

Sept. 22, 1931.

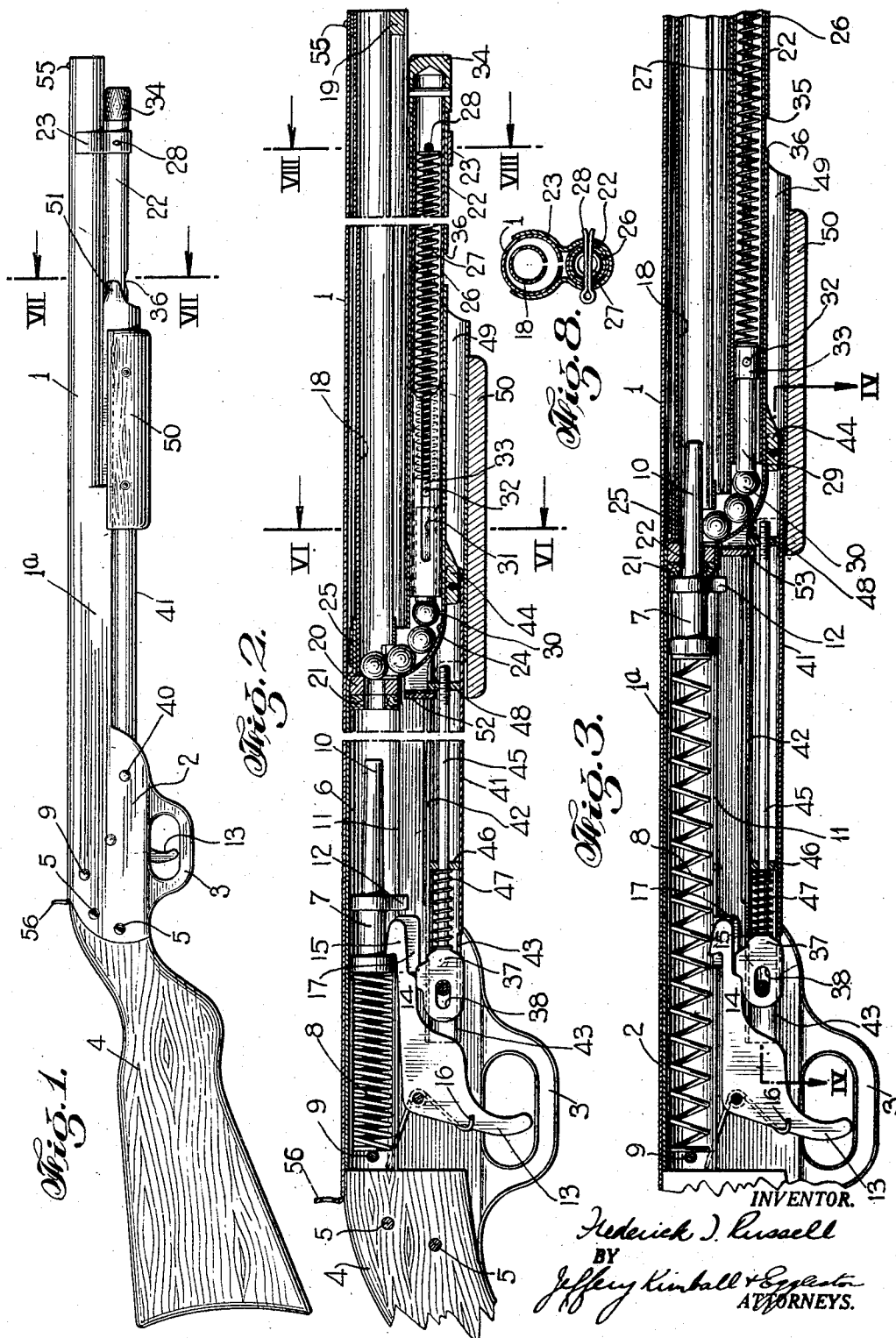
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TOY GUN

