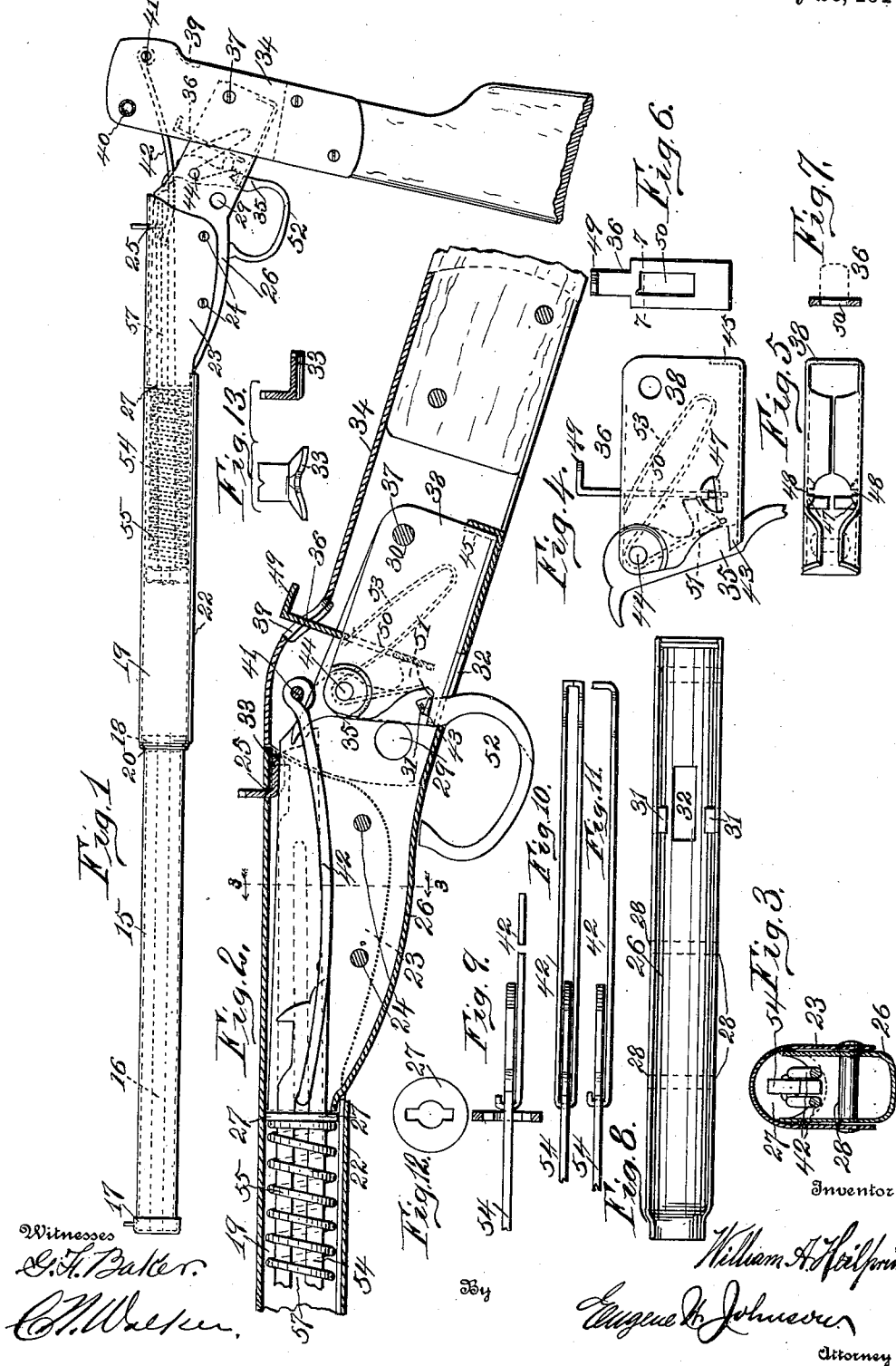


W. A. HEILPRIN.
AIR GUN.
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WILLIAM A. HEILPRIN, OF PHILADELPHIA, PENNSYLVANIA.

