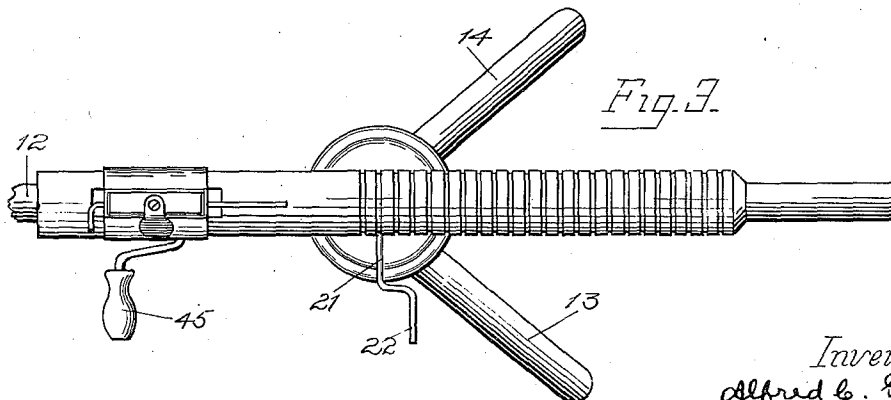
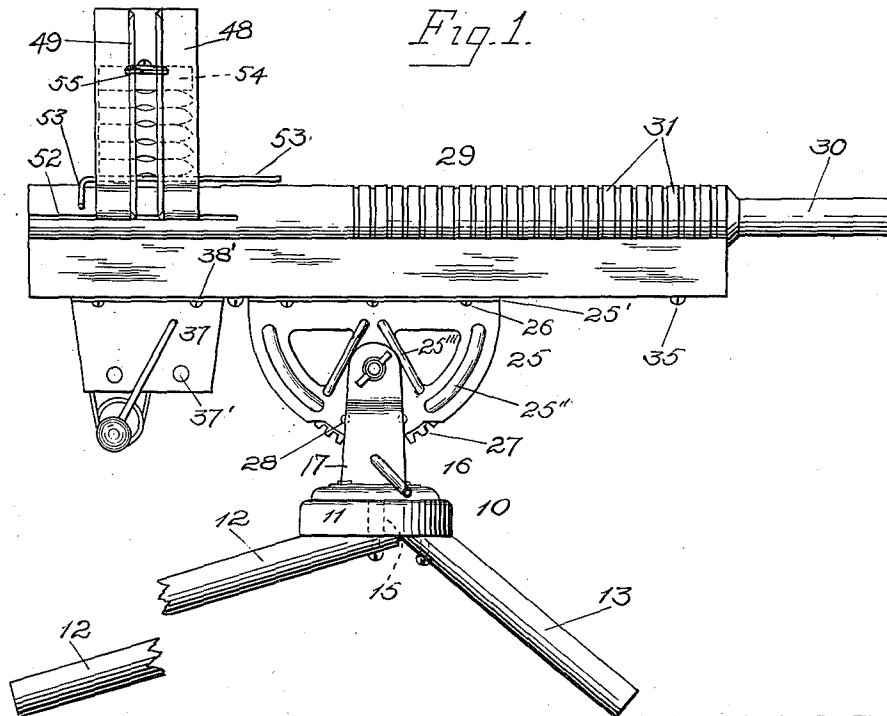


A. C. GILBERT.
TOY GUN.
APPLICATION FILED MAR. 25, 1918.

1,310,613.

Patented July 22, 1919.

