

Jan. 16, 1945.

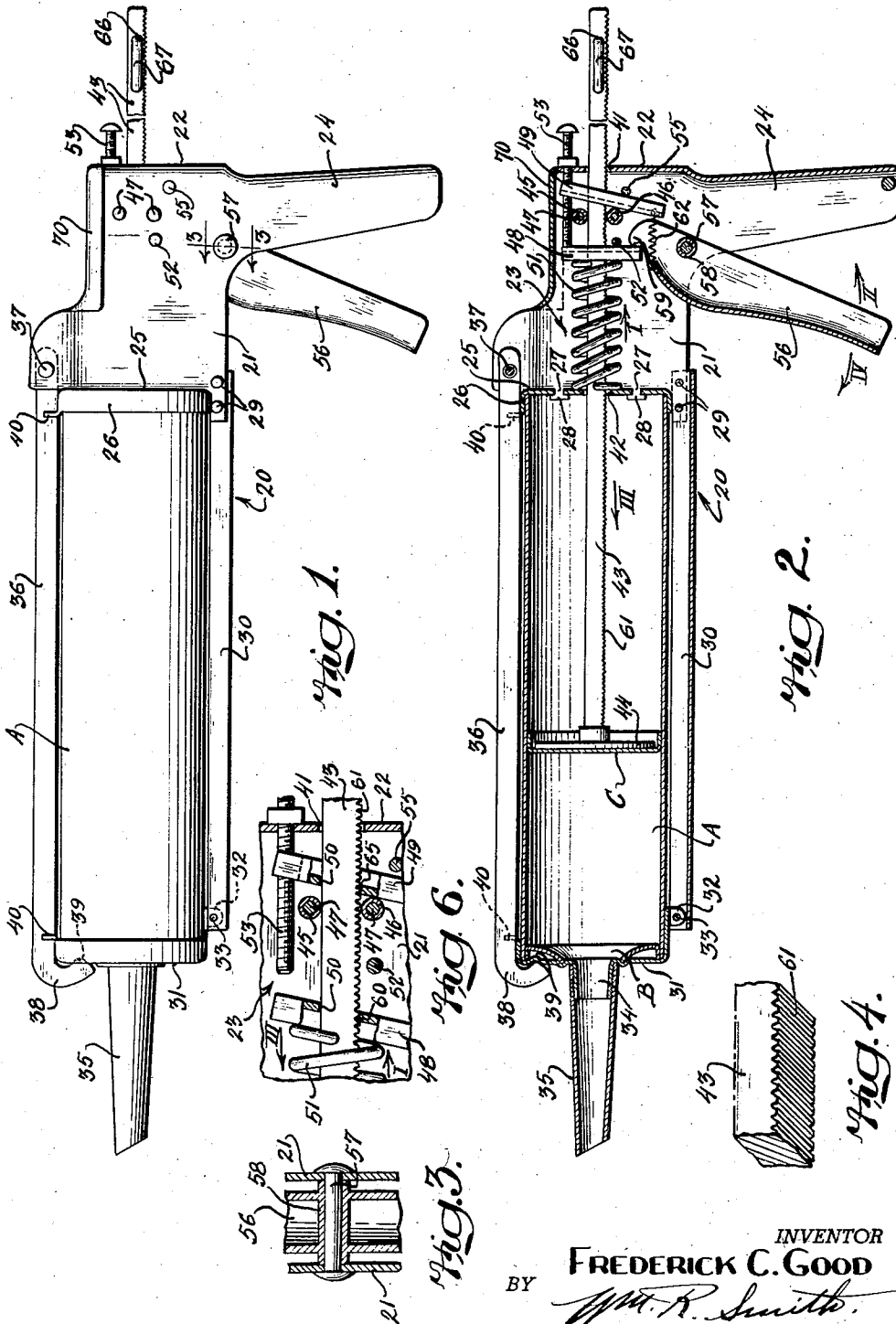
F. C. GOOD

2,367,346

CALKING GUN AND OPERATING MECHANISM THEREFOR

Filed Feb. 3, 1942

2 Sheets-Sheet 1



INVENTOR
FREDERICK C. GOOD
BY *Wm. R. Smith*
ATTORNEY

Jan. 16, 1945.

