

Dec. 6, 1938

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ELECTRIC EYE RIFLE

Filed June 14, 1937

2,139,530

3 Sheets-Sheet 1

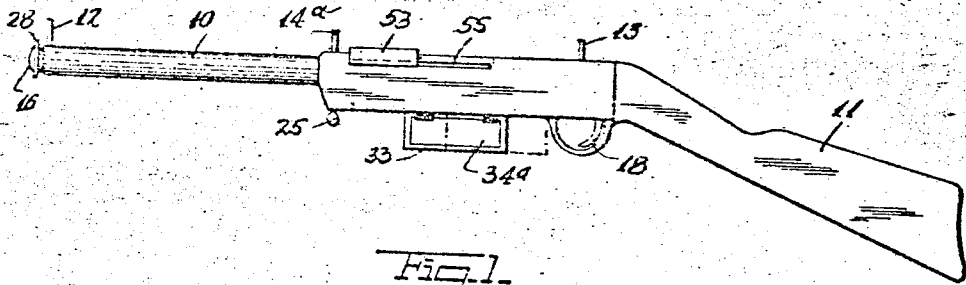


Fig. 1.

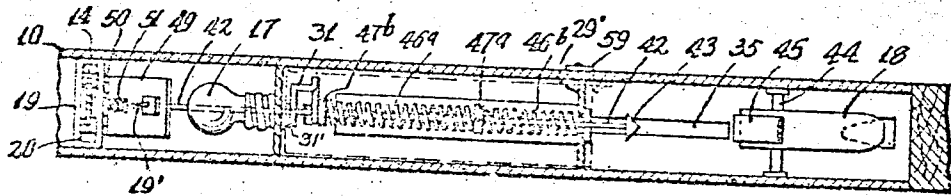


Fig. 2.

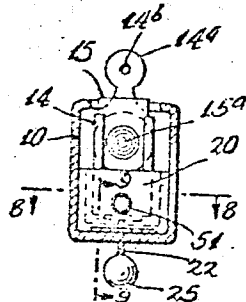


Fig. 3.

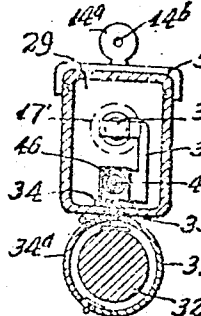


Fig. 4.

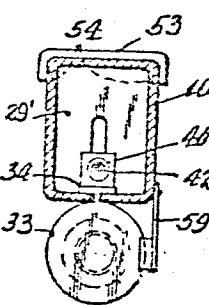


Fig. 5.

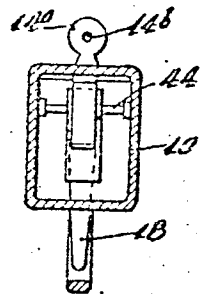


Fig. 6.

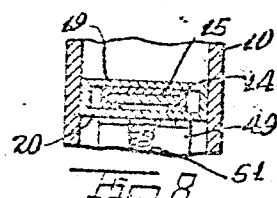


Fig. 7.

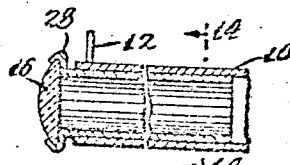


Fig. 8.

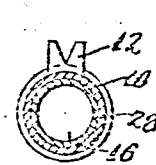


Fig. 9.

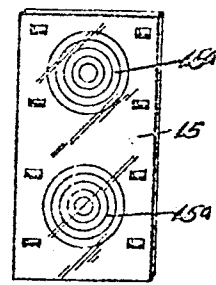


Fig. 10.

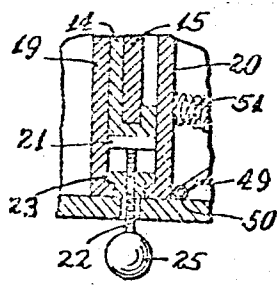


Fig. 11.