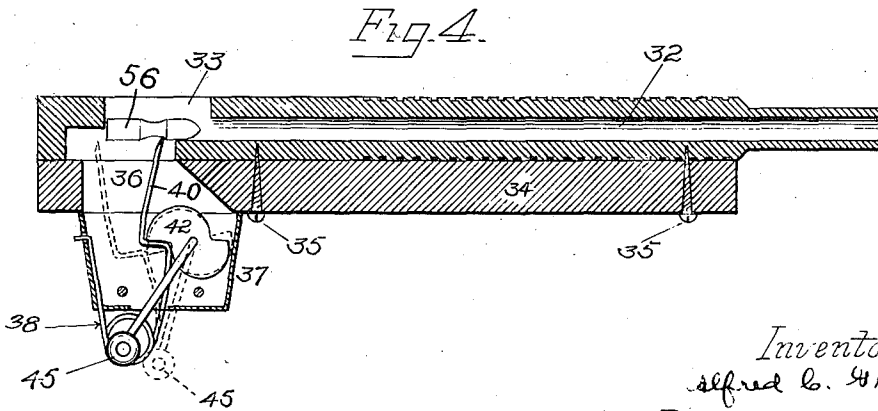
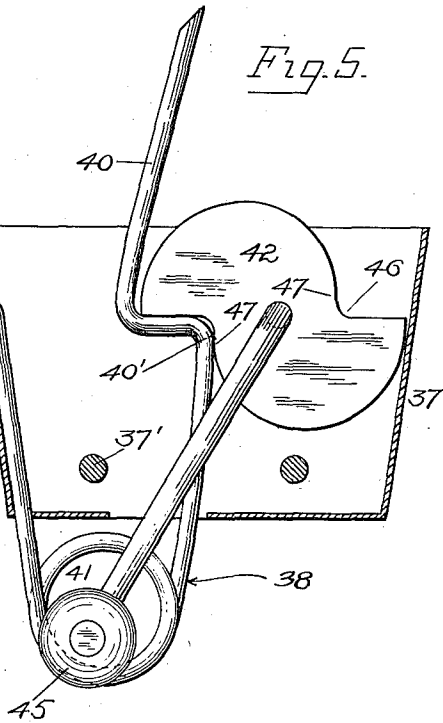
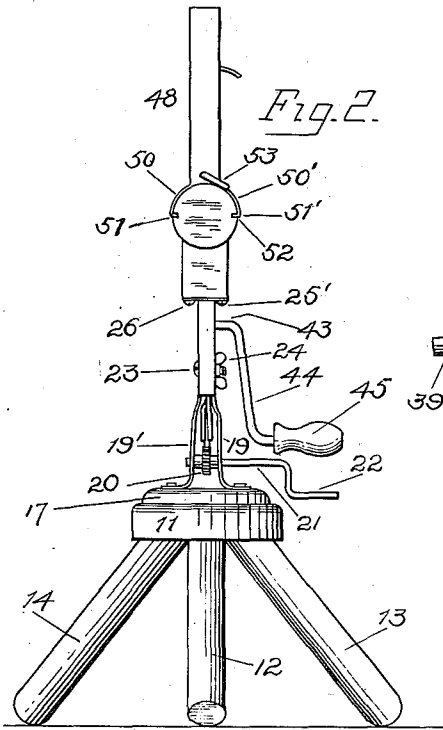
4 SHEETS—SHEET 1.



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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 7.

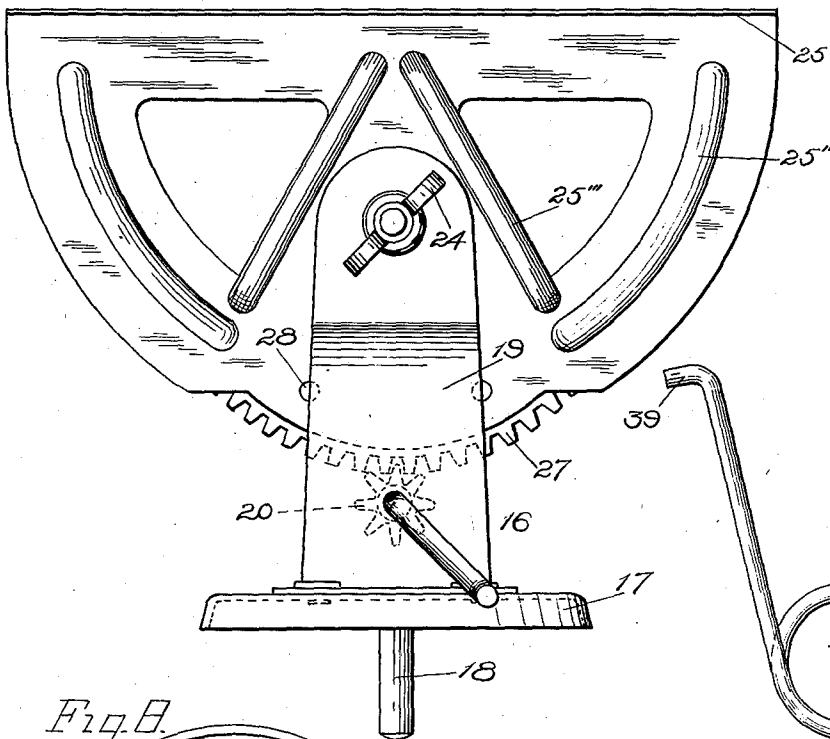


Fig. 6.