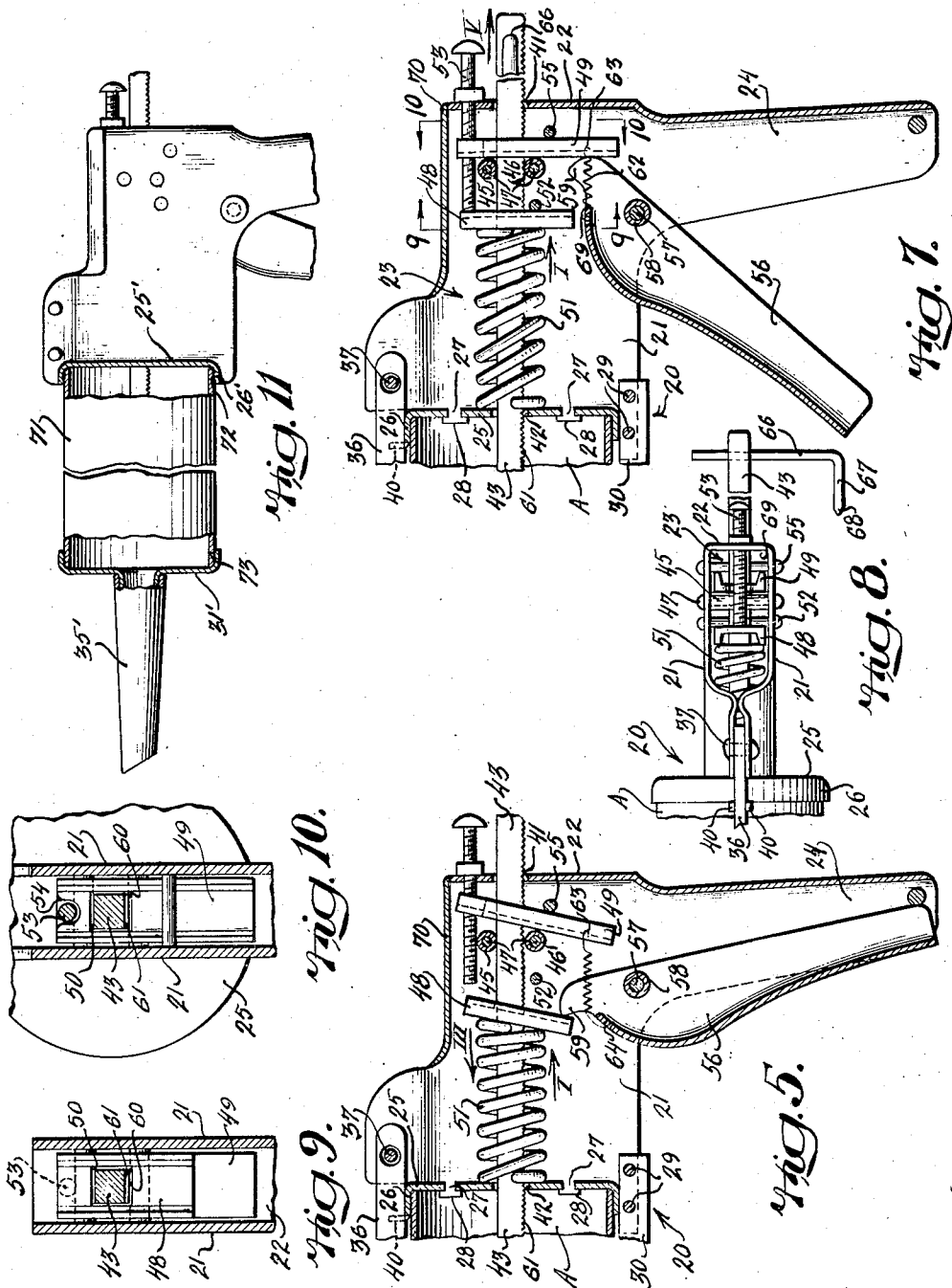
F. C. GOOD

2,367,346

CALKING GUN AND OPERATING MECHANISM THEREFOR

Filed Feb. 3, 1942

2 Sheets-Sheet 2



INVENTOR
FREDERICK C. GOOD
BY *Wm. A. Smith*
ATTORNEY

UNITED STATES PATENT OFFICE

2,367,346

CALKING GUN AND OPERATING
MECHANISM THEREFORFrederick C. Good, Philadelphia, Pa., assignor to
Pecora Paint Company, Philadelphia, Pa.

