Sept. 18, 1951 W. S. WELLS 2,568,308

COCKING MECHANISM FOR PNEUMATIC GUNS

Filed July 21, 1947

FIG. 1

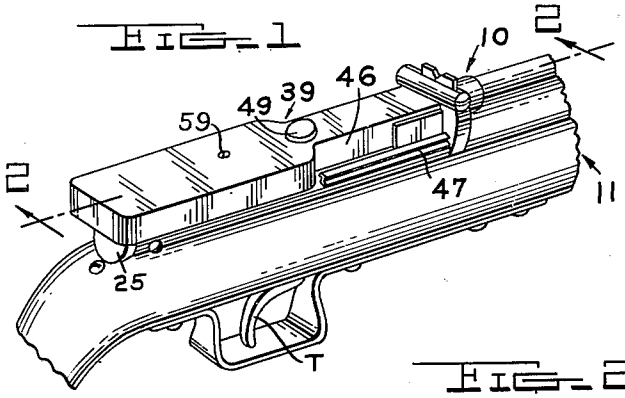
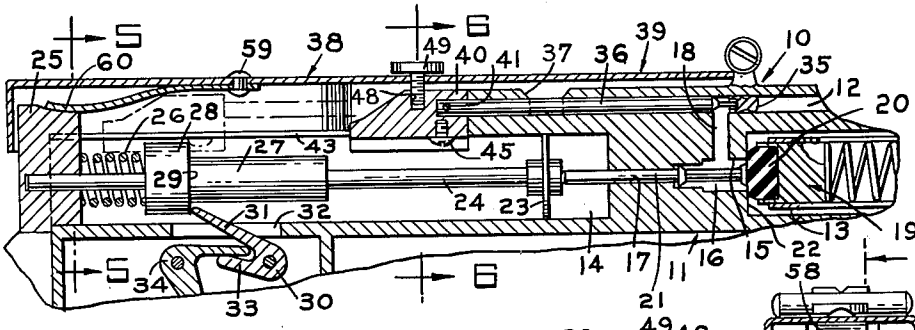



FIG. 2



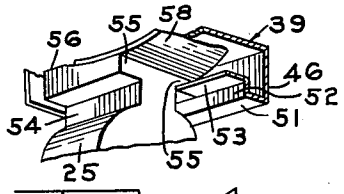




FIG. 4

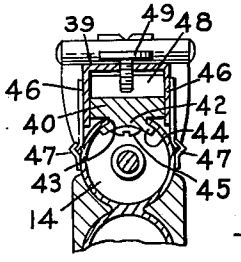



FIG. 6

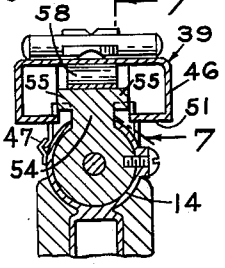



FIG. 5

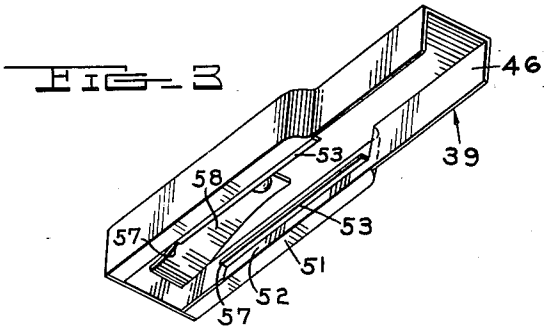



FIG. 3

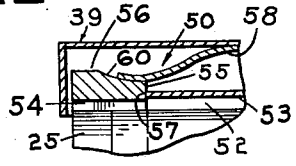



FIG. 7

INVENTOR.
WILLIAM S. WELLS
BY
Whittemore Hulbert & Belknap
ATTORNEYS

Patented Sept. 18, 1951 2,568,308

# UNITED STATES PATENT OFFICE

2,568,308

## COCKING MECHANISM FOR PNEUMATIC GUNS

William S. Wells, Palo Alto, Calif., assignor to Daisy Manufacturing Company, Plymouth, Mich., a corporation of Michigan

Application July 21, 1947, Serial No. 762,393

7 Claims. (Cl. 124—13)

1

This invention relates generally to guns and refers more particularly to improvements in guns of the type adapted to fire shot either of the ball or pellet type.

One of the objects of this invention is to provide a gun having a cap or sleeve supported for sliding movement on the gun frame at the breech end of the barrel for convenient manipulation by the operator and connected to the cocking mechanism for operating the latter.

