F. HESS.

TOY GUN AND PROJECTILE.

APPLICATION FILED FEB. 26, 1921.

1,381,639.

Patented June 14, 1921.

2 SHEETS—SHEET 1.

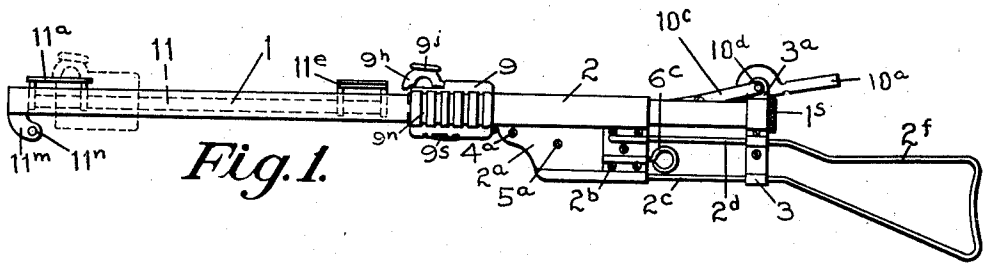


Fig. 1.

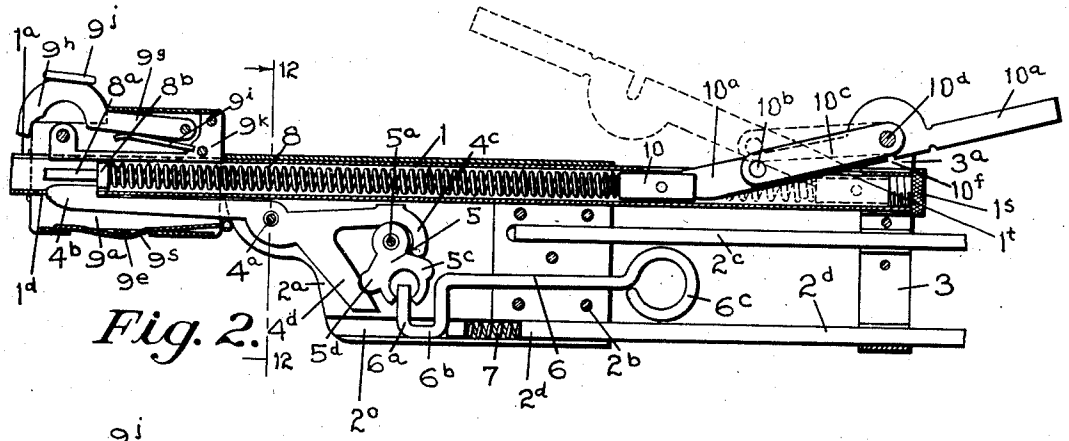


Fig. 2.

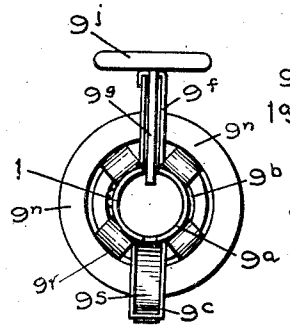


Fig. 4.

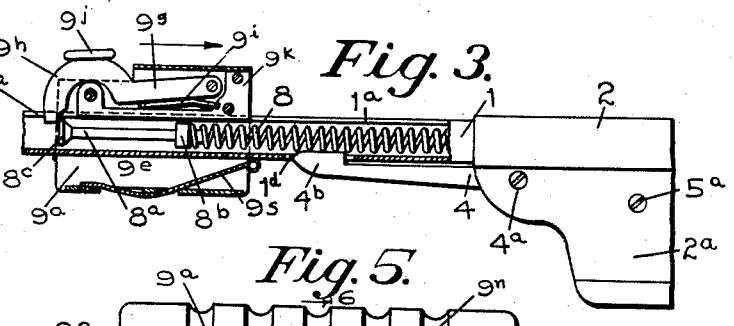


Fig. 3.

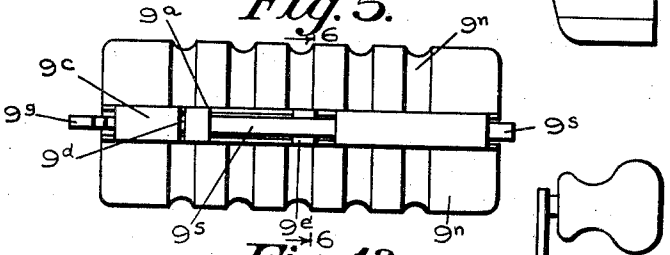


Fig. 5.

