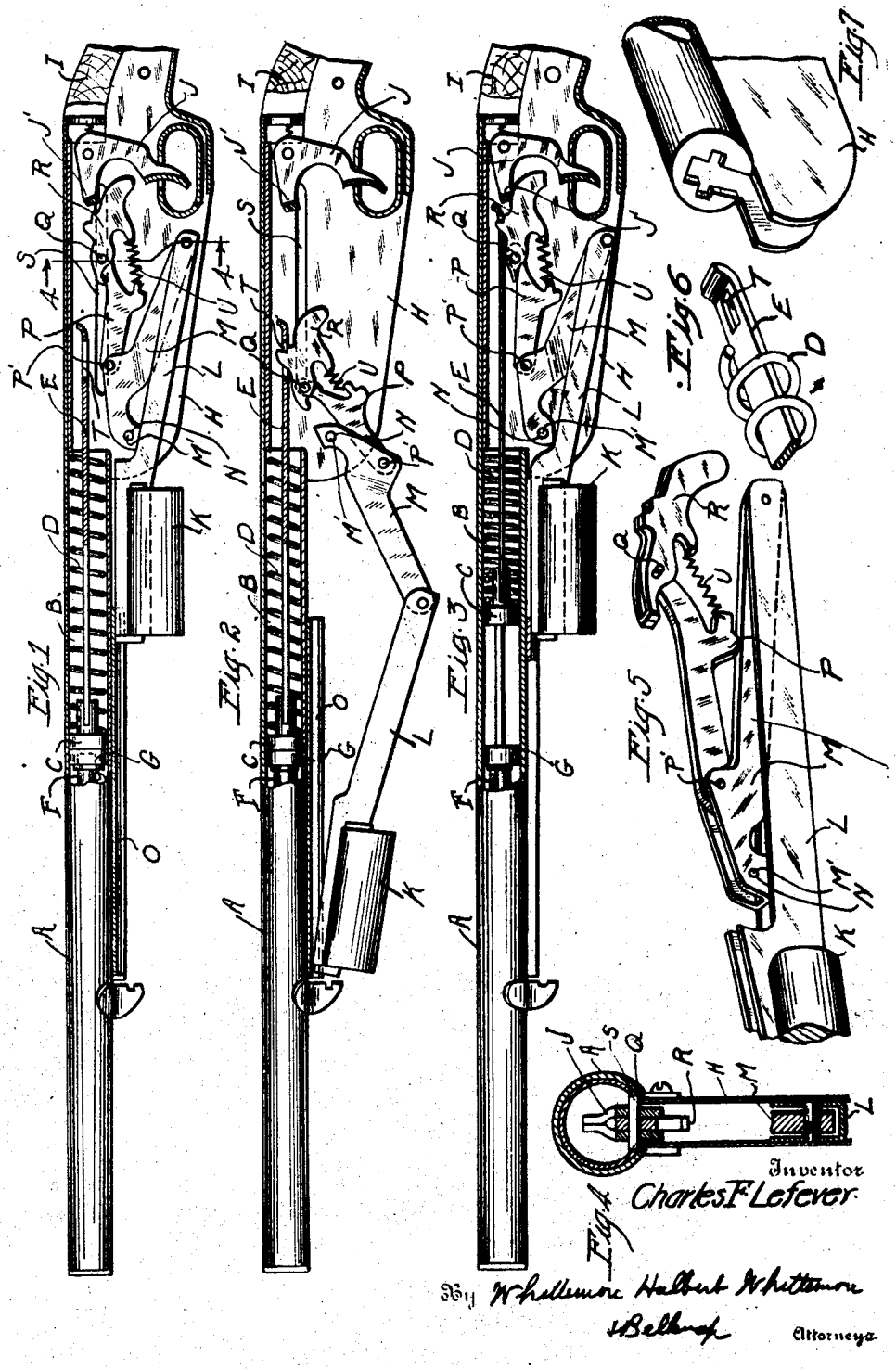
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SPRING AIR GUN

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# UNITED STATES PATENT OFFICE.

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## SPRING AIR GUN.

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The invention relates to spring air guns of that type which simulate the appearance of the so-called pump gun and in which the spring is compressed by the sliding of the pump handle on the barrel. As heretofore constructed the movement of the handle operating through swinging links or toggle levers compresses the spring and engages the sear to hold said spring under compression until released by the trigger. If, however, the sear should fail to engage or should be accidentally released, the reaction of the spring will cause the straightening of the toggle with the danger of catching the hand of the operator between the links and the barrel. It is the object of the present invention to avoid the possibility of such an accident, and to this end the invention consists in the construction as hereinafter set forth.

In the drawings:

Figure 1 is a sectional elevation of the gun showing the spring in released position;

Figure 2 is a similar view with the pump handle adjusted to a position for engaging the sear with the plunger;

Figure 3 is a similar view showing the spring compressed and the parts in position ready for firing;

Figure 4 is a cross section on line 4—4 of Figure 1; and

Figures 5, 6 and 7 are perspective views of some of the parts detached.