AIR-GUN.

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Specification of Letters Patent.

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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, and a resident of 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 more particularly to air guns of the break down type, and embodies in its construction a barrel, a cylinder, a spring driven piston, a link associated with the piston to compress the spring thereof when the gun is broken and by such movement to effect engagement of the piston with a fixed abutment from which the piston is disengaged by movement of the trigger, the trigger being normally locked against movement by a spring actuated slide which has to be manually actuated against movement of the spring prior to actuating the trigger to release the piston.

The invention also comprises a construction in which is embodied a safety or lock for the trigger organized so that the trigger lock can not be reached to position the same so that the trigger can be moved to release the piston until the parts of the gun have been brought into position for firing.

In the general make up of the gun, the parts are constructed with a view of reducing the cost of manufacture and at the same time retain the features by which accuracy, safety, durability, simplicity and ease of assembling are secured, and with such ends in view my invention consists in the construction and combination of the parts as will be hereinafter set forth, the specification being directed more particularly to the preferred form of construction illustrated by the accompanying drawings.

In the drawings Figure 1, is a side elevation of an air gun made in accord with my invention, such view showing the gun broken and certain parts in dotted lines. Fig. 2 is a longitudinal section of a part of the gun. Fig. 3 is a sectional view on the dotted line 3—3 of Fig. 2. Fig. 4 is a side elevation of the supporting casing for the trigger and trigger lock. Fig. 5 is a plan view of the supporting casing for the trigger lock. Fig. 6 is a rear elevation of the trigger lock. Fig. 7 is a sectional view of the trigger lock on the line 7—7. Fig. 8 is a plan view of the

connecting piece. Figs. 9, 10 and 11 are plan views showing different forms of the connecting link for retracting the piston rod. Fig. 12 is a front elevation of the abutment washer through which the piston rod passes, and Fig. 13 are rear and sectional views of the rear sight and catch for the hook of the piston rod.

In a gun which embodies the leading characteristics of my invention there is present a false barrel 15, which incloses the true barrel 16. The true barrel 16 is attached to a cap 17, which may carry the front sight, and the rear end of the true barrel is screw threaded to engage with a disk or washer 18 that is secured in place between the false barrel and the cylinder. The false barrel and the cylinder 19 are made from a single piece of sheet metal the edges being on the underside and the cylinder is of larger diameter than the false barrel, the construction being such as to provide a shoulder 20 between such parts and the washer 18 which is seated against the shoulder 20 and being soldered in place, forms a reinforce for the shoulder. The false barrel and cylinder may be made in two separate pieces the external diameter of the false barrel being substantially the same as the internal diameter of the cylinder in which it is housed, the parts being suitably connected to provide a cylinder for the head of the piston. In the preferred form of construction the edges of the cylinder are overlaid by a strip 22, which is soldered in place to make an air tight joint between the parts and incidentally the strip reinforces the cylinder. The rear end of the cylinder 19 is shaped to provide below its transverse center parallel side pieces 23, and the rear ends where the stock fitting contacts with the side pieces is the segment of a circle, the center of which is the pivotal point of the stock fitting. The side pieces have apertures 24 which register with apertures through the side pieces of a connecting frame and the upper part has an opening for the passage therethrough of the rear sight.

The connecting piece or frame 26, is shaped from a sheet metal blank the lower fore portion thereof being curved both longitudinally and transversely, the front end being somewhat reduced to admit of the same being easily inserted in the rear end of

the cylinder and at the same time provide a somewhat better bearing for the washer or abutment 27 through which the piston rod passes and against which the spring that encircles the piston rod bears.