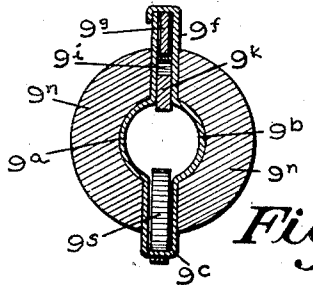


Fig. 6.

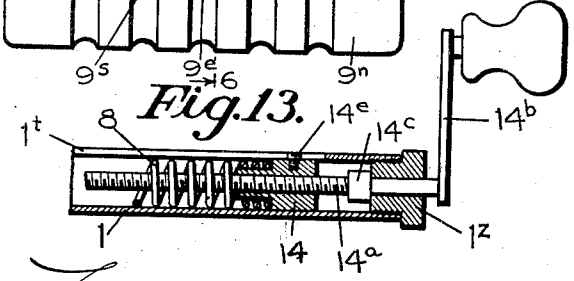


Fig. 13.

Frank Hess INVENTOR.

By Alexander & Fowler Attorneys.

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2 SHEETS—SHEET 2.

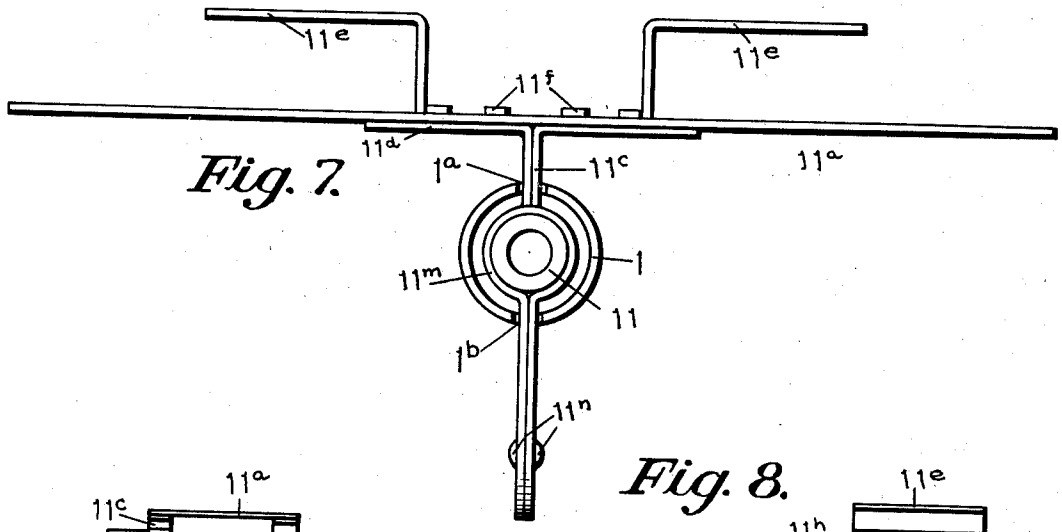


Fig. 7.

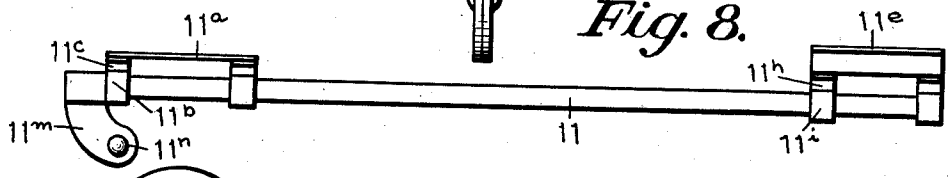


Fig. 8.

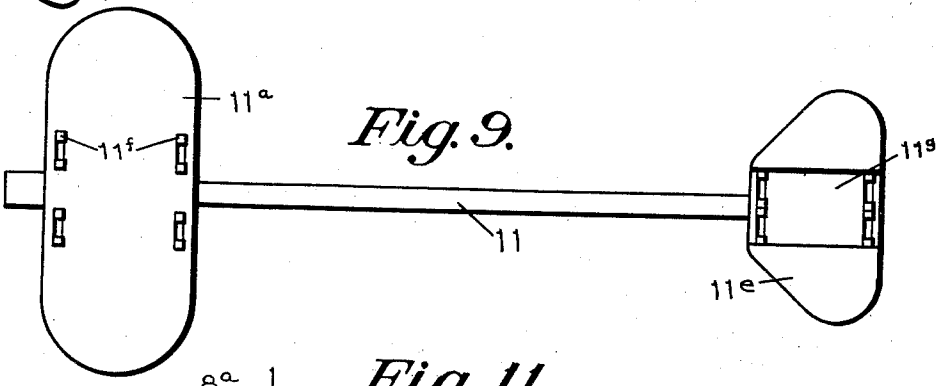


Fig. 9.