A is the outer or so-called false barrel, a portion of which forms the air compression cylinder B containing the plunger or piston C, the spring D and plunger shank E. F is the true barrel within the forward portion of the barrel A with its rear end supported in the abutment G, against which the plunger strikes when the gun is fired. H is the frame which connects the barrel A with the stock I and contains the trigger J and other mechanism. This mechanism comprises the pump handle K connected to a swinging link L, which in turn is connected to the lever M fulcrumed at N in the frame. The forward end of the link L slidably engages a grooved guideway O on the bottom of the barrel and in the normal position of parts the handle K is drawn to the rear and the link L and lever M are folded to lie within the frame H, as shown in Figure 1. The lever M has connected thereto a link P extending rearward therefrom and connected by a pin Q with the sear R. The pin Q is guided for longitudinal movement preferably by engaging slots S in opposite sides of the frame, which slots are concealed by overlapping portions of the barrel A. Thus when the handle K is moved forward and the link L and lever M are swung into the position shown in Figure 2, the link P and sear R will be drawn forward until the latter latches into engagement with a notch T at the rear end of the plunger shank E. The handle K may then be drawn rearward again and in so doing will force the link P, sear R, shank E and plunger C rearward, compressing the spring D, the rear end of which abuts against the frame H. The movement is continued until the pivot pin P′ connecting the link P to the lever M passes slightly beyond the center line, connecting the fulcrum pin M′ and the pin Q′ for the sear, thereby locking the lever mechanism against any reaction from the spring. However, the sear R, which is held in normal position by a small spring U, extends into operative relation to a finger J′ on the trigger J so that the pulling of said finger will disengage the sear from the notch T and permit the spring D to force the plunger C forward.

With the construction as just described, it will be noted that in the position of parts shown in Figure 1 the spring does not react against the lever mechanism, so that the handle K may be freely moved forward to engage the sear with the notch T. The rearward movement of the handle K is opposed by the reaction of the spring D, but the construction of the levers is such that the power is progressively increased as the link P assumes the position shown in Figure 3. In this position the link L and lever M are both folded within the frame H and the reaction of the spring D tends to hold them in this folded position. Thus should the sear be accidentally disengaged, it can have no detrimental effect, but will merely permit the forward movement of the plunger C. If the operator's hand should slip while he is actuating the handle K to compress the spring, no injury could result for the reaction of the spring will merely throw the levers outward from the frame. Moreover the spring will be fully expanded before the handle K reaches its forward position and in this position there is still sufficient angularity in the link L and lever M to hold these parts out of contact with the barrel.

What I claim as my invention is:

1. In a spring air gun, the combination with a barrel, a spring actuated plunger therein, a member movable with said plunger and a sear engageable with said member for holding the plunger in the compressed position of the spring, of a handle slidable on said barrel normally occupying its rear position thereon, and levers connected to said handle normally folded, adapted to be straightened by the forward movement of said handle to engage the sear with said member and upon the rear movement of said handle to compress the spring.

2. In a spring air gun, the combination with a barrel, a spring actuated plunger therein, of compression mechanism for said spring including normally folded levers, a travelling sear actuated by the unfolding of said levers to engage said spring actuated plunger and upon the refolding of said levers to compress said spring, and a trigger in operative relation to said sear in the compressed position of the spring.

3. In a spring air gun, the combination with a barrel, a spring actuated plunger therein and a frame connected with said barrel, of spring compressing levers normally in folded position within said frame, a handle connected with one of said levers slidable on said barrel to cause the unfolding of the levers, a sear connected to said levers actuated by the forward movement of said handle to engage said plunger and by the rear movement thereof to compress the spring, and a trigger in operative relation to said sear in the rear position thereof to disengage the same from said plunger.

4. In a spring air gun, the combination with a barrel, a spring actuated plunger therein, a frame connected to said barrel, of spring compressing levers normally in folded position within said frame, a handle connected to one of said levers slidable along said barrel to unfold the levers, a sear, a link connecting said sear with one of said levers, where by the forward movement of said lever said sear is engaged with said spring actuated plunger and in the rear movement of the handle the spring is compressed, and a trigger within said frame arranged to be in operative relation to said sear in the compressed position of the spring.

5. In a spring air gun, the combination with a barrel, a plunger therein having a rearwardly extending shank, a spring surrounding said shank and an abutment for said spring through which said shank projects, of a frame, a toggle lever normally folded within said frame, a sear slidable within said frame, a link connecting said toggle with said sear and actuated by the unfolding of the toggle to engage said sear with said shank and by the refolding thereof to compress the spring, and a trigger for disengaging said sear from said plunger.

6. In a spring air gun, the combination with a barrel, a plunger therein, and a spring compressible by retraction of said plunger, of a mechanism for compressing said spring, establishing an inherent lock upon said mechanism in the compressed position of the spring, the spring acting to maintain the compressive position of said mechanism.

7. In a spring air gun, the combination with a barrel, a plunger therein, and a spring compressible by retraction of said plunger, of a pair of levers adapted to be folded upon each other, an actuating member connected to one of said levers, and means connected to the other lever for retracting said plunger, as the levers are folded said spring re-acting through said connecting means upon said levers to maintain them folded.

8. In a spring air gun, the combination with a barrel, a plunger therein, and a spring compressible by retraction of said plunger, of a compression mechanism for said spring including a pair of levers movable from and extended to a folded position, an actuating member connected to one of said levers and a member connected to the other lever engageable with said plunger in the extended position of the levers, and movable by folding of the levers to retract the plunger, said spring acting in the retracted position of the plunger to resist unfolding of the levers.

9. In a spring air gun, the combination with a barrel, and a spring actuated plunger therein, of a trigger, a sear forwardly movable to engage the plunger and rearwardly movable to retract the plunger and compress said spring, and releasable from the plunger by the trigger in its retracted position, and a lever mechanism controlling travel of the sear, and establishing an inherent lock upon said mechanism in the retracted position of the sear to maintain said position.

In testimony whereof I affix my signature.

CHARLES F. LEFEVER.