Another feature of this invention is to operatively connect the firing pin of the gun to the cap or sleeve for actuation by the latter. In accordance with this invention, rearward sliding movement of the cap to cock the gun effects a withdrawal of the firing pin from the barrel to enable a shot to be inserted into the breech end of the barrel in advance of the firing pin, so that return movement of the cap to its forwardmost or normal position locates the shot in a firing position in the barrel.

A further object of this invention is to provide a latch responsive to return movement of the cap to its normal or forwardmost position to lock the cap in the latter position and releasable to permit rearward sliding movement of the cap by merely depressing the rear end portion of the cap.

The foregoing as well as other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein:

Figure 1 is a perspective view showing the breech end of a gun embodying the features of this invention;

Figure 2 is a longitudinal sectional view taken on the plane indicated by the line 2—2 of Figure 1;

Figure 3 is a fragmentary perspective view of a part of the cocking mechanism shown in Figure 2;

Figure 4 is a fragmentary perspective view of another part of the cocking mechanism;

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 2;

Figure 6 is a cross sectional view taken on the line 6—6 of Figure 2; and

Figure 7 is a sectional view taken substantially on the line 7—7 of Figure 5.

Referring now more in detail to the several figures of the drawing, it will be noted that the reference character 10 indicates the breech end portion of a gun having a frame 11 comprising a barrel 12, a storage chamber 13 for air under pressure, and a tubular compartment 14 located at the breech end of the barrel in axial spaced

2

relationship to the storage chamber 13. As shown in Figure 2 of the drawing, an outlet opening 15 is formed in the rear end of the storage chamber 13 and communicates with a passage 16 formed in the frame 11 of the gun. The passage 16 is connected to the tubular compartment 14 by an axially extending bore 17 and is also connected to the barrel 12 by a lateral extension 18.

The flow of air under pressure into the barrel 12 through the passage 16 is controlled by a valve 19 preferably of the type shown and described in detail in my copending application Serial No. 762,391, filed July 21, 1947 and now abandoned. Briefly, the valve 19 comprises a pad or valve member 20 formed of a suitable deformable material and slidably supported in the storage chamber 13. The valve member is normally urged by the pressure in the storage chamber against a flat seat 22 surrounding the opening 15 and is moved away from the seat to its open position by a plunger 21. The plunger 21 is slidably supported in the bore 17 and projects through the passage 16 into engagement with the valve member 20.

The rear end of the plunger 21 projects into the tubular compartment 14, and is engaged by an anvil 23. The anvil is secured to the front end of a rod 24 and is provided with a cylindrical flange of sufficient diameter to slidably engage the inner surface of the tubular compartment 14. The rear end of the rod 24 is slidably supported in a breech block 25 which serves to close the rear end of the tubular compartment 14 and acts as an abutment for the rear end of a coil spring 26. The coil spring 26 surrounds the rod 24 and engages a hammer 27. The hammer 27 is slidably supported on the rod 24 and is provided with a head 28 at the rear end thereof forming a shoulder 29.

The hammer 27 is shown in its cocked position in Figure 2 of the drawing, and is held in this position by a sear 30 pivotally supported on the gun frame 11 below the compartment 14 for swinging movement in a vertical plane. An arm 31 on the sear projects into the compartment 14 through a slot 32 formed in the adjacent wall of the compartment, and is adapted to engage the shoulder 29. A second arm 33 on the sear is engaged by a trip 34 pivotally supported on the gun frame 11 for swinging movement in a vertical plane and adapted to be operated by a trigger T.

The coil spring 26 is held under compression in the cocked position of the hammer 27, and is retained under compression until the sear 30 is operated by the trip to release the arm 31 from the shoulder 29 on the hammer. When this is

accomplished, the hammer 27 is in effect thrown in a forward direction along the rod 24 by the force of the spring 26 and applies a blow on the anvil 23 at the front end of the rod 24. The force of the blow is transferred to the valve member 20, and is sufficient to move the valve member in a direction away from the seat 22 to permit the escape of a limited amount of air under pressure from the storage chamber 13 into the barrel 12. The air under pressure is admitted to the barrel 12 at a point in the rear of the firing position of a shot 35 previously located in the barrel by a positioning pin 36 about to be described.

The positioning pin 36 is slidably supported in the breech end of the barrel 12, and is retractable from its advanced position shown in Figure 2 of the drawing to a position wherein the front end thereof is spaced rearwardly beyond an opening 37 formed at the upper end of the barrel for receiving shot. Thus when the positioning pin is in its retracted position, a shot may be inserted into the barrel through the opening 37 in advance of the positioning pin. The positioning pin 36 is operated by the cocking mechanism designated generally by the reference numeral 38. This cocking mechanism comprises a slidable sleeve or cap 39 and a block 40.