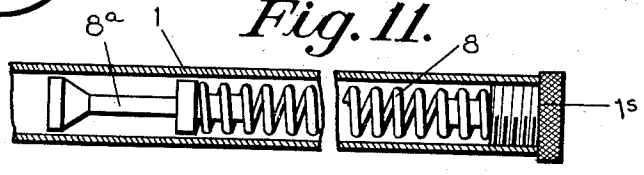


Fig. 11.

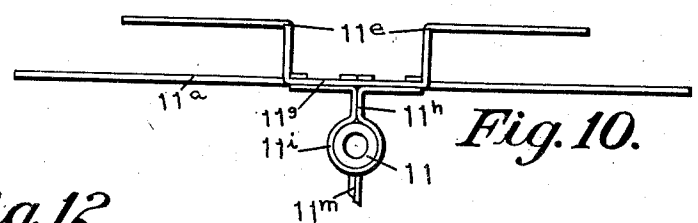


Fig. 10.

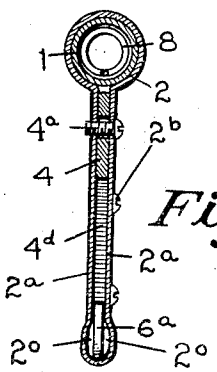


Fig. 12.

By Frank Hess INVENTOR

Alexander & Sawall Attorneys.

UNITED STATES PATENT OFFICE.

FRANK HESS, OF FREEPORT, ILLINOIS.

TOY GUN AND PROJECTILE.

1,381,639. Specification of Letters Patent. Patented June 14, 1921.

Application filed February 26, 1921. Serial No. 448,027.

To all whom it may concern:

Be it known that I, FRANK HESS, a citizen of the United States, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Toy Guns and Projectiles; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is a novel toy and includes a novel toy gun adapted to project a flying or aerial projectile and the novel projectile, or toy "aeroplane" adapted to be projected by the gun.

The toy gun includes a novel barrel, a spring actuated ejector and manually operable means for tensioning and setting the spring, novel devices for locking and releasing the spring, and also auxiliary means whereby after the spring is primarily tensioned and members locked it may be further tensioned so as to increase its propulsive power when released. The invention also includes novel means for primarily setting the spring; novel means for additionally tensioning the spring; the novel construction of the lock, stock and barrel of the gun and trigger devices; and a novel aerial projectile or "aeroplane" adapted to be partly inserted into the barrel of the gun and discharged therefrom.

The accompanying drawings illustrate the preferred form of the toy and some modifications, and I will describe the invention in detail with reference to the said drawings, and set forth in the claims the novel features of the invention and novel constructions and combinations of parts for which protection is desired.

In said drawings:

Figure 1 is a side view of the gun showing the aerial projectile in position for discharge therefrom the parts being in position ready for discharge of the projectile.

Fig. 2 is an enlarged longitudinal section through a portion of the gun.

Fig. 3 is a detail sectional view showing the manner in which the slide is used in initially compressing the ejector spring.

Fig. 4 is an enlarged end view of the slide detached.

Fig. 5 is a bottom view of the slide.

Fig. 6 is a transverse sectional view of the slide on the line 6—6, Fig. 5.

Fig. 7 is a greatly magnified end view of the muzzle of the gun and the projectile or aeroplane in position therein.

Fig. 8 is a side view of the projectile detached.

Fig. 9 is a top view of Fig. 8.

Fig. 10 is a right hand end view of Fig. 8.

Fig. 11 is a detail view illustrating a slight modification.

Fig. 12 is an enlarged vertical section of the barrel and stock on the line 12—12, Fig. 2.

Fig. 13 is a detail sectional view of a modification.

The barrel 1 of the gun has a slot 1^a in its top side extending from the muzzle to the stock. It also has a short slot 1^b in its lower side at the muzzle for the accommodation of part of the projectile hereinafter referred to. This barrel is securely attached to a lock and stock.

