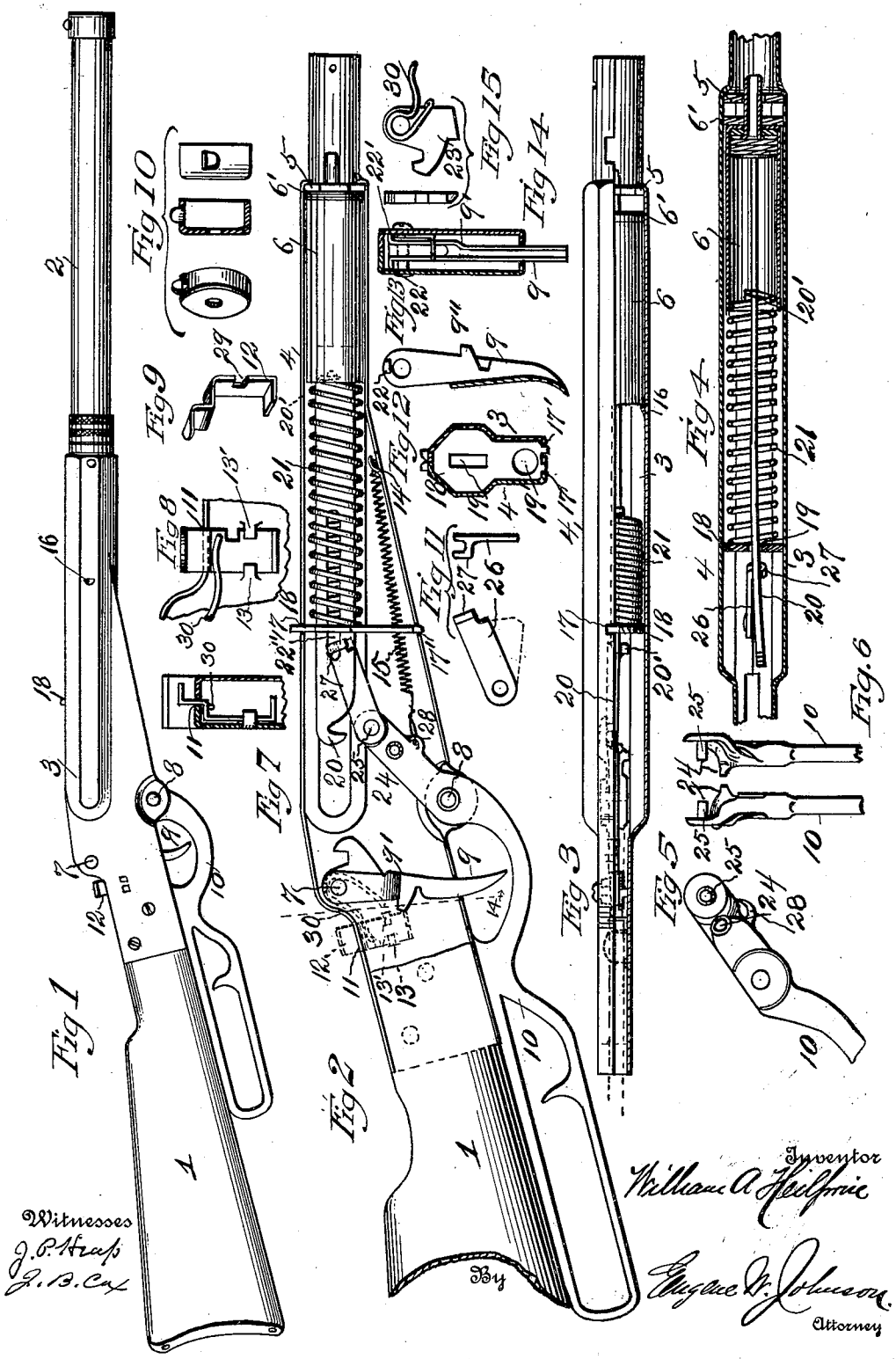
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AIR GUN.

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AIR-GUN.

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To all whom it may concern:

Be it known that I, WILLIAM A. HEILPRIN, a citizen of the United States of America, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Air-Guns, of which the following is a specification.