Filed Nov. 15, 1928

2 Sheets-Sheet 1



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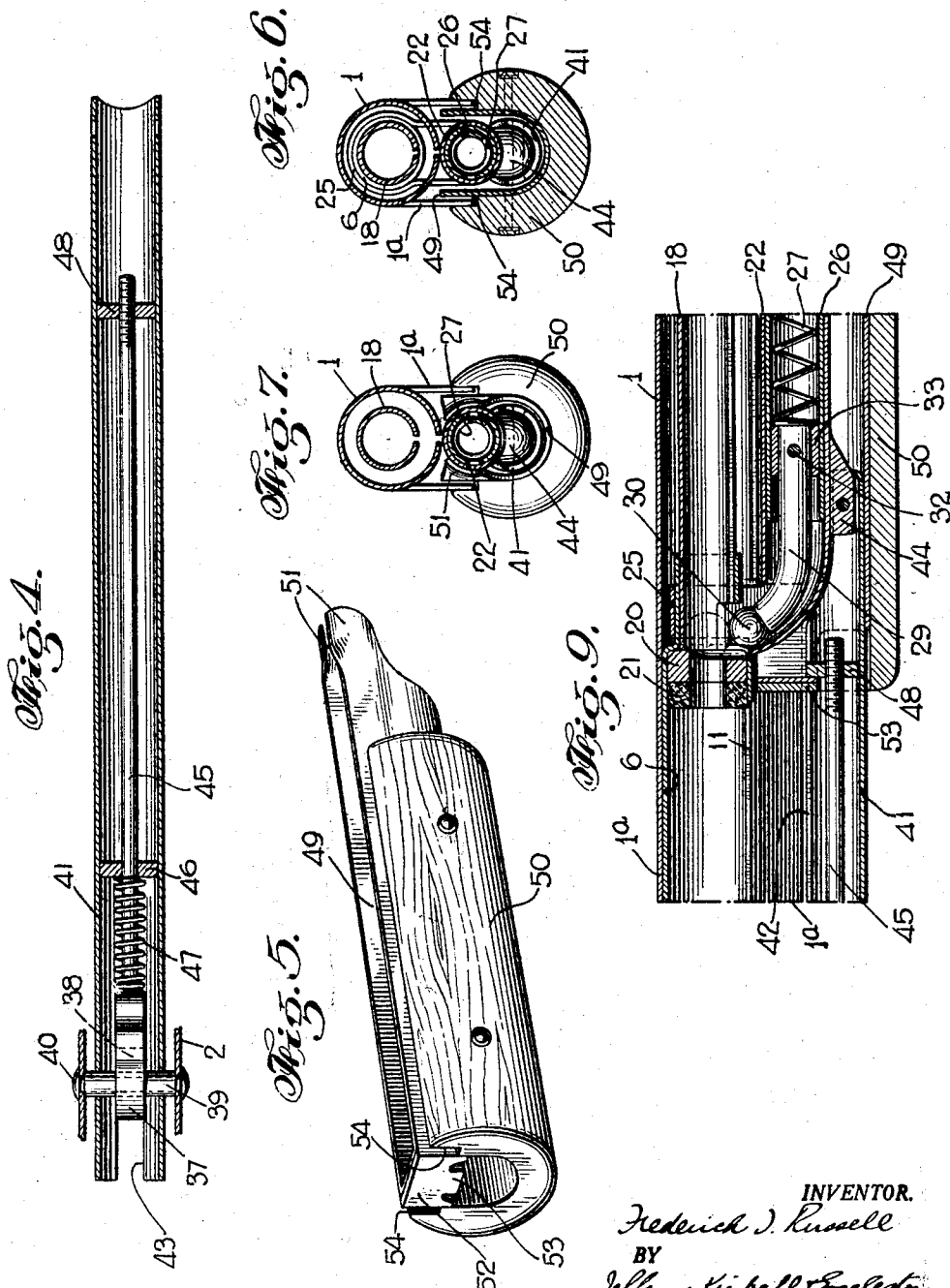
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TOY GUN

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The object of the invention is to provide a toy gun very closely resembling an actual fire-arm and capable of production at relatively small cost. The invention also provides a toy gun having its parts so organized as to minimize the danger of accident and although applicable to toy guns generally, whether of the pistol or rifle type, the foregoing and other features are embodied, by way of exemplification, in the magazine rifle shown in the accompanying drawings, in which:

Fig. 1 is a side elevation;

Figs. 2 and 3 larger scale sectional views showing the interior mechanism in its cocked and fired positions respectively;

Fig. 4 a larger scale horizontal section on the line IV—IV of Fig. 3;

Fig. 5 a perspective view of the forehand piece;

Fig. 6 a larger scale vertical section on the line VI—VI of Fig. 2;

Fig. 7 a vertical section on the line VII—VII of Fig. 1;

Fig. 8 a vertical section on the line VIII—VIII of Fig. 2, and

Fig. 9 a large scale detail section of the magazine and barrel assembly and associated parts.