Application February 3, 1942, Serial No. 429,363

14 Claims. (Cl. 74—169)

The present invention generally relates to dispensing devices and, more particularly, to hand operated pressure guns especially intended to dispense calking or similar material, and primarily aims to provide a simplified, yet rugged, operating mechanism for such devices.

It is an important specific object of the invention to provide an operating mechanism for a calking gun including a slidable pressure creating member, and manually actuated control means associated therewith and operable to perform the triple function of imparting a positive thrust to said member to advance the same progressively for creating pressure within the gun, of rigidly holding said member in an advanced position, thereby maintaining the pressure created within the gun, and of releasing said member to relieve pressure within the gun and also to permit manual sliding of the member to retracted inactive position.

Another meritorious feature of the invention resides in the provision of a calking gun or like dispensing device wherein the operating mechanism consists of relatively few parts which may be easily assembled and which, when once assembled in the gun or device, are readily accessible, thus effecting a material saving in material and in the cost of production and maintenance.

Other important objects and advantages of the invention will be in part obvious and in part pointed out hereinafter.

In order that the invention and its mode of operation may be readily understood by those skilled in the art, I have, in the accompanying drawings and in the detailed description based thereupon, set out a possible embodiment of the invention.

In these drawings:

Figure 1 is a side elevation of the preferred form of calking gun construction, in accordance with the invention;

Figure 2 is a longitudinal vertical section of the same illustrating the operating mechanism in its position of rest;

Figure 3 is an enlarged section taken substantially along line 3—3 of Figure 1;

Figure 4 is a perspective on a greatly enlarged scale of a portion of the piston rod showing the preferred formation of the underside thereof;

Figure 5 is an enlarged sectional detail of the operating mechanism illustrating the same in its operative position;

Figure 6 is an enlarged detail of parts in Figure 5 showing the cooperative action thereof;

Figure 7 is a view similar to Figure 5 illustrating the operating mechanism in another of its operative positions;

Figure 8 is a top plan of the same, with the cover removed, to clearly show the accessibility of the internal parts of the operating mechanism;

Figure 9 is an enlarged section taken substantially on line 9—9 of Figure 7;

Figure 10 is an enlarged section taken substantially on line 10—10 of Figure 7;

Figure 11 is a longitudinal sectional elevation of a modified form of calking gun.

Referring more particularly to the drawings wherein like characters of reference will designate corresponding parts throughout, the calking gun shown by way of example may be stated to comprise a skeleton frame designated in its entirety for clarity and convenience herein by the reference character 20. This frame 20 is adapted to engage and retain in position a cartridge A containing the material to be discharged. As shown in the drawings, the cartridge A is preferably of cylindrical configuration and has at one end an annular flanged open portion B, and slidably carries at its other end a movable circular cover C which may serve as a piston to force the contents of the cartridge out through said opening B in the manner to be described more fully hereinafter.

The skeleton frame 20 includes a body portion which may be termed the head or stock and which may be, and preferably is, constructed of sheet metal stamped and bent into a shape to provide diametrically opposed walls 21 and a rear wall 22 defining a housing 23 from which depends a pistol grip or handle 24. Upon the inner end portion of the housing 23 is mounted a disc 25 provided with a flange 26 constituting a rigid and fixed seat for that one end of the cylindrical cartridge A carrying the movable cover C. The flanged disc 25 may advantageously be secured to said housing 23 by means of lugs 27 formed with the end portion of said housing to extend therefrom for passage through openings formed in said disc and riveted or upset over the inner surface of the latter as indicated at 28.

Located immediately below the flanged disc 25 and fixedly secured to the lower inner end portion of the housing 23 by means of fastening elements, such as rivets 29 or the like, is a rigid bar 30 projecting for a distance beyond said portion of the housing. At the free extremity of the bar 30 is mounted a combined nozzle and

flange seat 31 adapted to receive the open portion B of the cartridge A. The seat 31 has a depending lug or hinge member 32 whereby said seat may be pivotally connected to said free end of the bar 30 by means of a suitable pin or rivet 33. This seat is centrally apertured, as indicated at 34, for the passage of the extruded material, and carries a nozzle 35 which preferably is removable, whereby different nozzles of various sizes and shapes may be interchanged.