This invention relates to certain new and useful improvements in air-guns of the type shown in my Letters-Patent No. 944,188, dated December 21, 1909.

The object of the invention forming the subject matter of this application and upon which the claims are predicated is to reduce the cost of manufacture by simplifying the construction of certain parts and by means of such construction and combinations to overcome a liability of disorganization of certain parts when assembled, which parts in the prior structure were liable to spring out of place when one of the side pieces of the housing was detached.

In order to accomplish one of the ends in view, one of the sheet metal side pieces of the housing is provided with an attached abutment positioned in advance of the cylinder and such side piece has recesses for an abutment for the spring, the recesses being slightly deeper than the companion recesses in the opposite side piece and associated with such construction there is a piston-rod the rear portion of which is deflected or bent to engage a sear that is carried by a trigger of such construction that the sear will be maintained nearer to one of the side pieces than the other, and in line with the hooked end of the piston-rod.

A further object of my invention is to provide a trigger of such construction that the part adjacent to its fulcrum may be to one side of the longitudinal center of the housing and the part that projects may be in line longitudinally with the housing, to be centrally located.

A further object of my invention is to provide a simple and efficient safety device or trigger-lock which is attached to one of the side pieces and which when in its normal position will lock the trigger; but will not restrict the movement of the sear to admit of engagement therewith of the piston-rod.

A further object of this invention is to simplify the construction of the trigger, the lock therefor and provide for these parts a spring which will actuate the trigger, the sear that is associated therewith and the safety-device or lock which is held by such spring in engagement with the trigger to hold the same against movement.

A further object of my invention is to provide a lever which is associated with the piston-rod by a link which is pivoted to the lever to engage the piston-rod, the portion of the lever that is located within the housing being so constructed as to have bearings against the flat side portions of the housing to restrain lateral movement of the lever in compressing the spring.

A further object of the invention is to provide a lever with an inner end of such construction that its inner end may be moved rearward over one side of the sear carried by the trigger and when so positioned will exert pressure upon the piston-rod which tends to move the same downward or toward the catch on the sear.

In the accompanying drawings which illustrate a practical embodiment of my invention, Figure 1, is a side elevation. Fig. 2, is a side elevation showing the parts in position, one of the side pieces being removed. Fig. 3, is a partial top elevation and section. Fig. 4, is a horizontal section taken through a portion of the side pieces. Figs. 5 and 6 are detail views of the lever. Figs. 7, 8 and 9 are views of the safety device or trigger lock. Fig. 10 are views illustrating the cap and front sight of the magazine. Fig. 11 are views showing the link for the lever that connects the same to the piston-rod. Fig. 12, illustrates one of the abutments. Fig. 13, is a side elevation partly in section of the trigger. Fig. 14, is a section on the line 14—14 on Fig. 2 and Fig. 15, are detail views of the sear or latch for the piston-rod.

The general appearance of an air-gun made to accord with my present invention is similar to that shown in my Patent No. 944,188 dated December 21, 1909, the stock 1 and the magazine 2 providing end connecting means for the sheet metal side pieces 3 and 4. The sheet metal side pieces are of similar configuration and one of the side pieces has fixedly attached thereto an abutment 5 for the forward end of the cylinder 6, or a washer 6′ that surrounds the air tube that projects from the cylinder and extends through an opening formed centrally through the abutment 5, to enter the

shot-race and engage the barrel, not shown. The side piece of the housing that carries the abutment 5 has in fixed engagement with the side piece studs 7 and 8 one for the trigger 9 and the other for the lever 10. The side piece to which the abutment 5, and the studs 7 and 8 are attached has a recess 11 formed in the upper flange thereof for the passage therethrough of a part of a safety device or trigger lock 12, and the flat side below the recess has lugs 13 and 13′ which overlie the sides of the trigger lock to maintain the same in slidable engagement with the side piece of the housing. The side piece which carries the safety device or trigger-lock, a stud for the trigger and one for the lever, and also the abutment 5 has its lower flange cut and indented to form a spur or prong 14 with which the forward end of the lever-spring 15 is connected. One of the sides 4 has a recess and the other side 3 a perforation to receive the abutment 18. Otherwise than heretofore stated the side pieces which constitute the housing are similar in construction each having indentations 16, to provide stops which limit the rearward movement of the cylinder 6, when its piston-rod is moved rearward by the lever 10, recess 17 and perforation 17′ for the abutment 18 said abutment having an opening 19 through which the piston-rod 20 is passed and below the opening 19, an opening 19′ for lever-spring 15, and in addition to the recesses for the abutment the flanges of the side pieces are cut away to provide recesses which together form openings for the passage of the outer portions of the trigger and of the lever.