The block 40 is positioned beyond the breech end of the barrel 12, and is connected to the rear end of the positioning pin 36 by a suitable pin 41. As shown particularly in Figure 6 of the drawing, the block 40 is formed with a rib 42 at the underside thereof which projects downwardly into the compartment 14 through an elongated slot 43 formed in the top wall of the compartment 14. The rib 42 extends lengthwise of the block 40 between opposite side edges of the latter, and is formed with laterally outwardly extending flanges 44 respectively engageable with the inner surface of the tubular compartment 14 at opposite sides of the slot 43.

A projection in the form of a screw 45 extends downwardly from the rib 42 in the path of travel of the head 28 on the hammer 27. The arrangement is such that when the hammer 27 is in its released or forwardmost position, the shoulder 29 engages the projection 45, so that rearward movement of the block 40 to withdraw the positioning pin 36 effects a corresponding movement of the hammer 27 to its cocked position shown in Figure 2 of the drawing. During rearward movement of the hammer 27, the head portion 28 merely slides over the arm 31 of the sear enabling this arm to again engage the shoulder 29 and hold the hammer 27 in its cocked position. Before returning the block 40 to its forwardmost position, a shot 35 is inserted into the barrel 12 through the opening 37 in advance of the front end of the positioning pin 36. Thus return movement of the block 40 to its forwardmost or normal position shown in Figure 2 of the drawing advances the shot 35 to its firing position at the front side of the air passage 18.

The cap 39 is in the form of an inverted channel-shaped sheet metal sleeve adapted to fit over the breech end of the gun to conceal the openings 37 and 43. The depending flanges 46 at opposite sides of the cap 39 are respectively slidably supported in ways 47 secured to opposite sides of the tubular compartment 14. The construction is such as to permit sliding movement of the cap 39 fore and aft of the gun at the breech end of the frame 11.

Referring again to Figure 6 of the drawing, it will be noted that the cap 39 is connected to the block 40 for actuating the latter. In the present instance the block 40 is formed with a transversely extending slot 48 intermediate the ends thereof, and a screw 49 is threadably supported in the top wall of the cap 39 in a position to enable the shank of the screw to extend into the slot 48. Thus the cap 39 provides a convenient grip for the operator to enable readily manipulating the cocking mechanism.

In order to prevent accidental sliding movement of the cap 39 and associated parts in a rearward direction when the muzzle end of the barrel is tipped upwardly, suitable latch means 50 is provided. In detail the opposite side flanges 46 adjacent the rear end of the cap 39 are formed with upwardly opening channel portions 51 at the lower edges thereof. As shown in Figure 4 of the drawing, the inner upstanding flanges 52 of the channel-shaped portions 51 are formed with laterally inwardly extending flanges 53 at the upper edges thereof. It will also be noted that the breech block 25 is formed with an upwardly projecting longitudinally extending rib 54 having flanges 55 extending laterally outwardly from the upper end thereof and providing a head 56.

It will be noted from Figures 3 and 7 of the drawings that the laterally inwardly extending flanges 53 on the cap 39 terminate short of the rear end of the cap, and the rear ends 57 on the flanges 53 are adapted to respectively abut the front ends of the flanges 55 on the head 56 of the breech block when the cap is in its forwardmost position shown in Figure 2 of the drawing. The rear ends of the flanges 53 are yieldably held in a position where they abut the flanges 55 by a leaf spring 58 having the front end secured to the underside of the top wall of the cap by a rivet 59, and having the rear end bowed downwardly to engage an arcuate surface 60 formed at the top of the head 56 on the breech block.

It follows from the above that accidental rearward displacement of the cap 39 from the position thereof shown in Figure 2 of the drawing is prevented by engagement of the rear ends 57 on the flanges 53 with the front ends of the flanges 55 on the breech block. It this connection it is pointed out, however, that the lateral distance between the longitudinal edges of the flanges 53 is somewhat greater than the width of the rib 54. As a result the cap 39 may be unlatched from its operative position shown in Figure 2 of the drawing by merely depressing the rear end of the cap against the action of the leaf spring 58 to locate the flanges 53 below the flanges 55 on the breech block. When the cap is in the depressed position noted above, it may be readily shifted rearwardly since the flanges 53 are free to pass along opposite sides of the rib 54. Assuming that the cap 39 is in its retracted or rearwardmost position and is shifted forwardly, it will be noted that the spring 58 automatically raises the rear end of the cap to the position shown in Figure 7 of the drawing as soon as the rear ends 57 of the flanges 53 are advanced to the front side of the head 56 on the breech block 25. Thus the cap 39 is latched in its normal position without any special manipulation on the part of the user.