For the purpose of maintaining the pivotal seat 31 in operative position against the open portion B of the cartridge A, there is provided a lock bar 36 disposed in paralleling diametrically opposed relation to the fixed bar 30, and having one end pivotally connected, as indicated at 37, to the upper inner end portion of the housing 23. The free end of the lock bar 36 is preferably shaped into a hook 38 adapted to snap over the outer face of the seat 31 which, for that purpose, is formed with a slight depression 39 disposed to cooperate with said hook for assuring the locking function of the lock bar 36. The lock bar 36 may advantageously be guided into its locking position by means of ears 40 preferably formed with the seats or discs 25 and 31.

Mounted to slide through aligned openings 41 and 42 respectively cut through the rear wall 22 of the housing 23 and through the seat disc 25 is a piston rod 43 carrying a head 44 shaped and arranged to engage and bear against the movable flange cover C. The piston rod 43 may be guided in its sliding movement by means of a pair of diametrically opposed rollers 45 and 46 respectively disposed for riding engagement with the normal top and bottom sides of the piston rod and being supported within the housing 23 by means of suitable pins 47 conveniently affixed to the side walls 21 of said housing 23.

Disposed within the housing 23 is a pair of plates 48 and 49, each having an opening 50 through which the piston rod 43 passes, preferably one plate 48 being located on one side of the rollers 45 and 46, and the other plate 49 being located on the other side of said rollers so that said plates are maintained in spaced relationship.

A coil spring 51 encircling a portion of the piston rod 43 is arranged between the plate 48 and the opposed surface of the seat disc 25, and normally acts to urge said plate 48 from said disc 25, that is, in the direction indicated by the arrow I. The movement of the plate 48 in the direction of arrow I, however, is limited by means of a stop pin 52 and an adjustable abutment 53, as illustrated in the drawings.

The stop pin 52 is supported within the housing 23 to extend transversely therethrough, and is positioned to engage the normal lower portion of said plate 48, whereas the adjustable abutment 53 is suitably mounted in screw-threaded engagement with the rear wall 22 of the housing 23 to extend longitudinally thereof so that the inner end of said abutment becomes located to contact the normal upper portion of said plate 48.

The adjustable abutment 53 clears the plate 49 which, for that purpose (as more clearly shown in Figure 10), may be provided with a recess 54. A pin 55 extending transversely of the housing 23 is located therein for bearing engagement with the lower portion of the plate 49 and acts in the fashion of a pivot for causing the free upper portion of said plate 49 to swing in a definite arc, in the manner and for the purpose to be specified hereinafter.

In accordance with the invention, the plates 48

and 49 are acted upon by a trigger 56. This trigger is pivoted to the housing 23 by means of a riveted pin 57, or the like, and in order to assure proper positioning of said trigger, the same, as more clearly shown in Figure 3, may advantageously be provided with a bushing 58 which snugly fits between the side walls 21 of said housing and through which the pivot pin 57 passes.

The trigger 56 is formed with a cam shaped end 59 projecting between the lower portions of the plates 48 and 49. In this manner, it will be appreciated that, upon pressing the trigger, that is, moving it in a direction towards the grip or handle 24, as indicated by arrow II (Figure 2), the cam shaped end 59 comes in contact with the lower portion of the plate 48, forcing the latter to move, as shown in Figure 5, in the general direction of arrow III, thus compressing the spring 51.

As also shown in Figure 5, the plate 48, upon leaving the abutment 53, assumes an angular position with respect to the piston rod 43 so that the lower marginal edge 60 of the opening 50 in said plate 48 positively engages the under side surface 61 of said piston rod 43 and causes the latter to follow the movement of the plate 43 in the general direction of arrow III.