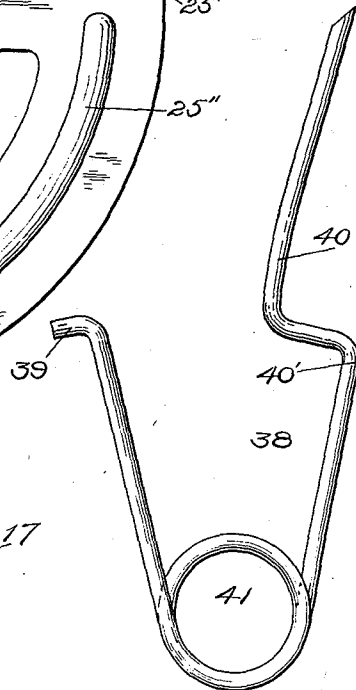


Fig. 8.

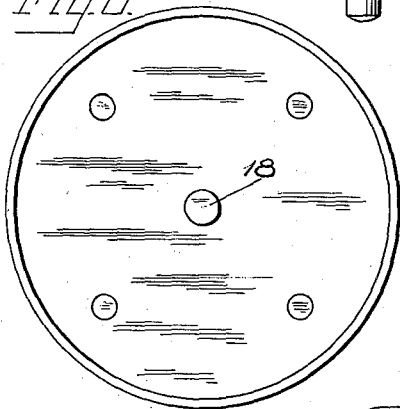


Fig. 9.

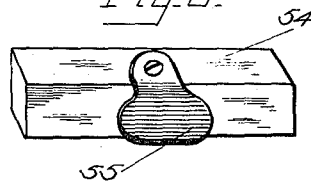


Fig. 10.

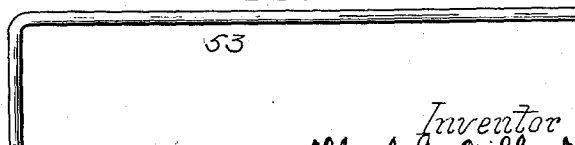
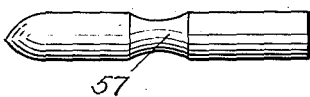


Fig. 11. 56



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4 SHEETS—SHEET 4.

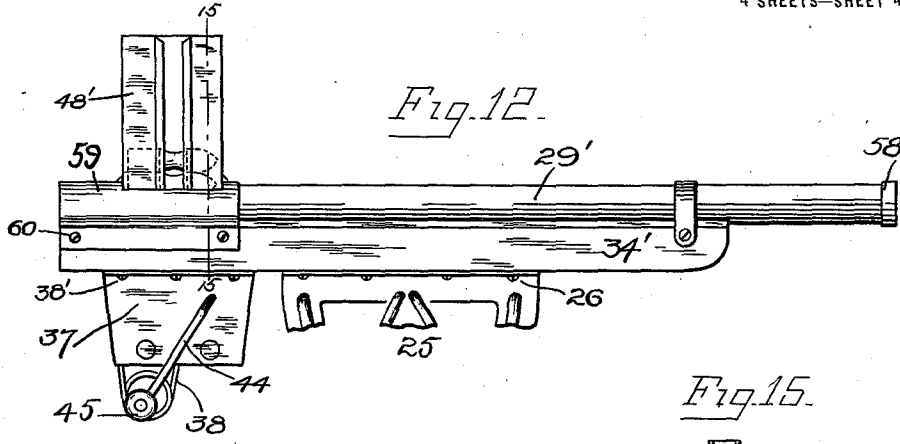


Fig. 15.