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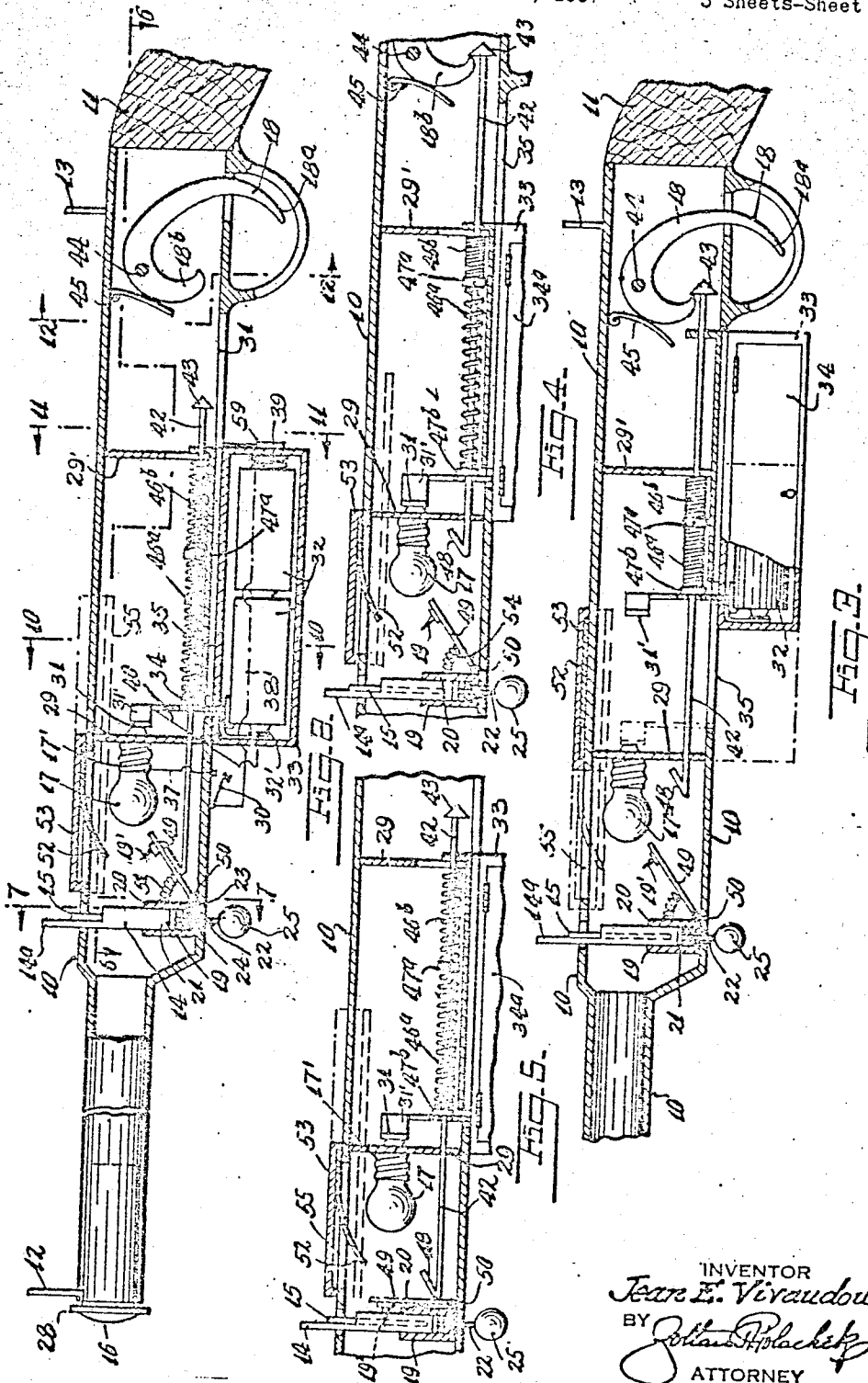
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