In order to assure the positive engagement between the plate 48 and the piston rod 43, the under surface 61 thereof may be, and preferably is, serrated as shown more clearly on a greatly enlarged scale in Figure 4. Upon releasing the trigger 56, the compressed spring 51 is free to expand and, accordingly, acts to return the plate 48, together with the trigger 56, to their original or rest position shown in Figure 2. However, the piston rod 43 is held against retrogressive movement by reason of the plate 49 which is normally maintained in angular position with respect to the piston rod 43 by means of a spring 62 connected to said plate, as at 63, and to said trigger, as at 64, so that the marginal edge 65 of the opening 50 engages the serrated surface 61 of the piston rod 43 and thus locks the same against such retrogressive movement.

The piston rod 43, however, may be instantly released for retrogressive movement whenever desired merely by moving the trigger 56 in a direction away from the grip or handle 24, that is, in the direction of arrow IV (Figure 2). This latter movement of the trigger 56, as clearly shown in Figure 7, brings the cam shaped end 59 in bearing engagement with the lower end of the plate 49, causing the same to swing against the pivot acting pin 55, thereby displacing said plate from its normal angular position with respect to the piston rod 43, that is, from the position illustrated in Figure 2 to a position perpendicular to said piston rod, that is, to the position shown in Figure 7.

The positioning of the plate 49, as shown in Figure 7, it will be understood, causes the lower marginal edge 65 of the opening 50 in the plate 49 to disengage the serrated underside surface of the piston rod 43 so that the same is free to be moved retroactively, that is, in the general direction of arrow V (Figure 7). When thus free, the piston rod 43 may be pulled outwardly through the opening in the rear wall 22 of the housing 23 and, for that purpose, convenient finger gripping means, such as a cross piece 66, is carried by the exposed end of said piston rod. One end portion of the cross piece 66 may advantageously be bent, as more clearly illustrated

in Figure 8, thereby providing a convenient hook 67 whereby the device, as a whole, may be hung (for instance, on a ladder rung) whenever the user so wishes.

The extremity of said bent portions 67 may further be slightly pointed, as shown at 68 in said Figure 8, so that the device, if desired, may also be hung securely upon some protruding surface, such as a window sill.

From the foregoing description, it will be understood that, in using the improved device, the cartridge A being held in position between the seats 25 and 31, the pressing of the trigger 56, that is, moving the trigger in the direction of arrow II, will cause the piston rod 43 with its head 44 to advance in the general direction of arrow III, thereby creating a pressure on the piston acting cover C forcing the material within the cartridge to flow through the nozzle 25.

Because the compounds generally used with devices of the type herein described have a great amount of elasticity, it is desirable, when a determined part of the caking or other operation has been completed, that the back pressure upon the contained material be relieved. This may be accomplished quickly and effectively merely by flipping the trigger 56 in the direction of arrow IV (Figure 2) which, as hereinbefore stated, acts on the plate 49 to free the piston rod 43 so that the same yields to such back pressure and is thereby displaced retroactively in the direction of arrow V (Figure 7). Due to this action, the back pressure exerted by the material being extruded is fully relieved and, accordingly, the material is prevented from being wasted by oozing out through the nozzle 35.

Also when an empty cartridge is to be replaced by a filled one, the piston rod 43 may likewise be released by flipping the trigger 56 in the manner aforesaid, whereupon said piston rod may be withdrawn by pulling on the cross piece 66.

As will appear from the drawings, particularly Figure 8 thereof, the parts of the operating mechanism are readily accessible through the opening 69 provided by the formation of the housing 23. This opening 69 may be closed by means of a cover 70 suitably engaging the adjoining portions of the housing 23.

It is to be understood that the operating mechanism hereinbefore described is applicable to that type of pressure gun wherein a cylinder, such as represented at 71 in Figure 11, is associated with the head or stock of the gun. In this instance, the bars 30 and 36 of the skeleton frame 20 in the construction shown particularly in Figures 1 and 2, are omitted, but a seat disc 25' attached to the housing may be formed with a screw threaded flange 26' for engagement with a screw threaded end portion 72 of the cylinder 71, the other end portion of which may also be screw threaded, as indicated at 73, for engagement with the screw threaded flange of a cap 31' detachably carrying a nozzle 35'.

From the foregoing description, it will be apparent that simple and efficient means are provided for accomplishing the objects of the invention, and while the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction set forth, but includes within its scope such changes and modifications as may be made within the terms of the appended claims.