The side pieces of the connecting frame 26 have therethrough openings 28 which register with the openings 24 and the sides have apertures 29 and 30 and inward extending lugs 31, and the bottom portion has an opening 32 for the passage of the trigger. The upper edges of the connecting frame are adapted to engage with the parallel side portions 23 of the cylinder and to contact with the underside of the catch 33 on the rear sight to hold the same in place. The rear portion of the connecting frame, when the gun is assembled, is overlaid by the sides of the stock fitting 34. The connecting frame 26 may have attached thereto the trigger 35, guides for the trigger lock or safety 36, the guides consisting merely of parts of the side pieces and top which are bent inward and recessed to guide the slide 36.

The stock fitting 34 which is made of sheet metal has at its rear portion a socket within which is secured the fore end of the stock. The front edges are curved on a segment of a circle the center of which is the fulcrum pin 37 that connects the stock fitting with the connecting frame 26, and also holds in place the frame 38 when such a frame is associated with the connecting frame. The upper portion of the stock fitting through the drop has an opening 39 for the passage of the upper end of the trigger lock 36 and the sides have circular indents 40 to engage with the walls of the apertures 29 to hold the stock fitting in position for firing. The pin 41 carried by the stock fitting connects the link 42 in swinging engagement therewith, such pin being passed through the openings at the rear ends of the link.

The trigger and safety frame 38 is made up of a single piece of sheet metal which is pressed into shape, a part of the lower portion of the frame 38 is removed to provide for the movement of the trigger, the open ended slot overlying the opening 32, when the prongs 43 are placed beneath the retaining lugs 31. The forward upper portions of the frame are bent inward to bear against the sides of the trigger about the fulcrum pin or rivet 44, the bottom of the frame at its rear is bent upward to provide a part 45 that abuts against the inner face of a similar part at the rear lower portion of the connecting frame 26. The sides of the frame 38 have lugs 47 with recesses to engage with the edges of the trigger lock 36 and the top of the frame is cut away to provide guide recesses 48. The trigger lock or safety 36 is reduced at its upper end 65 which is bent over to provide a finger piece

49 and there is an opening 50 through the plate for the passage of a part on the trigger when the trigger lock is depressed.

The trigger 35 may be made of cast metal and comprises a projecting portion for engagement and release of the piston bar from its catch 33, below the fulcrum of the trigger for normal contact with a part of the trigger lock is a projection 51, and the outer or exposed portion of the trigger 52 is shaped to simulate the shape of a trigger guard, in its preferred form. The external part of the trigger may be indented to weaken the same at a point where it will break without destroying the efficacy thereof in case of rough usage. The trigger is held in operative position by a spring 53, which spring also actuates the safety 36 to hold the trigger in normally locked position. The spring is made in a single piece, one end engaging with the trigger below the lug 51 and from such point extends about the pin 44 and then rearward and again forward passing through the opening 50 through the trigger lock and engaging the trigger lock to hold the same moved upward so that the part that is below the opening will be engaged by the lug 51 of the trigger.

The piston rod 54 between the piston head and the washer 27 is encircled by a spring 55 and the rear end of the piston rod is shaped to provide a latch for engagement with the catch 33 and the extreme rear end of the piston rod is shaped to provide a part with which the trigger will engage to depress the rear end of the rod and release the same from the catch. The link 42 that engages with the pin 41 of the stock fitting also engages with the end wall of a slot 57 formed through a portion of the piston rod 54.

In toy guns the greatest wear comes upon the catch and the latch and with the construction shown these parts may be made of metal that may be hardened to obviate wear. The links may be of a variety of shapes but in each instance I prefer to have them curved longitudinally to position the same when the gun is broken adjacent to the safety to protect the same against accidental movement when the gun is broke.

The longitudinally curved link is a desirable feature in a gun of the type shown, where the hook on the piston rod extends upward to engage with a part that holds the piston rod in retracted position until released by the trigger, for when the pivotal point of the rear end of the link is moved to be above the horizontal plane of the end of the hook and catch therefor it exerts a draft on a direct line which has a tendency to raise the end of the piston rod to engage with the catch, but such engagement is not always certain with a

straight link or direct pull and in order to render the upward movement of the rear end of the piston rod positive the link is curved longitudinally to span the safety and the end of the trigger as a guard for the same when the gun is broken.