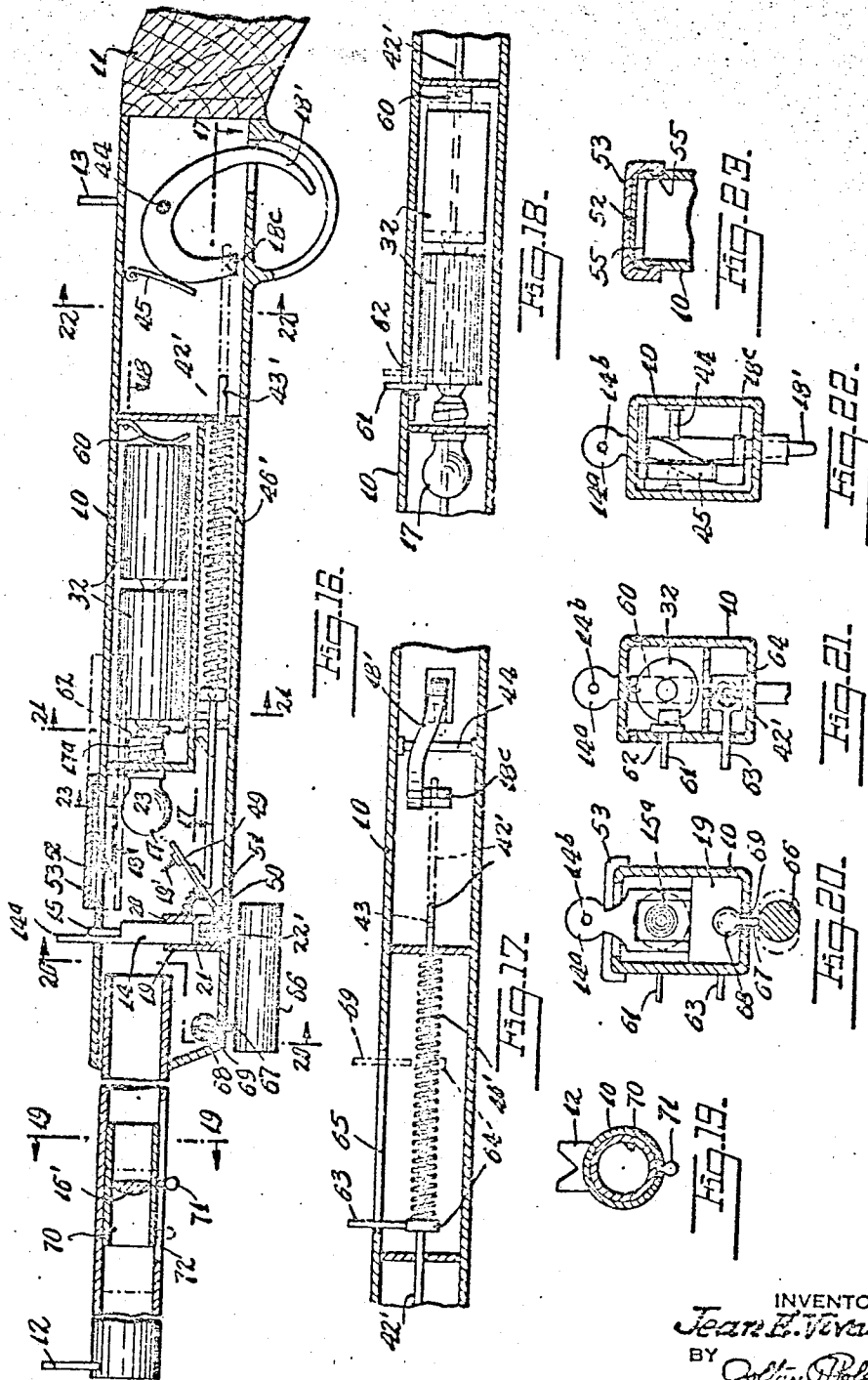
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UNITED STATES PATENT OFFICE