What I claim is:

1. In a pressure gun of the character described: a supporting frame; a piston rod mounted in the frame to reciprocate therein; a first element associated with said rod and adapted to engage the latter to move the same for creating pressure within the gun; a second element associated with said rod and adapted to engage the latter to hold the same against retrogressive movement; a pivotal trigger movable in one direction to operate said first element; means carried by said frame and disposed to engage said first element to cause its disengagement from the piston rod when the trigger is moved in the other direction; and means formed with said trigger and disposed to engage said second element to cause its disengagement from the piston rod when the trigger is moved in said other direction.
2. In a pressure gun of the character described: a supporting frame; a piston rod mounted in the frame to reciprocate therein; a first element associated with said rod and adapted to engage the latter to move the same for creating pressure within the gun; a second element associated with said rod and adapted to engage the latter to hold the same against retrogressive movement; a pivotal trigger movable in one direction to operate said first element; means carried by said frame and disposed to engage said first element to cause its disengagement from the piston rod when the trigger is moved in the other direction; means formed with said trigger and disposed to engage said second element to cause its disengagement from the piston rod when the trigger is moved in said other direction; and spring means associated with said elements to normally urge the same into engagement with the piston rod.
3. In combination with the reciprocable piston rod of a hand operated pressure gun: a first element associated with said rod and adapted to directly engage the latter to move the same for creating pressure within the gun; a second element associated with said rod and adapted to directly engage the latter to normally hold the same against retrogressive movement by action of the pressure created within the gun; means normally acting on the first element to automatically locate the same in a position to disengage said rod; means normally acting on the second element to automatically locate the same in a position to engage said rod; and means movable in one direction to force the first element in a position to engage the piston rod against the means normally acting on said element, and in another direction to force the second element in a position to disengage the piston rod against the means normally acting on said second element.
4. In combination with the reciprocable piston rod of a hand operated pressure gun: a first element associated with said rod and adapted to directly engage the later to move the same for creating pressure within the gun; a second element associated with said rod and adapted to directly engage the latter to normally hold the same against retrogressive movement by action of the pressure created within the gun; means normally acting on the first element to automatically locate the same in a position to disengage said rod; means normally acting on the second element to automatically locate the same in a position to engage said rod; and a pivotal member movable in one direction to force the first element in a position to engage the piston

rod against the means normally acting on said element, and in another direction to force the second element in a position to disengage the piston rod against the means normally acting on said second element.

5. In combination with the piston rod of a hand operated pressure gun: a pair of spaced elements associated with said piston rod, one element being mounted to directly engage the piston rod to move the same for creating pressure within the gun, the other element being mounted to directly engage the piston rod for normally holding the same against retrogressive movement by action of the pressure created within the gun; and a pivotal trigger normally disconnected from said elements having means extended between said elements to engage said one element for actuating the same upon pivotal movement of the trigger in one direction, and to engage said other element for actuating the same to disengage the piston rod for its retrogressive movement upon pivotal movement of the trigger in the other direction.

6. In a pressure gun of the character described: a reciprocable piston rod; a pair of spaced plates, each having an opening therein for the passage of said rod therethrough, whereby said plates may be moved into and out of engagement with the piston rod, one plate being mounted to normally disengage the piston rod and the other plate being mounted to normally engage the piston rod; and means movable in one direction to force said one plate into engagement with the piston rod and movable in the other direction to force said other plate out of engagement with the piston rod.

7. In a pressure gun of the character described: a reciprocable piston rod having a serrated surface; a pair of spaced plates, each having an opening therein for the passage of said rod therethrough, whereby said plates may be moved into and out of engagement with the serrated surface of the piston rod, one plate being mounted to normally disengage the piston rod and the other plate being mounted to normally engage the piston rod; and means movable in one direction to force said one plate into engagement with the piston rod and movable in the other direction to force said other plate out of engagement with the piston rod.

8. In a pressure gun of the character described: a reciprocable piston rod; a pair of spaced plates, each having an opening therein for the passage of said rod therethrough whereby said plates may be moved into and out of engagement with the piston rod; means normally acting on one plate to urge the same out of engagement with the piston rod; means normally acting on the other plate to urge the same into engagement with the piston rod; and means movable in one direction to force said one plate into engagement with the piston rod, and movable in the other direction to force said other plate out of engagement with the piston rod.