The body of the gun comprises a single sheet of metal appropriately stamped and rolled to form an integral barrel casing 1 and receiver 2, the former including a forward tubular portion and an inverted U-shaped portion constituting shroud flanges 1^a which merge into the receiver. The latter designation refers to that part of the body which houses the trigger and associated parts, as will presently appear, the lower parts of the wings of the receiver being brought together to form the trigger guard 3 and preferably united, as by spot-welding. The rear end of the receiver is closed by the wooden stock 4 to which it is secured by screws 5. If desired the casing may serve as the barrel proper and the parts above referred to may be otherwise organized or in accordance with common practice but the arrangement illustrated is preferred

on account of its simplicity and economy of construction.

The firing mechanism includes a striker tube 6, a striker 7 and a striker spring 8. The striker tube closely fits the upper part of the receiver and casing and is secured to the former by a rivet 9 which extends through the tube and receiver walls and serves as a stop for the striker spring. The striker is of light weight and made preferably of aluminum alloy so that under the action of its spring it attains a high velocity in a short travel. It consists of a dumb-bell shaped body sliding freely in the striker tube and having an extruded nose or pin 10 projecting from its forward end. This pin constitutes the striker proper or hammer member, which strikes the bullet and drives it through and out of the barrel by the force of its impact, the bullet being loaded into the gun and introduced into the path of the striker as below described. It has been found that the phenol compound known as bakelite, molded into balls under high temperature and under pressure, is more desirable than any other known material, the bullets thus made being of light weight and capable of expulsion by the striker with sufficient velocity to permit of accurate firing. The striker tube is slotted, as indicated at 11, to accommodate a lug 12 on the striker and by which the striker is cocked.

A trigger 13 is pivotally mounted within the receiver and has an extension 14 terminating in a hook or latch 15 which operates through slot 11 and between ears 17 on the striker tube to engage the head of the striker, as will be understood. The latch is urged upwardly by trigger spring 16 so that when the gun has been fired, as in Fig. 3, the latch bears against the coils of the striker spring; when the striker is moved to the rear of its tube the latch hooks over the head of the striker and holds it cocked, as in Fig. 2, the latch being guided in these movements not only by ears 17 but also by the slot in which the trigger proper is located, such slot being formed by the proximate edges of the sheet metal receiver. It may be pointed out that the function of

this latch is to hold and release the striker and although herein referred to as the trigger latch it is not necessarily a part of the trigger although operated by it.

5 The barrel 18, which may also be made of rolled sheet metal, is mounted within the casing and preferably with a slight inclination or elevation therein, as indicated, the purpose of which is to extend the point
10 blank range as will be understood. The front end of the barrel is supported in an eccentric opening in a closure disc 19 for this purpose. The rear end of the barrel, which is substantially concentric with the
15 casing, is supported and rigidly held in the end of the striker tube, the latter being swedged down or otherwise formed to telescope over and closely fit the barrel. A metal washer 20 wedged against the shoulder of the reduced forward end of the striker tube serves to locate the bullet in position to be fired. The striker pin strikes the bullet through the hole in the washer which is of less diameter than the barrel but large
20 enough to accommodate such pin. A second similar washer 21, of leather or like soft material is placed behind the washer 20 and serves as a cushion to receive and deaden the noise of the striker impact.

30 When the invention is applied to a magazine or repeating type of gun, which is preferred, the magazine 22 is mounted beneath the barrel casing, being secured to the casing by an assembly clip 23 or otherwise, and
35 comprising a guide tube having a straight portion and an upcurved terminal portion 24 which extends upwardly between the shroud flanges 1^a adjacent the rear end of the barrel and terminates, forward of the receiver, in a strap 25 arranged to embrace the reduced end of the striker tube (Fig. 9). The rear or curved end of the magazine is thus rigidly supported on the striker tube, the whole being readily assembled by
40 passing the barrel and striker tube into the barrel casing and receiver from the rear end of the latter, through strap 25. After inserting the striker and its spring, tube 6 is in turn locked in position in the receiver by
45 rivet 9.