It will be noted that when the gun is broken the link exerts a rearward and upward pull upon the piston rod which causes the hook to ride upon and then engage the catch which positions the extension 46 beneath the prong on the upper end of the trigger, and when the stock fitting is brought in alinement with the connecting frame the safety will pass through the opening in the stock fitting in position to be depressed by the thumb when a finger engages the trigger, for as hereinbefore set forth the trigger can not be moved to release the piston rod until the safety has been depressed.

I claim.

1. In an air gun, a one piece construction which includes a false barrel; a cylinder and an end portion having depending sides such end portion being open at the bottom and rear end, a connecting piece attached to the depending sides of the end portion and a stock fitting pivoted to the connecting piece and adapted to frictionally engage therewith.

2. In an air gun, a sheet metal false barrel, a cylinder in the rear of the false barrel, a part integral with the cylinder providing depending parallel side portions, a connecting piece attached to the depending side portions which are integral with the cylinder and shaped to enter the rear end of the cylinder when connected to the side pieces thereof, a stock fitting pivoted directly to the connecting piece and adapted to frictionally engage therewith when positioned to overlie the same.

3. In a gun, a false barrel, a cylinder, parallel side pieces at the rear of the cylinder and integral therewith, a connecting piece which is associated with the side pieces to be partly overlaid thereby, the forward end thereof being reduced to enter the rear end of the cylinder, a stock fitting fulcrumed upon the connecting piece to overlie the rear portion of said connecting piece and engage with the rear portion of the side pieces, and means on the stock fitting for frictionally engaging the connecting piece.

4. In a gun, a cylinder, parallel depending side pieces at the rear of the cylinder and integral therewith, a connecting piece shaped to have its forward end reduced to enter the rear end of the cylinder, means for fixedly attaching the connecting piece to the parallel side pieces, a stock fitting fulcrumed upon the rear portion of the connecting piece, and means for effecting frictional engagement of the stock fitting with the connecting piece.

5. In a gun, a cylinder having at its rear end parallel side pieces connected by a curved top portion, an opening through the top portion, a connecting piece, a catch having a part which is seated in the opening and a part that is engaged by the connecting piece to retain the catch in place.

6. In a gun, the combination with a cylinder having integral side pieces at its rear end, a connecting piece shaped to enter and engage the rear end of the cylinder and to be overlaid by the side pieces which are integral with the cylinder, a stock fitting fulcrumed upon the rear upper portion of the connecting piece and adapted to be swung to overlie the rear portion of the connecting piece and to frictionally engage the connecting piece, an opening through the upper portion of the stock fitting, and a trigger-lock associated with the connecting piece a part of the trigger-lock being adapted to pass through the opening through the stock fitting when the connecting piece and the stock fitting are in frictional engagement one with the other.

7. In an air gun, a cylinder having at its rear end extension provided with parallel side pieces which depend below the lower edge of the cylinder, apertures through the side pieces, a connecting piece provided with registering apertures and a forward end which is adapted to enter the rear open end of the cylinder, means that pass through the apertures in the side pieces and the connecting piece to associate the parts, a trigger and a trigger-lock associated with the connecting piece, a stock fitting fulcrumed upon the connecting piece and provided with an opening therethrough for the passage of a part of the trigger-lock.

8. In a gun, a cylinder having at its rear portion an extension shaped to provide parallel side pieces and a rounded top portion, a connecting piece shaped to have parallel sides which are connected by a bottom portion that has a trigger opening therethrough said connecting piece having a contracted front end that is seated in the rear end of the cylinder, means for fixedly connecting the parallel side pieces of the cylinder with the forward portion of the connecting piece and a stock fitting fulcrumed upon the connecting piece to be swung over its rear portion to engage with the rear portion of the parallel side pieces and with the rear edge of the top.