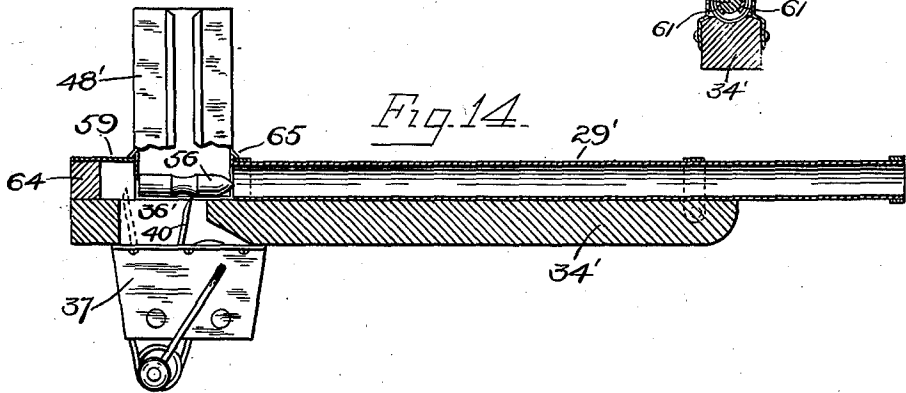
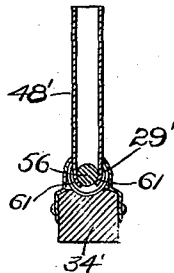
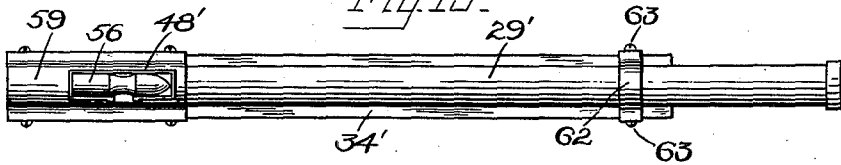


Fig. 13.



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UNITED STATES PATENT OFFICE.

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TOY GUN.

1,310,613.

Specification of Letters Patent.

Patented July 22, 1919.

Application filed March 25, 1918. Serial No. 224,553.

To all whom it may concern:

Be it known that I, ALFRED C. GILBERT, a citizen of the United States, residing in New Haven, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Toy Guns, of which the following is a full, clear, and exact description.

This invention relates to toy guns, and more particularly to a toy machine gun designed to amuse and entertain boys and to train them in the military use of machine guns.

The primary object of this invention is to provide a toy machine gun which closely resembles in appearance and mode of operation the machine guns now in actual use for military purposes.

A further object is to provide a toy gun which is simple in mechanism, durable in use, and which consists of but few parts, which may be inexpensively manufactured and easily assembled.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Figure 1 is a side elevation of my complete toy machine gun;

Fig. 2 is an end view of the same;

Fig. 3 is a plan view of the same;

Fig. 4 is a longitudinal vertical section through the gun barrel, stock and case for the firing mechanism;

Fig. 5 is an enlarged sectional view through the case in which the firing mechanism is inclosed;

Fig. 6 is an enlarged detail view of the projectile propelling spring removed from its case;

Fig. 7 is an enlarged side elevation of the gun elevating mechanism and bracket for supporting the same;

Fig. 8 is an enlarged end or bottom view of the swivel bracket;

Figs. 9 and 10 are perspective and side views respectively of details of my invention;

Fig. 11 is a side view of the bullet or projectile used in my toy gun;

Fig. 12 is a side elevation of a modified type of gun barrel and means for securing the same to its stock;

Fig. 13 is a plan view of the device shown in Fig. 12;

Fig. 14 is a longitudinal vertical section of Fig. 12; and

Fig. 15 is a sectional view taken on line 15—15 of Fig. 12.

In the drawings, I have designated the tripod supporting means upon which my gun is mounted by the numeral 10. This tripod consists of a disk-like base plate 11 having a comparatively long supporting leg 12 rigidly secured to the lower face thereof by screws or other means and extending therefrom in an inclined direction. To the lower face of the disk 11 is also secured a pair of relatively short legs 13 and 14, which are preferably pivotally secured to the plate 11 by screws or similar means. The plate, 11 has centrally formed therein a drill hole 15, the object of which will be hereinafter described.