What I claim as my invention is:

1. A gun comprising a frame having a barrel, a shot positioning pin slidably supported in the breech end of the barrel for advancing shot to a firing position in said barrel, means for firing shot through the barrel including a spring op-

erable hammer, releasable means for holding the hammer in a cocked position, a member supported on the frame at the breech end of the barrel for fore and aft sliding movement, cooperating means on said frame and member preventing relative rotation between said member and frame and supporting said member for longitudinal fore and aft movement on said frame, a connection between said member and positioning pin, and means rigidly connected with said member disposed in the path of travel of a part on said hammer and moveable fore and aft of said frame in accordance with the movement of said member so as to move said hammer to its cocked position in response to movement of the member in a direction to retract said positioning pin.

2. A gun comprising a frame having a barrel, a shot positioning pin slidably supported in the breech end of the barrel for advancing shot to a firing position in the barrel, a member supported on the frame at the breech end of the barrel for sliding movement longitudinally of the barrel cooperating means on said member and frame preventing relative rotation between said member and frame and supporting said member for fore and aft longitudinal movement on said frame, means connecting said member to said poitioning pin so that said positioning pin will be actuated by movement of said member, and releasable means responsive to movement of the member to its forwardmost position with respect to the barrel to releasably retain the member in its advanced position in said barrel.

3. A gun comprising a frame having a barrel, a shot positioning pin slidably supported in the breech end of the barrel for advancing shot to a firing position in the barrel, a member supported on the frame at the breech end of the barrel for sliding movement longitudinally of the barrel and connected to the positioning pin for actuating the latter, and a cap for the breech end of the frame carrying means engaging said frame and preventing relative rotation between said cap and frame and supporting said cap for sliding movement longitudinally of the barrel and rigidly connected to the member for actuating the latter.

4. A gun comprising a frame having a barrel adapted to receive shot, a shot positioning pin slidably supported in the breech of the barrel for advancing shot to a firing position in the barrel, means for firing shot through the barrel including a spring operated hammer, releasable means for holding the hammer in its cocked position, an inverted substantially channel-shaped cap supported on the top of the frame at the breech end of the latter for sliding movement longitudinally of the barrel means connecting said channel-shaped cap to said shot positioning pin so that movement of said cap will actuate said pin, and means for moving the hammer to its cocked position in response to sliding movement of the cap in one direction relative to the frame.



5. A gun comprising a frame having a barrel adapted to receive shot, means for firing shot through the barrel including a spring operated hammer, releasable means for holding the hammer in its cocked position, a cap for the breech end of the frame carrying means engaging said frame and preventing relative rotation between said cap and frame and supporting said cap for sliding movement longitudinally of the barrel, means for moving the hammer to its cocked position in response to sliding movement of the cap in a rearward direction relative to the frame, and means responsive to forward movement of said cap to releasably retain the latter against accidental displacement from its forwardmost position relative to the barrel.

6. A gun comprising a frame having a barrel, a shot positioning pin slidably supported in the breech end of the barrel for advancing shot to a firing position in the barrel, a manually operable member supported on the top of the frame above said pin for sliding movement in a direction longitudinally of the barrel and for tilting movement relative to said frame, means connecting said member to the positioning pin for actuating the latter upon sliding movement of the member, latch means for holding said member in its forwardmost position with respect to the barrel and releasable in response to downward tilting movement of the member relative to said frame.

7. A gun comprising a frame having a barrel, an inverted substantially channel-shaped cap supported on the top of the frame at the breech end of the barrel for sliding movement in a direction longitudinally of the barrel and for limited tipping movement relative to the frame, latch means for holding the cap in its forwardmost position with respect to the barrel and releasable in response to tipping movement of the cap in a downward direction, and spring means resisting tipping movement of the cap in said downward direction.

WILLIAM S. WELLS.


## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,146,753 | Dickey | July 13, 1915 |
| 1,192,308 | Hicks | July 25, 1916 |
| 1,292,665 | Udesen | Jan. 28, 1919 |
| 1,512,993 | McLean | Oct. 28, 1924 |
| 1,825,489 | Tostenson | Sept. 29, 1931 |
| 2,283,300 | Vincent | May 9, 1942 |