figure 3 is a view similar to Figure 2 but illustrating the drive means in releasing position;

Figure 4 is a fragmentary view in vertical transverse section taken on the line 4—4 of Figure 3;

Figure 5 is an enlarged perspective view of the pawl;

Figure 6 is an enlarged fragmentary view in vertical longitudinal section of a modified form of my improved drive means;

Figure 7 is a fragmentary view in side elevation partly broken away and shown in section of the modified form;

Figure 8 is a view in vertical section taken on the line 8—8 of Figure 6;

Figure 9 is an enlarged perspective view of the pawl of the modified form; and

Figure 10 is a fragmentary view in vertical section of a second modified form of my improved drive means.

Referring to the drawings by numerals, and first to Figures 1 to 5, the type of calking gun illustrated therein as embodying my invention comprises a trough-like magazine 1 for holding the usual cartridge of calking compound, not shown, between a cap 5 and a stop plate 7 on the rear and front ends of the magazine, respectively and a forwardly opening pistol grip 9 riveted, as at 11, to the cap 5.

The plunger rod 13 slides through an opening 15 in the rear edge 17 of the pistol grip 9 and through an opening 19 in the cap 5 and carries on its front end a piston 21 moved forwardly by advance of said rod and in the magazine 1 for compressing and forcing the calking compound out of the cartridge in a manner well

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understood in the art. A right angled rear end 23 on the plunger rod 13 is provided for manually retracting said rod and the piston 21 to starting position.

A rearwardly opening channelled operating lever 25 is pivoted adjacent its upper end in the pistol grip 9 below the plunger rod for manual operation to swing its upper end 27 on a transverse pivot 29 forwardly and rearwardly. A hairpin spring 31 coiled about the pivot 29 with depending ends 33, 35 sliding in the pistol grip 9 and operating lever 25, respectively, retains said lever in normal position with its upper end swung into an upwardly and rearwardly inclined position.

According to my invention the plunger rod 13 is provided on its bottom with ratchet teeth 37. An elongated transversely U-shaped feed pawl 39 is provided on the upper end 27 of the operating lever 25 above the pivot 29 and extends upwardly therefrom in straddling sliding relation to the plunger rod 13. The pawl is generally triangular and pivoted at one corner thereof, as at 41, in the upper end 27 of said lever 25 which is bifurcated to straddle and fit over the pivoted end 43 of said pawl 39.

The triangular shape of the pawl 39 and the arrangement of its pivot 41 at one corner provides for a bottom bight portion 45 on the pawl inclining upwardly and forwardly into ratcheting engagement with the teeth 37. In the normal unactuated position of the operating lever 25 in which the spring 31 urges the upper end of the lever rearwardly the sides 47 of the pawl engage an internal annular boss 49 on the back of the pistol grip 9 and the bight portion 45 is thereby swung forwardly on its pivot 41 to disengage the upper edge of the bight from the ratchet teeth 37, while the upper end 27 of the operating lever 25 abuts the back of said grip 9 and establishes the normal position of said lever all as shown in Figure 3.

A hairpin spring 46 on the pivot 29 engages the front edge of the operating lever 25 and the front side of the bight portion 45 of the pawl 39 and acts to swing said pawl rearwardly on its pivot 41.

A combined trigger and sear holding and releasing pawl 51 is pivoted, as at 53 in the upper portion of the pistol grip 9, between the cap 5 and said operating lever 25 and is urged by a hairpin spring 55 into engagement with the ratchet teeth to hold the plunger rod against rearward movement under back pressure of the compound in the cartridge, not shown, and over which said rod ratchets in its advance movement. The pawl 51 is of right angled channel form to provide a forwardly and upwardly inclined sear 52, straddling the plunger rod 13 and engaging the teeth 37 and having a depending trigger arm 54 integral therewith and projecting downwardly below the lowermost edge of the upper portion of the grip.

The operation of the described form of my invention will be readily understood. To drive the plunger rod 13 forwardly the operating lever 25 is pulled rearwardly which swings its upper end 27 forwardly and upwardly in opposition to the spring 31 whereby the feed pawl 39 is moved bodily forwardly in forwardly inclined position on its pivot 41 and is swung rearwardly by its spring to engage and advance the plunger rod 13, all as shown in Figure 2. Upon release of the operating lever, it and the pawl assume the normal position previously described, the upper end 27 of said lever swinging downwardly and rearwardly to disengage the bight portion 45 from the teeth 37.

Now if it is desired to release the pressure on the caulking material, it is only necessary to pull on the trigger arm 54 of the combination sear and trigger hold-

ing and releasing pawl, with a finger, and the rod 13 will be completely disengaged and free to move rearwardly.

Referring now to the modified form of the feed means shown in Figures 6 to 8, this form is embodied in the same type of caulking gun, namely the magazine, cap, pistol grip, and holding and releasing pawl of which are designated 56, 57, 59 and 61, respectively. The plunger rod 63 in this form is also provided with bottom ratchet teeth designated 65.