The piston-rod 20 carries at one end a piston head for the cylinder 6 and this rod or bar has securely attached thereto a stud or pin 20′ against which one end of a helical spring 21 bears when its other end bears against the abutment 18. The bar which is encircled by the spring between the pin and the abutment, and which is compressed by rearward movement of the bar, and such bar has its rear end shaped to form a hook for engagement with a sear or latch in the rear thereof, and through the bar there is formed a longitudinal slot 20″ for the passage therethrough of one end of a link that is attached to the inner end of the lever.

The trigger 9 which is fulcrumed upon the stud 7 is formed from a single piece of sheet metal that is bent upon itself to provide sides which are connected by a front part which is rounded the lower part that extends beyond the housing being curved, one of the sides of the trigger is flat and the opposite side is shaped so that the sides above the part that has the rounded front will be separated by a greater space than the part below, such shape being effected by bending one of the sides to form an offset 9′ and extending rearward substantially on a line with the offset or bend there is a projection 9″ below which there is a recess formed by removing a part of the side from which the projection extends, the projection extending from the narrower part of the trigger. Above the offset the part that connects the sides terminates and the upper wider parts of the trigger have openings for the passage therethrough of the stud 7. The rounded upper ends of the sides of the trigger have laterally projecting portions 22 and 22′ one being longer than the other, these projections abut against the inner walls of the housing and maintain the portion of the trigger that is below the offset 9′ centrally between the walls.

A sear or latch 23 having an aperture through the same which corresponds with the apertures through the trigger is maintained between the upper portion of the sides of the trigger and is capable of movement upon the pin 7 independent of the trigger downwardly and rearwardly, the sear has a hook to engage with the hook upon the rear end of the piston-bar and it also has a part for engagement with the front wall of the trigger that is located above the offset 9′. The rear edge of the sear when the front of its depending part engages the front wall of the trigger is in line with the rear edges of the trigger and the side of the depending part may be beveled to fit well within the bent part forming the offset 9′. By the construction shown the sear is positioned between the sides of the trigger and is maintained so that it is located almost entirely to one side of the central dividing line of the housing and in order that the piston-bar 20 may engage therewith such bar is bent to one side or has its rear portion bent laterally, the bend being about on a line with the forward end of the slot 20″, the degree of the bend being sufficient to locate the hooked end in line with the hook of the sear.

The lever 10 about the aperture through which passes the stud or pin 8, is slightly widened by bosses and beyond the bosses on one side there is formed a projection of sufficient length to engage or bear against one of the side plates of the housing and beyond the projection 24 the inner portion of the lever extends laterally and then forward the distance laterally being sufficient to position the face opposite to the side from which the stud projects so that such face or a small projection thereon will bear against the side plate opposite to the one with which the projection 24 engages. The projections contacting with the inner faces of the side pieces of the housing prevents lateral movement of the lever in swinging the same upon its fulcrum in compressing the spring. The inner end portion of the lever has a stud or