Pivotally mounted upon the tripod support just described is a bracket designated in its entirety by the numeral 16. This bracket is provided with a round base member 17 having a saucer-like formation. Centrally mounted in the member 17 and projecting downwardly therefrom is a projecting pin 18, adapted to be mounted in the drill hole 15 above referred to, thus providing a pivotal mounting between the bracket 16 and the tripod 10. The periphery or outer edge of the saucer-like base 17 contacts with the upper face of the plate 11 and forms a bearing surface therewith. Mounted upon the upper face of the base 17 and rigidly secured thereto by rivets or similar means are a pair of substantially L-shaped brackets 19, 19'; these brackets are spaced a slight distance apart adjacent the base 17 to form a clearance space in which the pinion 20 is mounted upon a shaft 21, to which it is rigidly secured. The outer end of this shaft is bent to form a crank handle 22, by means of which the pinion 20 may be rotated. The upper end of the brackets 19, 19' lie parallel to each other and are spaced a very slight distance apart, and have formed therein drill holes, in which is mounted a threaded bolt 23 having a head formed at one end thereof, which contacts with the outer face of one of the brackets; and mounted upon the threaded portion of the bolt is a wing nut 24 which

may be screwed into clamping engagement with the outer face of the opposite bracket, the arrangement being such that the upper ends of the brackets 19, 19' may be forced into frictional engagement with the bracket 25 mounted therebetween to prevent the same from swinging too freely about its pivot. This bracket 25 is semi-circular in configuration and is pivotally mounted upon the bolt 23 to form an adjustable elevating means for the gun hereinafter described. This bracket is preferably formed by securing together two sheet metal semi-circular plates having the appearance and shape shown in the drawings. These plates are preferably provided with portions 25', bent at right angles thereto to provide means by which the bracket 25 may be rigidly secured to the gun stock hereinafter described. The portions 25' may be conveniently secured to the stock of the gun by screws or other securing means 26. The bracket 25 is preferably provided with the rib-like portions 25'' and 25''' stamped in the face thereof for reinforcing or stiffening the same. The bracket 25 is further provided with a curved toothed portion 27, which toothed portion cooperates with the pinion 20, as shown in Fig. 7. A convenient way of providing the bracket 25 with the toothed portion 27 is to form the element 27 out of a separate piece of sheet metal and secure this element in place between the two plates of which the bracket is formed by means of rivets 28. From the structure just described, it will be seen that the bracket 25 is pivotally mounted upon the bolt 23 between the spaced brackets 19, 19', and that this bracket may be swung about its pivotal mounting to the desired angle by means of the pinion 20, the teeth of which cooperate with the teeth formed in the portion 27, the pinion being rotated by means of the crank handle 22.

The barrel of my toy machine gun is designated in its entirety by the numeral 29. This barrel is preferably cylindrical in shape, having a reduced cylindrical portion 30 formed at the forward end thereof. The body portion of the barrel 29, between the ends thereof, is provided with a number of grooves 31. These grooves serve no function so far as the operation of my toy gun is concerned, but are desirable in that they resemble the cooling flanges that are formed upon machine guns which are now in general use for military purposes. The barrel 29 has the usual bullet-receiving bore 32, which extends substantially through the entire length of the barrel but terminates short of the rear end thereof, as shown in Fig. 4. Adjacent the rear end of the barrel 29 and in the upper face thereof is formed a slot 33, by means of which the bullets or projectiles to be discharged from the gun may be introduced into the breech of the barrel. The barrel 29 is provided with a stock 34, to which it is firmly secured by screws or other securing means 35. The stock 34, near the rear end thereof, is provided with a slot 36, which extends through the stock and into the breech of the barrel 29. Rigidly mounted upon the lower face of the stock 34 is a sheet metal case 37, the parts of which may be secured together by rivets 37'. This case is secured to the stock by screws 38' or other securing means and is positioned to cover the outer end of the slot 36 just described. The sheet metal case 37 forms a housing or inclosure for the firing mechanism for propelling the bullet out of the gun. This firing mechanism consists of a stiff, substantially U-shaped spring 38, one end of which is provided with an L-shaped portion 39, and the other end of which is provided with an offset portion 40. The U-shaped spring is preferably provided with one or more coils 41, which increase the resiliency of the same. This spring is secured within the case 37 by inserting the projecting end 39 through an opening formed in the rear end of the case, the coil portion 41 of the spring being permitted to project from the bottom of the case, and the other arm of the spring being so positioned that the offset portion extends through the slot 36 and into the bore 32 of the gun barrel. The spring 38 is operated by means of the pivotally mounted cam member 42, which preferably consists of two or more cam-like members symmetrically arranged about the rotating shaft 43 and operatively secured thereto, the shaft 43 being provided with a crank handle 44 and knob 45, by means of which the spring-operating means 42 may be rotated. The member 42 is provided with notches 46 formed therein. These notches form a clearance space for a portion of the spring to permit the spring to move to its forward position, as shown in Figs. 4 and 5. These notches 46 also serve to produce an abutment 47 against which the portion 40' of the spring strikes when the spring is released to propel the projectile out of the gun barrel. From the above description of the firing mechanism it will be seen that when the crank handle 44 is rotated, the spring-operating means will be rotated so that its curved cam face contacts with the portion 40' of the spring and compresses the same, as shown in dotted lines in Fig. 4, and that, upon further rotation of the crank handle, the curved face of the cam is moved out of engagement with portion 40' of the spring, thus suddenly releasing the compressed spring, so that the end of the offset portion 40 strikes the bullet or projectile positioned in the bore of the rifle with considerable force, so that the bullet will be shot out of the barrel. By referring to Figs. 4 and 5,