9. In a pressure gun of the character described: a reciprocable piston rod having a serrated surface; a pair of spaced plates, each having an opening therein for the passage of said rod therethrough whereby said plates may be moved into and out of engagement with the serrated surface of the piston rod; means normally acting on one plate to urge the same out of engagement with the piston rod; means normally acting on the other plate to urge the same into engagement with the piston rod; and means mov-

able in one direction to force said one plate into engagement with the piston rod, and movable in the other direction to force said other plate out of engagement with the piston rod.

10. In combination with the reciprocable piston rod of a hand operated pressure gun: a first element associated with said rod and adapted to directly engage the latter to move the same for creating pressure within the gun; spring means associated with said first element and acting thereon to urge and yieldably maintain the same out of engagement with said rod; a second element associated with said rod and adapted to directly engage the latter to normally hold the same against retrogressive movement by action of the pressure created within the gun; spring means associated with said second element and normally acting thereon to urge and yieldably maintain the same in engagement with said rod; and means movable in one direction to force the first element into a position to engage the piston rod against the normal action of the spring means associated therewith, and in another direction to force the second element into a position to disengage the piston rod against the normal action of the spring means associated therewith.

11. In combination with the reciprocable piston rod of a hand operated pressure gun: a first element associated with said rod and adapted to directly engage the latter to move the same for creating pressure within the gun; spring means associated with said first element and acting thereon to urge and yieldably maintain the same out of engagement with said rod; a second element associated with said rod and adapted to directly engage the latter to normally hold the same against retrogressive movement by action of the pressure created within the gun; spring means associated with said second element and normally acting thereon to urge and yieldably maintain the same in engagement with said rod; and a pivoted member movable in one direction to force the first element into a position to engage the piston rod against the normal action of the spring means associated therewith, and in another direction to force the second element into a position to disengage the piston rod against the normal action of the spring means associated therewith.

12. In combination with the piston rod of a hand operated pressure gun: a pair of spaced elements associated with said piston rod, one element being mounted to directly engage the piston rod to move the same for creating pressure within the gun, and the other element being mounted to directly engage the piston rod for normally holding the same against retrogressive movement by action of the pressure created within the gun; means normally acting on the first element to automatically locate the same in a position to disengage said rod and including spring means associated with said first element to move the latter in one direction relatively to the rod, and stop members disposed in the path of movement of said first element to arrest the same in its movement under action of the associated spring means; means normally acting on the second element to automatically locate the same in a position to engage said rod and including members associated with said second element to cause pivotal movement thereof into and out of engaging position with the rod, and spring means connected to the second element to impart pivotal movement thereto into rod engaging position; and means operable to engage said one element

for actuating the same against the means normally acting thereon, and also operable to engage said other element for actuating the same against the means normally acting thereon.

13. In a pressure gun of the character described, a reciprocable piston rod; a pair of spaced plates, each having an opening therein for the passage of said rod therethrough whereby said plates may be moved into and out of engagement with the piston rod; a trigger movable in one direction to force one plate into engagement with the piston rod and movable in the other direction to force the other plate out of engagement with the piston rod; a coil spring surrounding a portion of said rod and disposed to bear on one side of said one plate to move the latter in one direction relatively to the rod; stop means disposed to abut the other side of said one plate to arrest and locate the same in a position out of engagement with the rod; pivot means associated with said other plate for the positioning thereof into and out of engagement with the rod; and a coil spring connected to said trigger and said other plate to move and locate the latter into rod engaging position.

14. In a pressure gun of the character described, a reciprocable piston rod; a pair of spaced plates each having an opening therein for the passage of said rod therethrough whereby said plates may be moved into and out of engagement with the piston rod; a trigger movable in one direction to force one plate into engagement with the piston rod and movable in the other direction to force the other plate out of engagement with the piston rod; a coil spring surrounding a portion of said rod and disposed to bear on one side of said one plate to move the latter in one direction relatively to the rod; stop means including an adjustable member disposed to abut the other side of said one plate to arrest and locate the same in a position out of engagement with the rod; pivot means associated with said other plate for the positioning thereof into and out of engagement with the rod; and a coil spring connected to said trigger and said other plate to move and locate the latter into rod engaging position.

FREDERICK C. GOOD