rivet 25 that is surrounded by a smooth surface against which bears one side of a link 26 which is secured to the lever by upsetting the end of the stud 25. The end of the link 26 is partially cutaway and is notched or recessed and bent to provide a hook 27 that is adapted to be passed through the slot in the piston bar. To provide means for connecting the rear end of the spring 15 to the lever 10 there is formed a prong 28 that is located on the front edge of the inner portion of the lever and through the opening or eye the rear end portion of the spring is passed. When the grip or external portion of the lever is moved away from the stock against which it is held by the spring 15, its inner end is moved in the arc of a circle and the link being in engagement with the lever and with the piston-bar moves the piston-bar rearward the piston and cylinder moving together until the cylinder engages the stops 16 when its movement will be arrested, continued movement of the lever further compresses the spring 21 and brings the hook on the piston-bar in engagement with the forward portion of the sear 23, the contacting faces being rounded the sear is moved against the action of its spring before the parts engage to hold the spring 21 compressed, during such movement the inner end of the lever and the rear end of the link will overlie one side of the sear. When the piston-bar and sear or catch engage one with the other reverse movement is imparted to the lever which causes the hooked end of the link to be positioned adjacent to the forward end of the slot through the piston-bar, the lever being held against the stock by the spring 15.

The safety device or trigger lock 12 is made up of a flat strip of metal one edge thereof having formed therein a recess 29 through which one of the lugs 13′ may be passed and the inner end is bent at substantially right angles to provide a part against which the projecting portion 9″ of the trigger will abut when the lock is in its normal position, above the recess 29 the strip is bent to form a projecting part that normally contacts with the flange of the side piece having the lugs 13 and 13′ and beyond such bend there is a part that extends through the recess 11 and the outer end is again bent to provide a horizontal or flat thumb rest, which also serves as a stop to limit the movement of the trigger lock by contact with the top flange of the side piece which it overlies.

To move the trigger lock upward and the trigger and the sear or catch forward there is used a spring 30, made of a single piece that is shaped to partially encircle the stud 7, one end of the spring is bent to provide a part that engages the rear face of the trigger and the sear and the other end portion contacts with a projecting portion of the trigger lock. When the spring 30 is in position it is overlaid by a portion of the trigger that is about the openings therethrough the shorter projection 22′ on the trigger being slightly beyond the spring. A trigger lock of the construction shown can be readily placed in position by bringing its notch in register with one of the lugs, and the sear when moved by the piston-bar moves over a part of the lock that is parallel with the side piece. When the trigger is moved to release the piston-bar the lower projecting end of the safety device will enter the recess in one side of the trigger and its end will be overlaid by the opposite side of the trigger.

It will be noted that the abutment 18 is held in place by frictional contact with the walls about the recess 17 and opening or hole 17′ and in assembling the parts considerable trouble arose by reason of the partially compressed spring forcing this abutment out of place, this difficulty has been surmounted by decentering certain parts so that no difficulty is experienced in assembling and one of the sides may be removed without liability of the parts springing out of place. The construction provides an air gun which is light and comprises but few parts and said parts may be cheaply manufactured and assembled.

Having thus set forth my invention I do not wish to limit myself to the precise construction of the parts herein described as the same may be modified without departing from the spirit of the invention.

I claim.

1. In an air gun, a housing or frame, a spring actuated piston, a piston bar having a hooked end and a longitudinal slot therethrough, means for moving the piston to compress the spring comprising a lever pivoted to the frame and a link connected to the lever within the frame to engage with the piston bar about the slot therethrough, a trigger, a sear associated with the trigger for engagement with the hooked end of the piston bar and adapted to be moved in one direction independent of the trigger and to be moved in an opposite direction with the trigger and means for holding the trigger against movement.

2. In an air gun, the combination with a spring actuated piston bar, of means pivoted to the frame of the gun for engagement with the piston bar to hold the same in a retracted position, a trigger lock maintained in slidable engagement with the frame of the gun, a spring that engages the trigger lock to maintain a part of the same projected beyond the frame of the gun and an inner part of the trigger lock in position to prevent rearward movement of the trigger, the parts being organized so that the trigger

lock must be manually depressed to admit of such movement of the trigger as will effect a release of the piston bar.

3. In an air gun, a housing comprising centrally divided side pieces, a piston, a spring actuated piston bar having a slot therethrough and a hook formed upon the rear end thereof, a trigger, a sear associated with the trigger for engagement with the hooked end of the piston bar and adapted to be movable independent of the trigger when engaged by the piston rod, a reciprocatory trigger lock which projects through the upper side of the housing and normally holds the trigger against movement, a spring which engages with the trigger; the trigger lock and with the sear when the sear is moved rearward by engagement therewith of the trigger, a lever pivoted to the housing and a link attached to the inner end of the lever for engagement with the piston bar about the slot therethrough.