The stock is preferably formed of a plate bent to form similar opposite members connected by an upper cylindric portion 2 which surrounds the barrel, see Fig. 12, and from which depend similar opposite parallel portions 2^a. These side portions are securely fastened together by suitable means, such as rivets or screws 2^b, and between these portions 2^a are clamped the forward ends 2^c and 2^d of a rod 2^f which is bent into the outline of a gun stock as shown in Fig. 1.

Between the portions 2^a and below the barrel is mounted the trigger and catch operating devices hereinafter described.

The portions 2^c and 2^d of the stock may be further securely united together at the end of the barrel by means of opposed metal strips 3 which are suitably bent to bind between them the part 2^c, 2^d of the stock and also to bind the rear end of the barrel thereto. These members 3 have ears 3^a projecting above the rear end of the barrel for a purpose hereinafter explained. This construction forms a light, neat looking stock and at the same time securely attaches the barrel to the stock.

As shown a lever 4 is between the portions 2^a of the stock and pivoted thereto as at 4^a; and this lever 4 has a forwardly projecting arm terminating in a catch 4^b which is adapted to project into the barrel through a slot 1^d in the lower side thereof, see Figs. 2 and 3. The rear end of the lever 4 is shown as bifurcated, the upper member 4^c and lower member 4^d of the bifurcation be-

ing concealed between the portions 2^a of the plate. Pivoted between the members of the bifurcation of the lever 4 is a rocking lever 5 having a part 5^c adapted to engage the member 4^c and part 5^d adapted to engage the member 4^d. The lever 5 is pivoted on a pin or screw 5^a transfixing the portions 2^a of the stock.

The lever 5 is engaged intermediate parts 5^c, 5^d by the end 5^a of a trigger rod 6 which has a U-shaped bend 6^b near its forward end and is guided in opposite grooves 2^o in the lower ends of portions 2^a; and said trigger has an eye or pull portion 6^c on its rear end by which it can be readily operated by the finger.

The trigger is normally pressed inward and the catch 4^b normally swung upward by suitable spring means. As shown a spring 7 is confined within the grooves 2^o between the bend 6^b of the trigger rod and the end 2^d of the stock rod, see Fig. 2, and said spring normally tends to move the trigger inward and cause lever 5 to rock lever 4 and throw the catch 4^b upward in engaging position in the barrel.

Within the barrel 1 is a helical expansion spring 8, the inner end of which is preferably attached to a slidable member 10 loosely fitted in the rear end of the barrel. The forward end of the spring 8 is securely connected to the inner end of an ejector which consists of a rod 8^a having a collar 8^b adapted to be engaged by the catch 4^b when the spring is compressed (as indicated in Fig. 2). On the forward end of the rod 8^a is a head 8^c which is adapted to engage the inner end of the projectile and eject the same from the barrel as hereinafter described.

The spring 8 when released will normally extend nearly the length of the barrel but it is adapted to be compressed longitudinally upon itself within the barrel by suitable means. Preferably I provide a primary compressing means consisting of a manually operable spring and spring engaging members attached to a manually operable slide 9. This slide is preferably composed of a metal plate 9^a bent upon itself as shown in Fig. 6 and having swelled portions 9^b in its opposite sides forming a recess adapted to surround the barrel 1 and guide the slide thereon; said plate is also bent to form a depending rectangular portion 9^c below the barrel, which portion 9^c forms a housing for a spring 9^s. The plate is also bent to form a rectangular housing 9^f above the barrel in which housing is pivoted a lever 9^g, Figs. 2 and 3, which has a curved outer end 9^h adapted to engage the ejector when the lever is depressed. The lever 9^g is normally upheld by a spring 9^i so that the end 9^h will not normally enter the slot 1^a in the barrel, but the lever 9^g may be depressed by placing the thumb on a button 9^j on the end 9^h so as to depress the part 9^h through the slot 1^a into the barrel. A filler and guide strip 9^k is inserted between the sides of the housing 9^a above the barrel, and is adapted to engage the slot 1^a of the barrel and prevent the slide turning on the barrel.

Wooden side pieces 9^n may be attached to opposite sides of the member 9^a as shown in Figs. 4 to 6, and may be secured thereto by lugs 9^r projecting from the ends of the cylindric portions 9^b which lugs are bent over and into the ends of the wooden member 9^k, as shown in Figs. 4 and 6.

The spring 9^s is secured within the bottom of part 9^c of the housing by having one end engaged with a slot 9^d in the bottom of the part 9^c and then extends past lugs 9^e projecting from opposite sides of the part 9^a and then back into the part 9^c as shown in Figs. 3, 5 and 6. The inner end of the spring 9^s is adapted to engage the under side of the arm of lever 4 carrying catch 4^b, when the slide is retracted, see Fig. 2, and insure the engagement of the catch 4^b with the collar 8^b of the ejector 8^a.