it will be seen that the offset portion 40' of the spring forms a clearance space for the spring operating face of the cam, so that the spring will move forward without striking this face.

In order that my machine gun may be supplied with bullets that will feed into the barrel as rapidly as the crank handle 44 may be rotated to discharge the bullets therefrom, I provide a bullet magazine designated in its entirety by the numeral 48. This magazine is rectangular in cross-section and is preferably provided with a slot 49, by means of which the bullets may be more easily positioned properly in the magazine, and which slot permits it to be seen at a glance how many bullets remain in the magazine. At the lower end of the magazine are formed oppositely curved portions 50, 50' which conform to the curvature of the gun barrel and form a seat for supporting the magazine upon the barrel. Means are provided for slidably mounting the magazine upon the gun barrel consisting of inwardly projecting blades 51, 51' formed upon the portions 50 and 50'. These blades cooperate with grooves 52 formed in the opposite sides of the gun barrel 29, and extending longitudinally thereof, the arrangement being such that the magazine 48 may readily be mounted upon the barrel 29 over the slot 33 formed therein by inserting the blades 51, 51' in the slots 52 and sliding the magazine forward along the barrel until it is properly positioned over the slot 33.

In order that the gun may be fired more rapidly, it is desirable to load the bullets in one magazine, which has been removed from the gun, while the other magazine is being used upon the gun. In order that this may be accomplished, means are provided for preventing the bullets from dropping out of the bottom of the magazine while it is removed from the gun barrel. This means consists of drill holes formed in the opposite end walls of the magazine 48 near the bottom thereof, through which an L-shaped wire 53 may be inserted, to prevent the bullets from dropping out of the bottom of the barrel. The bent end of the wire forms convenient means to be grasped when the wire is to be withdrawn from the magazine. In order to insure the proper feeding of the bullets into the gun barrel, I provide a weight or follower 54 having a finger grip 55 secured thereto. This follower 54 is placed in the magazine after the same has been filled with bullets, with the reduced portion of the finger grasp 55 extending through the slot 49; the weight of this follower insures the proper feeding of the bullets as it rests upon the uppermost bullet and moves downwardly in the magazine as the bullets are discharged from the gun barrel.

I preferably provide the bullet or pro-

jectile 56 which is used in my machine gun with a circumferential groove 57 formed about the same substantially midway between the ends of the projectile, as clearly shown in Fig. 11. This groove serves an important function and materially improves the operation of my gun. It will be apparent that should the gun barrel herein described in which the bullet slides freely, have its muzzle lowered below the horizontal plane, the bullet due to the force of gravity will tend to slide forwardly out of the barrel, before the gun can be fired. In order to prevent this the bullet is provided with the groove 57, which cooperates with the end of the spring that projects into the bore of my gun as shown in Fig. 4. When the bullet 56 is permitted to drop into the barrel, the bullet will assume a position therein so that its groove 57 receives the operating end of the spring, the arrangement being such that the projecting end of the spring prevents the bullet from sliding out of the barrel before the gun is fired, as will be apparent from Fig. 4.