4. In an air gun, a spring actuated piston bar, means for manually moving the piston bar rearward to compress the spring thereof, means for retaining the piston bar in its rearward position, a slidable member maintained by the frame of the gun and extending therethrough, a spring for normally maintaining a part of said slidable member projected beyond the frame of the gun and a part in position to engage with and to lock the trigger against rearward movement, a trigger pivoted to the frame forward of the lock therefor; the parts being organized so that pressure has to be applied simultaneously to the slidable lock and to the trigger to effect a release of the piston bar.

5. In a gun, a housing comprising sheet metal side pieces, an abutment attached to one of the side pieces, an abutment maintained in engagement with the side piece having the permanently attached abutment, a cylinder, a piston-bar having at one end a piston that is movable within the cylinder and on the opposite end from the piston a hook, a trigger fulcrumed between the side pieces of the housing, a sear mounted upon the fulcrum of the trigger and provided with a forwardly projecting portion with which the hooked end of the piston-bar engages, a spring surrounding the piston-bar for engagement therewith and with one of the abutments and means for moving the piston-bar to effect engagement thereof with the sear.

6. In an air gun, a housing, a piston bar, a trigger pivoted to the housing, a sear mounted to be moved by engagement with the piston bar, a trigger lock which is carried by the housing and is held normally positioned to engage the trigger and a single spring for actuating the trigger, the sear and the trigger lock.

7. In an air gun, a piston bar spring actuated in one direction, a trigger for holding the piston bar in retracted position, a trigger lock maintained at the rear of the trigger and in slidable engagement with the frame of the gun, a spring for moving the trigger lock upward and projected to position and maintain an inner portion of the trigger lock in position to be engaged by the trigger to hold the same against movement, the parts being organized so that pressure will have to be exerted at the same time upon both the trigger lock and the trigger to effect a release of the piston bar.

8. In a gun, a housing provided with a fulcrum for a trigger said housing comprising side pieces having a centrally located opening through which the trigger projects, a trigger made up to provide an inner portion that is in line with one side of the part that projects through the opening and an opposite inner portion that is out of line with the other side that extends through the opening and laterally extending projections of different lengths that engage with the inner faces of the housing adjacent to the fulcrum of the trigger.

9. A trigger made to provide side portions which are connected one of the side portions having an offset whereby the side portions above the offset are spaced farther apart one from the other than those parts which are located below the offset.

10. In a gun, a spring actuated piston-bar, a trigger, a pivoted sear associated with the trigger for engagement with the piston-bar to be moved with the trigger and to be moved by the piston-bar independent of the trigger and a spring for effecting movement of both the trigger and the sear.

11. In a gun, a trigger having side portions and a transverse portion below the side portions, a sear associated with the trigger to be overlaid by the side portions thereof and to have rearward movement independent of the trigger, a part on the sear for engagement with the transverse portion of the trigger and slidable spring actuated means for automatically locking the trigger against movement.

12. In an air gun, a spring actuated piston bar, means associated with a trigger that is engaged by the piston bar to hold the piston bar in a retracted position, a trigger lock maintained in slidable engagement with the frame of the gun the same having a laterally extending part for engagement with the trigger and a part which extends upward through the frame of the gun, a spring for sliding the trigger lock to normally maintain it in engagement with the trigger and means on the trigger lock for engagement with the frame of the gun to limit the movement of the trigger lock in the direction that it is moved by the spring.

13. In an air gun, a spring actuated pis-

ton bar having a hook-shaped rear end, means for moving the piston bar rearward to compress the spring, a trigger, a sear fulcrumed upon the same fulcrum as the trigger and provided with a notch with which the hook of the piston bar may engage and a portion for engagement with the trigger, a slidable trigger lock and a spring for holding the trigger lock in normal engagement with the trigger and the sear and the trigger in normal forward position.