When the spring 8 is to be compressed the slide 9 is first moved outward to the position indicated in dotted lines in Fig. 1 beyond the end 8^c of the member 8^a. Then the lever 9^g is depressed so that its end 9^h engages the head 8^c of the ejector; the slide is then drawn back by hand until the collar 8^b is engaged by the catch 4^b as shown in Fig. 2. Then the lever 9^g is released, the spring being then locked in the position shown in Fig. 2 and ready for ejecting the projectile.

In order to impart greater compression to the spring 8 I preferably provide a secondary means for additionally compressing the spring after it has been compressed by the slide 9. For this purpose as shown in Figs. 1–3, the inner end of a lever 10^a is pivotally connected to the sliding member 10; the said lever 10^a is also pivoted at 10^b to the outer ends of links 10^c which are in turn pivoted at 10^d on the ears 3^a of the members 3. When the spring 8 is to be tensioned, and before the slide 9 is moved inward, the lever 10^a should be moved to the position shown in dotted lines in Fig. 2 so that the member 10^a is then at the rear end of the barrel and abuts against the screw plug 1^s in the end of the barrel, as indicated in Fig. 2. Then after the spring has been compressed by the action of the slide as above, lever 10^a is moved to the position shown in full lines in Fig. 2, thereby moving the member 10 forward toward the slide 9 and compressing the spring 8. The lever 10^a may be provided with a notch 10^f which can be engaged with the pivot pin 10^d, when the lever 10^a is in position shown in full lines in Fig. 2 to prevent the spring 8 throwing the lever 10^a back to the position shown in dotted lines in Fig. 2.

Fig. 13 shows a modification of the means for secondarily tensioning the spring. In this instance the inner end of spring 8 is attached to a movable member 14 having an internally threaded bore engaged with a threaded rod 14^a which is rotatably mounted in an axial bore in a plug 12 closing the inner end of the barrel. Said rod is provided with a handle 14^b by which it can be rotated and with a collar 14^c engaging the inner end of the plug. The member 14 is provided with a key 14^c engaging the slot 1^t in the barrel. When the rod 14 is properly rotated the member 14 will be moved inward along the barrel tensioning the spring 8 to any desired degree. This device should be used after the spring has been initially compressed by the slide 9; and after the gun has been discharged the screw rod 14 would have to be reversed to move the member 14 back to initial position.

After the spring is set as described a suitable toy projectile is inserted in the barrel in advance of the ejector 8^a.

As shown I provide a novel "aeroplane" projectile as shown in Figs. 1, 7, 9 and 10. This projectile comprises a preferably tubular body 11 less in diameter than the bore of the barrel so that it can be easily slipped thereinto, and it is provided with a forward plane 11^a and rear plane 11^e. The plane 11^a is attached to the body 11 by means of a metal strip 11^b bent around the body 11 and its ends extending close together perpendicular to the body sufficiently to enable the parts 11^c to pass through the slot 1^a in the barrel when the body is inserted therein, see Fig. 7. The ends of the parts 11^c are bent outwardly at right angles to the wings 11^a as shown at 11^d and secured thereto preferably by forming ears on the parts 11^d and engaging them with apertures in the wing 11^a, as indicated at 11^f in Figs. 7 and 9.

The rear plane 11^e may be formed of a sheet of metal bent as indicated in Fig. 7, and the central portion 11^s of the plane is connected to the body 11 by means of metal strips 11^t which are bent around the body and their meeting ends extend upwardly as at 11^h so that they can pass through slot 1^a in the barrel. The ends of members 11^h are bent outwardly and attached to the under side of the part 11^g of plane 11^e by any suitable means, preferably by forming lugs on the member 11^h and engaging them with openings or slots in the part 11^g as shown in Figs. 9 and 10.

This construction enables the body of the projectile to be inserted in the barrel as shown in Fig. 1 with the planes 11^a, 11^e lying above and outside the barrel.

To the forward end of the part 11 is attached a balancing member which may be formed of a strip of metal 11^m bent around the forward end of the body and slightly curved rearwardly beneath the body, and having its ends united by a metal lug 11^n, see Fig. 1. This balancing member 11^m engages the slot 1^b in the outer end of the barrel when the projectile is inserted in the barrel, as shown in Figs. 1 and 7. In some cheaper forms of gun one of the spring tensioning means, above referred to, might be dispensed with. For example the inner end of the spring 8 might be directly fastened to the plug 1^s closing the inner end of the barrel 1 as indicated in Fig. 11.