9. In a gun, the combination with a cylinder having at its rear an extension comprising a top portion having an opening therethrough and sides which depend from the top, a connecting piece having a substantially closed bottom; parallel sides and a reduced fore end that enters the cylinder, a catch seated in the opening through the top part of the extension of the cylinder to

be held therein by being engaged by the upper portion of the sides of the connecting piece, a stock fitting having a substantially closed upper portion and sides which overlie the sides of the connecting piece, a piston rod, a link that engages the piston rod and the stock fitting to move the piston rod in engagement with the catch and a trigger carried by the connecting piece.

10. In a gun the combination of a false barrel, a cylinder and an extension of the cylinder, a connecting piece fixedly attached to the extension on the cylinder, a trigger carried by said connecting piece, a piston rod, a catch for the piston rod maintained between the extension of the cylinder and the connecting piece, a stock fitting fulcrumed upon the connecting piece and a link connected to the piston rod and to the stock fitting.

11. In a gun, a cylinder having an extension which is open at its bottom and at its rear end, a connecting piece open at its forward end and at its top the same having an opening for a trigger through its lower portion, a stock fitting that is open at its front and underside the upper portion having an opening for a trigger lock therethrough, a trigger associated with the connecting piece and extending through the opening beyond the connecting piece, a trigger lock associated with the connecting piece and provided with a part that extends beyond the upper portion of the connecting piece to pass through the opening in the stock fitting.

12. In a gun, a cylinder, an extension integral with the cylinder, a connecting piece attached to the extension of the cylinder, a trigger and a trigger lock associated with the connecting piece, a piston rod, a stock fitting fulcrumed upon the connecting piece, a link engaging the piston rod and the stock fitting, a catch for the piston rod that engages the extension of the cylinder and is engaged by the connecting piece; the parts being organized so that when the gun is broken the piston rod will be retracted to engage to catch and locate the end of the piston rod below a projecting part on the trigger.

13. In an air gun, a trigger made up of a single piece and provided above its pivot with a part that extends forward and below its pivot with a part that extends rearward, a piston rod which is adapted to be engaged and released by the forward extending part on the trigger, a trigger lock maintained transversely of the trigger and in slidable engagement with its supporting means, means for maintaining one end of the trigger lock normally projected upward through the frame of the gun for manual depression to position a part of the trigger lock out of position to be engaged by the trigger.

14. In combination with a trigger having

a rearward extending portion, of a spring actuated trigger lock having a portion with which the rearward extending portion of the trigger will normally engage and an opening above such portion through which the rearward extending portion of the trigger may pass when the opening and extension are brought in alinement, and means for holding the trigger-lock normally in position to be engaged by the trigger the parts being organized so that pressure will have to be applied to the trigger-lock and maintained thereon to admit of such movement of the trigger as will release the piston rod.

15. In combination with a trigger, a longitudinally slidable trigger lock made of a single piece and mounted between guides, a spring which is doubled upon itself longitudinally to provide oppositely projecting ends for moving the lower portion of the trigger forward and the trigger lock upward to normally hold the trigger lock in position to be engaged by the trigger so that manual pressure will have to be simultaneously exerted upon both the trigger lock and the trigger to effect operative movement of the trigger.

16. In an air gun, a frame comprising a cylinder, a stock fitting having therethrough an opening for a trigger lock, a connecting piece for associating the cylinder with the stock fitting, means carried by the connecting piece for supporting a trigger; a trigger lock and a spring for actuating the trigger and the trigger lock, a piston rod and a link pivotally connected to the stock fitting and maintained in slidable and pivotal relation with the piston rod.

17. In an air gun, a frame, a piston-rod retaining catch carried by the frame, a piston-rod having a part that engages with the catch to hold the piston-rod retracted and a part that extends rearward beyond the same, a trigger fulcrumed upon the frame and provided above its fulcrum with a forwardly projecting part which is positioned above the rearward extending part of the piston-rod and a spring for moving the trigger in one direction.

18. In a gun, a frame constituting a carrier for a trigger and a trigger lock, a trigger pivoted to the frame, guides for a trigger lock on said frame and a spring the opposite ends of which are disposed so that one end of the spring will engage the trigger and the opposite end with the trigger lock, and means for associating the trigger and trigger lock carrying frame with a part of the frame of the gun.