2,139,530

ELECTRIC EYE RIFLE

Jean E. Vivaudou, New York, N. Y.

Application June 14, 1937, Serial No. 148,244

4 Claims. (Cl. 273-101.2)

This invention relates to new and useful improvements in toy rifles.

The invention has for an object the construction of a toy rifle which is characterized by the fact that it is adapted to throw the image of a target on a wall or screen and illustrate where the target was hit by one using the gun.

More particularly, the invention proposes to provide a toy rifle with a rifle barrel in which a frame is slightly movably supported and has a projecting element in the line of vision between sights of the barrel, and adapted to be manually held in various adjusted positions so as to "aim" the rifle. It is proposed to so arrange the parts that one's skill in properly holding the frame as determined by the projecting aiming element and the sights of the rifle determines the point at which the target is "hit".

It is proposed to provide a removable target film for said frame and to dispose it within the barrel of the gun and to provide an arrangement whereby an image of said target may be thrown upon a wall.

Still further the invention proposes the provision of a trigger control means for marking said film to indicate the place where the target was "hit".

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:—

Fig. 1 is a side elevational view of a toy rifle constructed according to this invention.

Fig. 2 is an enlarged fragmentary sectional view of a portion of Fig. 1.

Fig. 3 is a view similar to a portion of Fig. 2 but illustrating the parts in a different position.

Fig. 4 is another view similar to Fig. 2 but illustrating the parts in still another position.

Fig. 5 is still another view similar to a portion of Fig. 2 but illustrating the parts in still another position.

Fig. 6 is a horizontal sectional view taken on the line 6—6 of Fig. 2.

Fig. 7 is a transverse sectional view taken on the line 7—7 of Fig. 2.

Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 7.

Fig. 9 is a fragmentary sectional view taken on the line 9—9 of Fig. 7.

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 2.

Fig. 11 is a sectional view taken on the line 11—11 of Fig. 2.

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 2.

Fig. 13 is a fragmentary vertical sectional view of the front portion of the barrel of the gun as illustrated in Fig. 1.

Fig. 14 is a transverse sectional view taken on the line 14—14 of Fig. 13.

Fig. 15 is a perspective view of the target film per se.

Fig. 16 is a view similar to Fig. 2 but illustrating another embodiment of the invention.

Fig. 17 is a sectional view taken on the line 17—17 of Fig. 16.

Fig. 18 is a sectional view taken on the line 18—18 of Fig. 16.

Fig. 19 is a transverse sectional view taken on the line 19—19 of Fig. 16.

Fig. 20 is a transverse sectional view taken on the line 20—20 of Fig. 16.

Fig. 21 is a transverse sectional view taken on the line 21—21 of Fig. 16.

Fig. 22 is a transverse sectional view taken on the line 22—22 of Fig. 16.

Fig. 23 is a fragmentary sectional view taken on the line 23—23 of Fig. 16.

The toy rifle, according to this invention, comprises a rifle barrel 10 connected with a stock 11 and shaped and designed according to conventional appearances of a gun. The rifle barrel 10 is provided with a front sight 12 and a rear sight 13 to assist one in aiming the gun. A frame 14 is slightly movably supported transversely within the barrel 10 and has a projecting aiming element 14^a arranged in the line of vision between the sights 12 and 13 and adapted to be manually held in adjusted positions. A removable target film 15 is mounted in the frame 14 and within the barrel 10. A lens 16 is arranged to the front of the film 15. A lamp 17 is disposed behind the film 15 and is adapted to throw an image of the target from the target film 15 in cooperation with the lens 16 consisting of one or more suitable magnifying glasses, upon a wall, screen, or the like.

There is a means controlled by the trigger 18 for marking the film 15 to indicate when the target is hit. This means includes a pin 19 adapted to punch the film 15 as hereinafter more fully described.

The means for slightly removably supporting the frame 14 comprises the following structure:

There are a pair of transverse slightly spaced walls 19, 20 mounted transversely across the lower half of the barrel 10. Between these walls there is a support strip 21 upon which the frame 14 is supported. This support strip 21 is supported by a screw 22 which threadably engages through a shiftable bushing 23. The screw 22 extends out through an enlarged opening 24 in the bottom of the barrel 10. The screw 22 has a spherical head 25 by which it may be moved. The bushing 23 is slidably arranged by reason of flange portions thereon engaging complementary flange portions formed on the lower ends on partitions 19 and 20 as clearly shown in Figs. 2 and 3. The screw 22 threadably engages through the bushing 23. The head 25 projects from the bottom of the gun (see Fig. 1) and may be shifted laterally, and turned so as to adjust the position of the frame 14.

The frame 14 has an open top through which the film 15 projects. The film 15 is illustrated in detail in Fig. 15. It comprises merely a strip of Celluloid or similar film material upon which one or more targets 15^a are imprinted. Only one target 15^a is used at a time but the target film may be removed and turned upside-down and replaced into the frame so that the other target may be used. The projecting aiming element 14^a comprises a disc shaped element (see Fig. 7) formed with a central opening 14^b. It is through this opening that one must aim in conjunction with the sights 12 and 13 for the proper aiming of the gun. If the aiming element 14^a is too low it may be raised by properly turning the screw 22 or if high it may be lowered as required. It may be shifted laterally also.