50 An inner tube 26 encloses the follower spring 27, the latter being anchored by a cotter pin 28 which passes through the guide tube and assembly clip. The other end of the spring carries the follower 29 which is of rubber or otherwise made flexible and long enough to negotiate the curved terminal part of the magazine without deforming the spring, as shown in Fig. 9. As also
55 shown in this figure, the lower parts of the telescoped striker tube and barrel are cut away to provide a lateral bullet opening and permit free passage of the bullets from the
60 magazine to the barrel. It will be observed

that the curved portion of the magazine opens into the barrel at an acute angle, and the front face of washer 20 is cut away, so that the leading bullet is directed toward the rear end of the barrel and comes to rest with its centre displaced somewhat rearwardly from that of the following bullet. By this means each bullet entering the barrel is pinched against the washer and the upper wall of the barrel by the succeeding
70 bullets and held in position to be engaged by the striker, and so as not to roll out when the muzzle is lowered. After each bullet is fired and until the gun is again cocked the striker pin serves to block the opening and hold back the remaining bullets against entry into the barrel, as shown in Fig. 3. To ensure uniformity in this action the leading end of the follower is provided with a rounded metal cap 30 shaped to correspond to a bullet, and serving to hold the last bullet against rolling out of the barrel.

The inner magazine tube 26 has a slot 31 which extends forwardly to a point just beyond cotter 28 and a pin 32 extending laterally from collar 33, against which the follower spring bears, operates in slot 31 and serves to limit the movement of the follower so that the latter cannot enter the barrel far enough to cross the path of the striker. The outer end of tube 26 is closed by a knurled cap 34 which serves as a finger piece by which the inner tube is withdrawn for loading the magazine, a second and shorter slot 35 (Fig. 3) in the inner tube 26 limiting the outward movement of the tube. As the tube is withdrawn the end of slot 31 engages pin 32 and compresses the follower spring so that the follower is also drawn back and the magazine filler opening 36 uncovered, the latter being normally closed by the inner tube. As soon as the cap is released the follower spring acts to return tube 26 a distance depending on the number of bullets loaded into the magazine but in any event far enough to again close the filler opening. The inner tube comes to rest when the movement of pin 32 is stopped by the engagement of the follower with the bullets and is then manually pushed home to the position of Figs. 2 and 3. In these figures only a few bullets are shown but when the magazine is full the additional bullets will occupy the inner tube, as will be understood.

To guard against accidental discharge of the gun I have provided an action lock and a novel actuating mechanism therefor, a preferred form of which will now be described. It comprises a safety plate 37 mounted to move or slide within the receiver and designed to obstruct some part of the firing mechanism, herein the forward extension 14 of the trigger although it may be otherwise arranged according to the type of
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firing mechanism. The plate is slotted at 38 for horizontal movement on a sleeve 39 (Fig. 4) which abuts against the receiver walls and is secured by a rivet 40 extending through it to the outside of the receiver. The plate is housed in a lock tube 41, upper and lower slots 42 and 43 in the tube serving to guide the safety plate and to receive a shoulder of the trigger so that the plate cannot get out of line with it. Lock tube 41 is also supported on sleeve 39. The lower edge of the trigger extension and the upper edge of the safety are shouldered in blocking relation so that when the trigger is in the position of Fig. 3, which is when the gun has been fired, the shoulders are in engagement and the safety blocked against rearward movement; when the trigger is in the position of Fig. 2, which is when the gun is cocked, the safety has moved rearwardly where its shoulder is directly beneath the shoulder on the trigger so that the latter is then locked and cannot be pulled until the safety is again moved forward.

Lock tube 41 extends outside of the receiver and forwardly of the gun to the rear end of the magazine where it is riveted to a lug 44 on the bottom of the magazine tube and appropriately fitted to the curved end of the magazine in simulation of an extension or continuation of the magazine back to the receiver. Within the tube is housed the actuating mechanism for the safety which includes a rod 45 formed integrally with or secured to the safety plate and passing through a fixed guide disc 46. The latter serves as a stop for spring 47 which surrounds the rod and by engagement with plate urges it toward its locking position (Fig. 2). The forward end of rod 45 is threaded and carries a round nut 48 which loosely fits the tube to guide the end of the rod and to provide a manufacturing adjustment, as below described. It will be seen that the upper slot 42 in lock tube 41 extends the entire length of the tube to give access to the nut 48 by which the safety is actuated.