The operation of the toy will be understood from the foregoing but in brief is as follows. To compress the spring 8, the lever 10 should be first turned to the position shown in dotted lines in Fig. 2, then slide 9 moved to the position shown in dotted lines in Fig. 1 and the lever 9^g depressed so its end 9^h will engage head 8^c of the ejector; then the slide moved inward to compress the spring until the collar 8^d of the ejector is caught by the catch 4^b; then the slide is released. Then lever 10^a is moved from the position shown in dotted lines, Fig. 2, to the position shown in full lines therein, additionally compressing spring 8. Then the body 11 of the projectile is inserted into the barrel, the planes lying outside thereof as indicated in dotted lines in Fig. 1. The projectile can then be discharged by the expansive action of the spring 8 when the latter is released by pulling the trigger 6^e. The toy is simple in construction, strong, is not dangerous, and is obviously attractive to children and adults.

What I claim is:

1. In a toy gun, a barrel having a longitudinal slot; a spring actuated ejector therein; a catch adapted to lock said ejector when the spring is compressed; devices for releasing the catch; a slide mounted upon the barrel and a movable member connected with the slide and adapted to be projected into the slot and engage the ejector and then compress the spring as the slide is moved inwardly until the ejector is locked by the catch.

2. In a toy gun as set forth in claim 1, means whereby the spring may be additionally compressed after it has been engaged by the catch.

3. In a toy gun as set forth in claim 1; a lever having one end connected with the rear end of the spring; and a link pivotally connected with said lever and with a fixed pivot, whereby when said lever is swung in one direction the spring is additionally compressed, substantially as described.

4. In a toy gun, a barrel having a longitudinal slot; a spring therein; an ejector connected to said spring; a stock; a lever pivoted on the stock and having a catch end

adapted to project into the barrel and lock said ejector when the spring is compressed; devices for releasing the catch; and a slide mounted upon the barrel and having a movable member adapted to be projected by hand into the slot, and enable the spring to be manually compressed by moving the slide inwardly while the said member is thus entered in the slot until the ejector is locked by the catch.

5. In a toy gun as set forth in claim 4, means whereby the spring may be additionally compressed from its rear end after it has been engaged by the catch.

6. In a toy gun as set forth in claim 4; a lever having one end connected with the rear end of the spring; and a link pivotallv connected with said lever and with a fixed pivot whereby when said lever is swung in one direction the spring may be compressed by having its rear end forced outwardly in the barrel.

7. A toy gun having a barrel; a spring actuated ejector therein; primary means for compressing the spring; a catch adapted to lock said ejector when the spring is compressed; trigger devices for releasing the catch; a lever having one end connected with the rear end of the spring; and a link pivotally connected with said lever and with a fixed pivot whereby when said lever is swung in one direction the spring is additionally compressed by having its rear end forced outwardly in the barrel.

8. In a toy gun, a barrel; opposite parallel metal plates clamped to the barrel and depending below the same; a stock formed of wire having its ends engaged between said plates; a catch pivoted between said plates; a lever pivoted between said plates for oscillating said catch; a trigger slidably mounted between said plates and engaging said lever; substantially as described.

9. In a toy gun as set forth in claim 8; opposite metal strips attached to the rear end of the barrel and to the forward portions of the bent wire stock to fasten the same and the stock together in rear of said plates.

10. For a gun of the character described; a slide comprising opposite metal plates bent to form an intermediate cylindric bore; said plates forming a housing below the bore, and also forming a housing above the bore; substantially as described.

11. In a slide as set forth in claim 10; opposite wooden side pieces attached to the outer sides of the said metal plates and retained by lugs on the ends of the metal plates.

12. In a gun of the character described, a barrel having a slot; a slide comprising opposite metal plates having intermediate oppositely bent cylindric portions adapted to embrace the barrel; said plates extending above and below the bore to form upper and lower housings; a spring in the lower housing; a lever pivoted in the upper housing having a tooth adapted to enter the slot; and means on the slide engaging the slot to guide it in its movements on the barrel.

13. In a gun as set forth in claim 12; opposite wooden side pieces attached to the outer sides of the metal plates at opposite sides of the barrel and retained by lugs on the ends of the metal plates.

In testimony that I claim the foregoing as my own, I affix my signature.

FRANK HESS.