The lens 16 is mounted within a tubular holder 28 which is engaged into the front end of the rifle barrel 10. It may be manually extended or moved inwards to properly focus the lens. The lamp 17 is arranged in a circuit controlled by a switch 30, another switch 31, and operated by the batteries 32. More specifically, the batteries 32 are disposed within a casing 33 arranged upon the bottom of the gun. This casing has a door 34 upon one side which may be opened and through which the batteries may be removed and replaced as required. The batteries 32 are arranged in series. The casing 33 is supported by a stud 34 (see particularly Fig. 10) which extends through a slot 35 formed longitudinally of and in the bottom wall of the gun barrel 10. The stud 34 has an enlarged head, as clearly shown in Fig. 10, so that it cannot disengage from the slot 35 and is limited to moving along in the slot.

The switch 31 comprises an arm 36 which is fixedly mounted on the stud 34 and which terminates in a contact 31' engageable against the end contact of a socket 17' mounted on the wall 29 and in which the lamp 17 is disposed. The socket 17' is connected with a lead 37 which connects with the hand operated switch 30 (see Fig. 2). From this switch the circuit continues along the lead 38 to the spring contact 39 engaging the back end of one of the batteries 32. From the end contact 32' of the foremost battery 32 the circuit continues along lead 40 to the contact 31. The arrangement is such that with the casing 33 in its normal position the switch 30 may be closed to close the circuit through the lamp 17 so that the lamp is lit. Furthermore, the casing 33 may be moved rearwards for loading the gun as hereinafter more fully explained, and during this period the circuit to the lamp 17 will

be broken at the contact 31 so that there is no waste of electric current while the gun is being loaded.

The trigger control means for marking the film 15 includes a rod 42 which is slidably mounted within the gun barrel and which has a wedge-shaped head 43 at one end cooperative with the trigger 18. The trigger 18 is pivotally supported by a pintle 44 and is urged into an operative position by a spring 45. The trigger 18 has a projecting end 18^a which may be pulled. It also has an interior end 18^b which is adapted to engage the head 43 for holding the rod 42 "loaded". The rod 42 is urged forwards by a spring 46^b arranged coaxially on the rod and acting between a collar 47^a fixed on the rod and a transverse partition 29' arranged within the gun barrel. The front end of the rod 42 is provided with a head 48 which is adapted to strike and operate a pin puncture mechanism for the film 15.

There is a second spring on the rod 42, the spring 46^a, which acts between the collar 47^a and an arm 47^b mounted on the casing 33 and projecting through the slot 35. This spring 46^a acts to urge the casing 33 into its forward position. When the casing 33 is manually moved rearwards, the spring 46^a acting against the collar 47^a moves the rod 43 rearward to its loaded position and at the same time compresses spring 46^b. While the rod 43 remains rearward, the spring 46^a moves the casing 33 forward to its initial position.

The pin puncture mechanism comprises a member 49 which is hingedly mounted by a hinge construction 50 at its lower end within the barrel 10. The upper end of the member 49 is provided with the pin 19'. An expansion spring 51 normally holds the member 49 in a rearward downward inclined position. The lamp 17 is adapted to throw its rays over the top of the member 49 and through the film 15. There is also a shutter element 52 for assisting in properly directing the rays of light from the lamp. This shutter element is supported upon a cover element 53 which is slidably mounted on the top portion of the gun barrel. The cover element 53 has a pair of pegs 54 at its sides engaging longitudinal grooves 55 formed in the outer surfaces of the side wall of the gun barrel. The arrangement is such that the cover 53 may be moved rearwards when desired. In its forward position, as shown in Figs. 1, 2, 4 and 5, it helps in properly directing the light from the light 17. When moved rearwards to the position as shown in Fig. 3 a top slot 55 formed in the barrel 10 is exposed. Through this top slot the lamp may be examined. Moreover, light rays may pass through this slot 55 and assist in illuminating the aiming element 14^a if this is required. With this arrangement it is possible to aim the gun in a dark place since the aiming element 14^a will be illuminated.

The shutter 52 comprises merely a flexible strip of material, such as a leaf spring, which is adapted to extend downwards through the slot 55 as shown for example in Fig. 2, or which may be forced upwards to an inoperative position between the top surface of the gun butt and the inside of the cover element 53 as shown in Fig. 3.

The operation of the gun is as follows: The switch 30 may be closed for causing the lamp 17 to light and for throwing an image of the target upon a wall or screen. The gun may be loaded by pulling the casing 33 rearwards to the position shown in Fig. 3. During this interval of

loading the gun, the lamp 17 will become extinguished because the circuit is broken at the contact 32 which is supported upon and moves along with the casing 33. The loading of the gun consists merely in catching the wedge-shaped head 43 behind the end 18^b of the trigger 18. The casing 33 is then returned to its forward position where it is held in this position by a leaf spring holding element 59 (see Figs. 2 and 11). This leaf spring holding element is sufficiently flexible so that the casing 33 may be drawn rearwards when desired.