The cocking mechanism includes a forehand piece mounted for sliding movement longitudinally of the barrel casing. It may be variously constructed and organized for this purpose but is preferably of the form shown in detail in Fig. 5, where it will be seen to comprise a U-shaped sheet metal base 49 having a complementary wooden grip 50 riveted to it. The base extends beyond the grip and is shaped to provide a pair of inbent wings 51 which embrace the magazine tube and are guided by it. A reinforcing piece 52, shaped as indicated in Fig. 5, is secured to the sheet metal base. This piece constitutes the action member and has a tongue 53 entering slot 42 behind the nut 48. The forehand piece is thus slidingly supported and guided on the magazine and lock tubes and conceals the junction between them. Slots 54 between the base and the grip accommodate the shroud flanges 1^a which thus serve to conceal the action member and striker lug and also hold the forehand piece against tilting.

The striker lug 12, which extends through slot 11 in the striker tube, as already explained, lies in the path of the action member 52 so that the gun is cocked as usual by pulling the forehand piece toward the stock; in such movement the action member 52 engages the striker lug and draws the striker back in its tube, compressing the striker spring, until the striker reaches the position of Fig. 2 when the trigger spring snaps the trigger latch 15 over the head of the striker, which is the cocked position. The upward movement of the trigger latch allows the spring 47 to move the safety plate rearwardly and beneath the trigger extension 14, as above described. The gun is now "safe", and cannot be fired until the safety is again moved forwards. This can only be done by pushing the forehand piece forward, which causes the tongue 53 of the action member to engage nut 48 on rod 45 and draw out the safety plate from beneath the trigger, this movement being against the spring 47. Should the forehand piece be released before the gun is fired the spring will immediately return the safety to its trigger blocking position. Nut 48 is so adjusted on rod 45 that when the safety is pushed forward far enough to permit the gun to be fired, action member 52 is then beyond the limit of travel of the striker (Fig. 3) and therefore cannot interfere with or be damaged by it. The forward movement of the forehand piece is limited by the engagement of slot 38 in the safety with its supporting sleeve 39, as shown in Fig. 3.

By means of this construction there is little danger of the gun being accidentally fired since the safety lock mechanism requires that the forehand piece be consciously moved to and held in its forward position during firing. The gun must thus be held firmly and with the user's hands placed as customary when taking aim or firing, which position is rarely assumed thoughtlessly and without intention that the gun be fired.

The front sight is a pin head 55 which may be the head of a small rivet passing through the barrel casing and the closure disc 19; the rear sight being shown as an apertured ear 56 upturned from the end of the receiver.

It will be understood that the details of construction and organization exemplify a preferred form of the invention and are

subject to modification within the limits defined by the following claims:

1. In a toy gun the combination of a receiver, barrel and striker, an action lock located within the receiver, a forehand piece manually movable rearwardly of the barrel into engagement with the striker to cock the same and forwardly of the barrel to release the action lock and spring means for automatically returning the lock to its safe position when the forehand piece is relieved from manual control.

2. In a toy gun the combination of a receiver and a barrel, cocking mechanism including a forehand piece manually movable relatively to the barrel and toward the receiver to cock the gun, an action lock arranged in the path of the forehand piece for operation by movement of the latter away from the receiver and a spring active on said lock to return the same to its safe position when the forehand piece is relieved from manual control.

3. In a toy gun the combination with a barrel and a striker, a magazine having a filler opening, a forehand piece slidable longitudinally on said magazine, a follower spring for feeding the bullets from the magazine into position to be engaged by the striker, a cover for the filler opening arranged within the magazine for closure by the follower spring and an exterior operating member for said cover.

4. A toy gun including a barrel, a magazine tube mounted below the same and a forehand piece comprising a sheet metal body having inbent ears arranged to embrace the magazine tube for sliding movement relatively thereto, for the purpose described.