The operating lever 67 is the same as in the preferred form. However, the hairpin spring 69 for swinging the operating lever into normal position is coiled about a rear cross bar 71 on said lever and a transverse stop lug 73 on the hand grip 59 in front of said lever establishes the normal position of said lever 67.

The feed pawl 75 is of elongated transversely U-shaped form with a front web or bight 77, and is pivoted, as at 79, at its lower end on the upper end 81 of said lever 67 in upwardly and forwardly inclined position, and has its upper end straddling the plunger rod 63 and the upper end of its web 77 engaging said teeth 65. A zigzag wire spring 83 above the pivot 85 of the operating lever bears rearwardly against the web 77 of the pawl 75 and is coiled around cross lugs 87 on said end 81 with a lower end 84 bearing rearwardly against the cross bar 71. In the normal position of the operating lever 67 and pawl 75, shown in Figure 6, said lever 67 is urged against the stop lug 73 and the upper end of the pawl 75 engages a pair of pawl releasing lugs 89 in the rear of said pawl and bent out of the pistol grip 59 at opposite sides thereof and depressing said pawl downwardly and forwardly into releasing position.

The operation of the modified form of plunger rod feed being substantially the same as in the first described embodiment will be clear from the foregoing and therefore need not be further described.

In the second modified form illustrated in Figure 10, the feed pawl 91 is more elongated than in the other forms and is released by camming engagement with an overlying pin 93 passing crosswise through the pistol grip 95. Otherwise the operation and construction is the same as in the previously described forms.

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 caulking gun having a pistol grip, a ratchet toothed plunger rod slidably mounted in said pistol grip for advance and retraction, an operating lever pivoted in the pistol grip for operation from a normal position to swing an upper end thereof forwardly, spring means acting against said lever and grip to move said lever into normal position, an elongated feed pawl pivoted on said upper end in upstanding upwardly and forwardly inclined position and being U-shaped in cross-section with the web of the section on the front of the pawl and the flanges extending upwardly and rearwardly to straddle said rod with the cross web of the section on the forward side of the pawl arranged to engage said teeth, said pawl being swingable upwardly and rearwardly to engage said

teeth and downwardly and forwardly to disengage the teeth, a spring on said lever acting to swing said pawl upwardly and rearwardly, and means coacting between said pawl and said pistol grip above the pivot axis of the pawl acting to swing said pawl downwardly in the normal position of said lever.

2. The combination of claim 1, said means comprising a pin passing crosswise through said pistol grip.

3. The combination of claim 1, said means comprising an annular boss on said hand grip through which said plunger rod slides.

4. The combination of claim 1, said means comprising rearwardly projecting portions on the upper ends of the sides of said pawl engageable with the inside back surface of said pistol grip.

5. In a caulking gun having a pistol grip, a ratchet toothed plunger rod slidably mounted in said pistol grip for advance and retraction, an operating lever pivoted in the pistol grip for operation from a normal position to swing an upper end thereof forwardly, spring means acting against said lever and grip to move said lever into normal position, an elongated feed pawl pivoted on said upper end in upstanding upwardly and forwardly inclined position and being U-shaped in cross-section to straddle said rod and engage said teeth, said pawl being swingable upwardly and rearwardly to engage said teeth and downwardly and forwardly to disengage the teeth, a spring on said lever acting to swing said pawl upwardly and rearwardly, and means comprising lugs at opposite sides of said pistol grip bent out of the same for depressing said pawl downwardly and forwardly into releasing position when said operating lever is in normal position.

6. In a caulking gun having a chambered pistol grip, a ratchet toothed plunger rod slidably mounted in the top of said grip for advance and retraction, an operating lever pivoted in said grip below said plunger and projecting downwardly in front of the lower portion of the grip, spring means biasing the lower end of said lever forwardly, a feed pawl pivoted on said lever above the pivot support for the lever and angled forwardly therefrom, second spring means biasing said pawl upwardly against the bottom of said rod, coacting means on said pawl and the inside of said grip engageable in the fully advanced position of the lower end of said lever to press said pawl downwardly out of engagement with said rod, a holding pawl pivoted to said grip ahead of said feed pawl and inclined forwardly and upwardly, third spring means biasing said holding pawl upwardly against the bottom of said rod, and a trigger arm rigidly connected to said holding pawl and projecting downwardly in exposed position below the lowermost edge of the upper portion of said grip and in spaced relation ahead of said lever and the lower portion of said grip whereby the trigger arm and lever are selectively and independently operable by the fingers of a hand gripping the grip.

References Cited in the file of this patent

UNITED STATES PATENTS

1,104,328	Sutton	July 21, 1914
1,159,938	Hiatt	Nov. 9, 1915
2,074,337	Krag	Mar. 23, 1937
2,205,604	Sherbondy	June 25, 1940
2,233,587	Crewe	Mar. 4, 1941
2,367,347	Good	Jan. 16, 1945