The gun is illustrated in the loaded position in Fig. 4 and is ready to be fired. The operator now aims the gun by looking through the sights 12 and 13 and through the aiming element 14^a. The aiming element 14^a must be properly positioned relative to the sides for perfect aim. The operator of the gun looks along the sights and at the picture of the target which is thrown on the wall. Of course, the aim of the gun as far as the picture of the target on the wall is concerned does not exist. The true aim of the gun consists in the relative adjustment of the frame 14 relative to the sights 12 and 13. When the gun has been properly aimed the trigger 18 is pulled which pivots the trigger anti-clockwise until the head 43 is released and then the rod 42 is shot forward by the spring 46^b to the position shown in Fig. 5. In this position the element 49 is swung upwards so that the pin 13' punctures the film 15. After the initial release of the spring 46^b it returns to its original position as shown in Fig. 2 and draws the rod 42 slightly rearwards to its original position and the rod 42 assumes the position shown in Fig. 2. The expansion spring 51 moves the member 49 back to its inclined position. The lamp 17 now shining through the film 15 throws an image of the target upon the wall or screen and the puncture part is clearly visible. The gun operator then takes note as to the accuracy of his aim. The gun may be fired several times on the same film 15. After there are too many shots or holes in the film 15, it may be removed and reversed so that the other imprinted target on the film may be used.

In Figs. 16-23 inclusive a modified form of the invention has been illustrated which distinguishes from the prior form in several respects. The main distinctions reside in the arrangement of having the batteries within the gun barrel, and having a different type of control for positioning the frame which supports the target film. According to this form of the invention the battery cells 32 are arranged within a compartment formed in the gun barrel. They are urged forward by a leaf spring 60 so as to engage the end contact of the socket 17^a. A pin 61 is slidably supported through the side wall of the gun barrel and engages against the front one of the batteries 32 and is adapted to be manually forced rearwards to break the circuit to the lamp 17. The pin 61 passes through a bayonet slot 62 in the side wall of the gun barrel so that it may hold the batteries 32 in the inoperative position.

In this form of the invention there is a trigger 18' which has a wedge-shaped element 18^c upon its inner end. This wedge-shaped element is co-operative with a wedge-shaped cut 43' formed in the rear end of the rod 42'. This rod 42' is the trigger operator rod. It is urged forwards by the spring 46'. It may be moved rearwards for loading the gun by a peg 63 which is attached to a collar 64 upon the rod 42' and which pro-

jects through a slot 65 formed in the side wall of the gun barrel.

The frame 14 may be adjusted by the operation of a longitudinal member 66 arranged on the bottom of the gun barrel. This longitudinal member 66 has a stud 67 at one end supported by a spherical socket 69 mounted within the gun barrel. The stud 67 projects through a somewhat large opening 69. The front end of the member 66 connects with a stem 22' which in turn connects with the support strip 21 supporting the frame 14. The arrangement is such that the longitudinal member 66 may be universally moved within a limited distance for correspondingly moving and adjusting the frame 14 and so aiming the gun.

There is also a modified form of lens for properly focusing the film image. This lens comprises a tubular member 70 slidably mounted in the gun barrel and supporting the lens 16'. A handle 71 projects from the tubular member 70 and extends to a slot 72 in the gun barrel by which the tubular member 70 may be moved forwards or rearwards for the focusing operation. In other respects this form of the invention is similar to the previous one and similar parts may be identified by corresponding reference numerals.

The operation of the form of the invention shown in Figs. 16-23 inclusive is as follows: The pin 61 is pressed in the bayonet slot 62 in such a manner that the circuit is broken to the lamp 17 when the gun is not used. The gun may be loaded by pulling the pin 63 to the position indicated in the dot and dash lines in Fig. 17. In the loaded position the cut 43' of the rod 42' engages the wedge-shaped portion 18^c of the trigger.