5. A toy gun including a receiver, a barrel, a magazine tube mounted below the barrel, a forehand piece having its front end arranged to embrace the magazine tube for sliding movement relatively thereto and means independent of the tube for supporting the rear end of the forehand piece in spaced relation to the receiver.

6. A toy gun including a barrel, a striker, a magazine tube mounted below the barrel, a forehand piece having its front end arranged to slide on the magazine tube, and an action lock having a tubular housing adapted to support the rear end of the forehand piece.

7. A toy gun comprising in combination a barrel, a receiver, a striker tube therein and a striker in said tube, a magazine tube mounted below the barrel and having its rear end secured to the striker tube and a forehand piece slidably mounted on the magazine tube and operable to cock the striker.

8. A toy gun comprising in combination with a receiver, a barrel casing and firing

mechanism, a magazine tube secured to the forward end of the casing, an action lock and a tubular housing therefor mounted in fixed relation to the receiver with its forward end secured to the magazine tube, and a forehand piece having its front end slidably mounted on the magazine tube and its rear end slidably mounted on said housing.

9. A toy gun comprising in combination with a barrel, a striker and an action lock, a control for the latter including a forehand piece manually movable longitudinally of the barrel, connections between the forehand piece and the lock for moving the latter to its firing position when the forehand piece is moved forwardly of the barrel and spring means for automatically returning the lock to its safe position when the forehand piece is relieved from manual control.

10. A toy gun comprising a sheet metal barrel casing and receiver, a barrel and striker tube mounted within the casing and receiver with their adjacent ends telescoped, and a magazine tube having its ends respectively secured to the casing and to the striker tube.

11. In a toy gun the combination of a sheet metal receiver and barrel casing, a magazine tube mounted below the casing with its rear end terminating forward of the receiver, and another tubular structure extending between the rear end of the magazine tube and the receiver in simulation of a rearward extension of the magazine tube to the receiver.

12. In a toy gun the combination of a receiver, a barrel, a magazine tube mounted below the barrel and terminating forward of the receiver, another tubular structure extending between the rear end of said tube and the receiver in simulation of a rearward extension of the magazine tube and a forehand piece mounted for sliding movement relatively to the barrel and arranged to cover the junction of the said tubular structure and the magazine tube.

13. In a toy gun the combination of a sheet metal receiver and barrel casing, and a magazine tube mounted below the casing with its discharge end located at the rear and terminating forward of the receiver, said casing having shroud flanges extending from the rear end of the magazine tube to the receiver.

14. In a rifle, the combination with a barrel, firing mechanism and an action lock, of a control member for the latter mounted adjacent the normal forward grip position with respect to the barrel and manually movable relatively thereto to release said lock, and spring means for automatically returning the lock to its safe position when said member is relieved from manual control.

15. The combination in a firearm of a receiver, firing mechanism therein and a bar-

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rel, an action lock, a forehand piece manually movable relatively to the barrel to release said lock and spring means arranged to oppose such manual movement, said forehand piece mounted for free movement out of its lock-releasing position, under the action of said spring means, when relieved from manual control.

16. In a toy gun, the combination of a receiver, a barrel, a striker and an actuating spring therefor, a forehand piece mounted for manual movement relatively to the barrel in one direction to retract the striker against its spring, a latch adapted to engage and hold the striker so retracted, a trigger for releasing said latch, an action lock adapted to be released by movement of the forehand piece in a reverse direction and a second spring opposing the latter movement and adapted to render active said lock when the forehand piece is relieved from manual control.

17. In a toy gun, the combination of a barrel, a frame and a trigger-guard integrally made of sheet metal, the top portion of the frame being semi-circular in cross-section and in axial alinement with and of the same radius as said barrel, the sides of said frame being parallel and extending downwardly tangentially from said semi-circular top, the lower edges of said sides being flanged integrally with the sides respectively and extending transversely toward each other into abutting relationship and rigidly secured together to form a closure for the bottom of said frame with a trigger slot therein, said trigger-guard being narrower than said frame and integral with and depending from said flanges forming said bottom and comprising complementary extensions of trigger-guard shape and channel shaped in transverse cross-section, and having aligned abutting edges, a transverse cross-section through said trigger-guard being substantially rectangular, the corners being rounded, and said trigger-guard being hollow.

In testimony whereof, I have signed this specification.

FREDERICK T. RUSSELL.