19. In an air gun, a frame, a trigger pivoted to the frame, a longitudinally slidable trigger lock associated with the frame to extend transversely between the sides of the frame and in the rear of the trigger, a spring for projecting the trigger lock upward to

position a part thereof beyond the frame and the lower part of the lock in position to be engaged by the trigger, an opening through the trigger lock which will register when the trigger lock is depressed with a rearward extending portion of the trigger and means on the trigger lock to restrict its upward movement.

20. In a gun, a slidable spring actuated trigger lock having a part that is normally positioned by a spring to be engaged by the trigger and to restrict its rearward movement and an opening through the trigger lock for the passage of a part of the trigger when the trigger lock is depressed and a spring having a looped portion which is passed through the aforesaid opening through the trigger lock.

21. In an air gun, a barrel, a cylinder having an extension which extends rearward of the cylinder, an opening through the upper portion of the extension for the passage therethrough of a sight, a connecting piece for a stock fitting, a combined rear sight and abutment for a piston rod made of a single piece and comprising a laterally extending part that is engaged by and held in place by the connecting piece.

22. In a gun, an abutment for the hooked end of a piston rod and a rear sight formed integral with the abutment.

23. In a gun, a cylinder extension having a transversely curved upper portion, an abutment or catch having curved side portions, a rear edge with a centrally located recess and a part that extends substantially at right angles thereto for engagement with the walls of an opening through the cylinder extension.

24. In a gun, a cylinder, a rearward extension beyond the cylinder, a connecting piece having at its forward end a reduced part with a shoulder adjacent thereto to enter the cylinder and bear against a part of the same, an abutment for a spring and guide for a piston rod positioned within the cylinder to be forced against the forward end of the connecting piece by the spring.

25. In a gun, a cylinder, a piston rod having a hook and an extension below the hook, a catch for the hook of the piston rod, a spring for moving the piston rod forward in the cylinder, a trigger having a forward extending portion above its fulcrum to overlie the extension on the piston rod to release the hook from the catch when the trigger is moved rearward and a link connecting the piston rod with retracting means.

26. In a gun, a connecting piece having

parallel sides with inward extending lugs and a bottom with a trigger opening there-through, a carrier for a trigger formed with projections to underlie the lugs of the connecting piece, apertures through the sides of the connecting piece and the carrier which register, a stock fitting that overlies and frictionally engages the connecting piece and a pin for connecting the parts such pin also providing a fulcrum for the stock fitting.

27. In a gun, a connecting piece for the cylinder and stock fitting having sides with inwardly extending lugs; a bottom provided with an opening for the passage of a trigger therethrough and a rear wall, a carrier having sides with extensions which underlie the lugs of the connecting piece, a trigger pivoted to the carrier, a trigger lock maintained in sliding engagement with the carrier to be engaged by the trigger and a spring for moving the trigger and the trigger lock.

28. In an air gun, a frame, a trigger pivoted to the frame and provided within the frame with a reduced rearward extending portion, a longitudinally slidable trigger lock associated with the frame to extend transversely between the sides of the frame, a spring for projecting the upper portion of the trigger lock upward beyond the frame to maintain a part of the lock in position to be engaged by the rearward extending portion of the trigger, an opening through the trigger lock which will register with the rearward projecting portion of the trigger when the trigger lock is depressed and means for restricting upward movement of the trigger lock.

29. In an air gun, a barrel, a cylinder, an abutment, a piston bar provided at its rear portion with a hook for engagement with the abutment, a longitudinally curved link which engages with the piston bar and is pivotally attached above its point of connection with the piston bar to a stock fitting so that the intermediate portion of the link will be below the points of attachment with piston bar and the stock fitting, a stock fitting which is pivotally associated with the fore part of the gun, the parts being organized to effect an upward movement of the rear end of the piston bar when the gun is broken to place the hook on the piston bar in engagement with the abutment.

WILLIAM A. HEILPRIN.

Witnesses:

ADA E. EDWARDS,
WALTER ROSENBAUM.