14. In an air gun, a frame or housing, a trigger pivoted between the sides of the housing, an opening through the upper portion of the housing, a trigger lock maintained in slidable engagement with the housing and positioned at the rear of the trigger, a part on the trigger lock which is normally maintained in position to engage with the trigger, and a spring for holding the trigger lock projected and in position to prevent movement of the trigger, the parts being organized so that the lock must be maintained in depressed position to effect actuation of the trigger rearward.

15. In a gun, a trigger, a pivoted sear associated therewith to be moved rearward with the trigger, a slidable lock for the trigger and a spring associated with such parts to move the trigger and the sear in the same direction and to hold the lock normally in engagement with the trigger.

16. In an air gun, a housing, a trigger pivoted thereto, a trigger lock held in slidable engagement with the housing, means for holding the lower end of the trigger in its forward position; the lock at the limit of its upward movement and projected beyond the housing and positioning a part of the trigger lock to engage with the trigger to hold the same against rearward movement.

17. In an air gun, a housing having means for maintaining in slidable engagement therewith a trigger lock, a trigger pivoted to the housing and provided with a recess having a curved wall, a part on the trigger lock with which the curved wall of the recess in the trigger will engage when the trigger lock is depressed and means for holding the trigger lock projected for manual depression.

18. In a gun, the combination with a slidable and spring actuated trigger-lock, of a trigger provided adjacent to the part thereof which is engaged by the lock with a notch or recess that alines with the trigger engaging portion of the lock when the lock is moved out of contact with the part of the trigger with which it engages.

19. In a gun, a side piece of a housing, parts that project therefrom to engage a slidable trigger-lock, a recess that provides an opening for a part of said lock, a trigger with which the lock may engage and a trigger lock shaped to provide a laterally extending part that limits its sliding movement outward and a laterally extending part for engagement with the trigger.

20. In a gun, a sheet metal housing, a trigger lock which is maintained in slidable longitudinal engagement with guide lugs which are struck up from the housing of the gun, and comprising a trigger engaging part and other parts for limiting sliding movement of the lock, means for holding the lock in operative position, and a trigger pivoted to the gun forward of the trigger lock.

21. In combination with a housing for lock mechanism of a gun, a side piece constituting a part of the housing said side piece having a flange with a recess therein and a flat portion below the flange and guide lugs which extend beyond the inner face of the side piece, of a trigger lock comprising a part that is engaged by the lugs, projecting parts one for engagement with a trigger and the other with the flange, a part that extends through the recess the end portion of such part being bent to lie substantially parallel with the flange.

22. In a gun, a sheet metal housing made up of two side pieces one of the side pieces having studs attached thereto, a lever fulcrumed upon one of the studs, a trigger fulcrumed upon the other stud, a trigger lock associated with the side piece of the housing to be moved in one direction to engage the trigger and in an opposite direction to release the trigger, a piston bar having a hooked end and an intermediate slot and a link one end thereof being movable in the slot and the other end being pivotally connected to the inner end of the lever.

23. In an air gun, a housing, a piston bar, a trigger pivoted to the housing, a trigger lock which is maintained in sliding engagement with the housing and is provided with a part that is normally maintained in the path of movement of the trigger to prevent rearward movement of the trigger when the trigger and trigger lock engage, and a spring for the trigger and the trigger lock which spring maintains the trigger lock in position to prevent movement of the trigger.

24. In an air gun, a housing, a trigger pivoted between the sides of the housing, an opening through the upper portion of the housing for the passage therethrough of a portion of a trigger lock, lugs on one of the sides of the housing which overlie the sides of a trigger lock, a trigger lock maintained by the lugs in slidable engagement with the housing, a part on the trigger lock for engagement when in normal position with the trigger and a spring for holding the trigger lock in such normal position.

25. In an air gun, a housing or frame, a

spring actuated piston bar, a trigger pivoted to the frame or housing, a trigger lock maintained rearward of the trigger and in slidable engagement with the frame or housing and provided with a part that engages with the trigger when the trigger lock is in its normal projected position and a spring for holding the trigger lock projected and positioned to engage with the rear portion of the trigger.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."