The circuit to the lamp 17 is then closed by proper manipulation of the pin 61. An image of the target film is thrown on the screen or wall and then the gun is aimed. To aim the gun the longitudinal element 66 is manipulated so as to move and adjust the aiming element 14^a. To fire the gun the trigger 18' is pulled which releases the rod 42'. This rod is shot forward by the spring 46' which acts against the hinged element 49 and causes the pin 13' to puncture the target film.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. In a toy rifle, a hollow gun butt having a gun barrel connected therewith, a frame adjustably mounted within said gun butt, a removable target film for said frame, a lens in said barrel in front of said film and a light in said butt and in back of said film for forming an image of said target on a wall or other substantially flat surface, a front sight on said gun barrel and a rear sight on said gun butt, an upwardly extending gun sight on said frame and projecting through an enlarged top opening in said gun butt and being located between said sights, means for adjusting said frame to properly locate said gun sight between said sights to align said gun barrel with the bull's eye of the image of the target on said wall, and means operable upon the releasing of

the gun's trigger to punch a hole in said film to show the accuracy of one's aim when the light passes therethrough, said adjustable mounting of said frame comprising, a pair of walls transversely mounted across the lower half of said barrel, and a support strip freely mounted between said walls and being adapted to support said frame in various adjusted positions.

2. In a toy rifle, a hollow gun butt having a gun barrel connected therewith, a frame adjustably mounted within said gun butt, a removable target film for said frame, a lens in said barrel in front of said film and a light in said butt and in back of said film for forming an image of said target on a wall or other substantially flat surface, a front sight on said gun barrel and a rear sight on said gun butt, an upwardly extending gun sight on said frame and projecting through an enlarged top opening in said gun butt and being located between said sights, means for adjusting said frame to properly locate said gun sight between said sights to align said gun barrel with the bull's eye of the image of the target on said wall, and means operable upon the releasing of the gun's trigger to punch a hole in said film to show the accuracy of one's aim when the light passes therethrough, said adjustable mounting of said frame comprises a pair of walls transversely mounted across the lower half of said barrel, and a support strip freely mounted between said walls and being adapted to support said frame in various adjusted positions, said means for adjusting said frame, comprises a bushing within said frame and beneath said support strip, flange portions on the sides of said bushing which are adapted to engage complementary grooves in the inside faces of said walls, a screw passing through an enlarged opening in said gun butt and threadedly passing through said bushing and having its end supporting said support strip so that by turning said screw said support strip will be raised and lowered and by moving said screw laterally of said gun butt, said support strip will be shifted and correspondingly move and shift said frame and gun sight so that said gun sight may be aligned with said sights to align said gun barrel with the bull's eye of said target image on said wall.

3. In a toy rifle, a rifle barrel, a frame mounted within said toy rifle, a target film mounted on

said frame and having a bull's eye, means for movably supporting said frame so as to be movable in all directions in a plane at right angles to the axis of said rifle barrel, a light fixedly mounted in back of said film for projecting an image of said target on a wall or other similar surface, gun sights mounted upon said toy rifle, another gun sight mounted on said frame and projecting through an opening formed in the top of said toy rifle and located between said gun sights, a piercing pin for striking a point on said plane coaxially with the axis of said rifle barrel, and means for manually moving said frame and other gun sight together as a unit for aiming said rifle by aligning all of said gun sights with the bull's eye of said image so that said pin may be made to strike the bull's eye of said target to record the accuracy of one's aim.

4. In a toy rifle, a rifle barrel, a frame mounted within said toy rifle, a target film mounted on said frame and having a bull's eye, means for movably supporting said frame so as to be movable in all direction in a plane at right angles to the axis of said rifle barrel, a light fixedly mounted in back of said film for projecting an image of said target on a wall or other similar surface, gun sights mounted upon said toy rifle, another gun sight mounted on said frame and projecting through an opening formed in the top of said toy rifle and located between said gun sights, a piercing pin for striking a point on said plane coaxially with the axis of said rifle barrel, and means for manually moving said frame and other gun sight together as a unit for aiming said rifle by aligning all of said gun sights with the bull's eye of said image so that said pin may be made to strike the bull's eye of said target to record the accuracy of one's aim, said frame and gun sight comprising a strip of metal, consisting of a top portion constituting said gun sight and extending through said opening and being formed with a centrally disposed opening through which one may look, and a bottom portion continuing from said top portion and constituting said frame and having a centrally disposed opening and its edges bent inwards for receiving and holding said target film in a position extended across said latter-mentioned opening.