From the above description, it is thought that the operation of my device will be apparent. When it is desired to use the toy gun, the same may be set up wherever desirable by placing the leg 12 upon the ground, and by swinging the pivoted legs 13 and 14 about their pivot until the tripod 10 assumes a rigid position upon the ground. Having positioned the tripod support for the gun, the gun may then be traversed in a horizontal plane by rotating the bracket member 16 about its pivotal mounting upon the base plate 11. While the gun is being traversed to the proper horizontal range, the gun barrel may be elevated or depressed by rotating the crank handle 22. Having sighted the gun and assuming that the magazine is loaded with projectiles, as shown in Fig. 1, the wire 53 which supports the projectiles in the magazine is withdrawn and the bullets will then drop into the gun bore one at a time, so that as the crank handle 44 is rotated, the gun will be fired and the projectiles may be fired from the gun as rapidly as the crank handle 44 can be rotated. When all the projectiles have been fired from the magazine mounted upon the gun, the magazine may be removed from the gun barrel by sliding the same toward the rear end of the barrel, and another magazine containing a number of projectiles ready to be fired may be quickly mounted upon the gun. It will thus be seen that very little time need be lost in removing the empty magazine and replacing it by a full magazine.

The cooperation between the groove 57 formed in the bullets 56 and the end of the spring which projects into the bore of the gun barrel, in addition to preventing the

bullet from sliding out of the barrel prematurely, as above described, serves the following function which is important. It will be apparent that in order that each bullet 5 may be shot from the gun with the maximum force of the spring, it should be so positioned in the gun that the propelling end of the spring will contact with the rear end of the projectile from substantially the 10 instant the spring is released until its outward movement is stopped by striking against the element 42; that is, in order that each bullet may be shot with the maximum force, it should be so positioned in the gun 15 barrel that the rear end of each projectile is positioned immediately in front of the rearmost position of the propelling spring as shown in Fig. 4 of the drawing. This is accomplished by the end of the spring, 20 which extends into the groove 57, for when the spring is compressed by the element 42, the projecting end of the spring moves rearwardly, and, due to its engagement in the groove 57, moves the bullet rearwardly 25 against the rear end of the bore of the gun.

Referring now to the modification illustrated in Figs. 12-15, inclusive, in these several views I have disclosed a gun barrel that may be more easily and quickly manufactured than the gun barrel disclosed in Figs. 30 1, 3 and 4. In Figs. 12-15, inclusive, I have shown a gun barrel 29' that may be constructed from stock tubing by simply selecting a piece of metal tubing of the desired 35 diameter and cutting the same to the desired length. The outer end of this tubing may be reinforced by a collar or band, such as 58, which is snugly fitted about the same. The inner end of this barrel, it should be noted, 40 does not extend to the inner end of the stock 34' on which the barrel is mounted but terminates adjacent the forward edge of the bullet magazine 48'. The rear portion of the barrel which may be termed the receiver, 45 59, is preferably constructed of a piece of sheet metal which is rounded to conform to the periphery of the barrel 29' and extends rearwardly to the rear end of the stock 34'. The sides of this strip of metal of which the 50 receiver 59 is constructed are spaced apart and bent downwardly to contact with the opposite sides of the stock 34' to which they are secured by securing means, such as screws 60. The upper face of the receiver 55 59 has a rectangular slot formed therein, the configuration of which is such that the lower end of the bullet magazine 48' may be snugly fitted therein. This bullet magazine is of substantially the same configuration 60 throughout its entire length except that the sides of the same adjacent the lower end of the magazine are bent inwardly slightly, as at 61, in Fig. 15. The object in bending these sides toward each other slightly is to 65 close the lower end of the magazine sufficiently to prevent the bullets 56 from dropping therethrough. The magazine 48' has an opening formed in its forward edge adjacent the lower end of the same, that is, this opening is directly in front of the bullet 56, 70 as shown in Fig. 14, and forms a clearance space which permits the bullet to be shot by the resilient spring 40 out of the magazine 48' and the tubular barrel 29'. The forward portion of the barrel 29' may be se- 75 cured to its stock by means of a strap, such as 62, which is placed over the barrel and secured to the stock by any desired means such as screws 63. The rear end of this barrel 29' extends under the forward end of the 80 receiver 59 a sufficient distance to be retained thereby rigidly in place upon its stock. The rear end of the receiver 59 may conveniently be closed by a plug, such as 64. The stock 34' is preferably mounted upon a bracket, 85 such as 25, shown in Fig. 1, and is provided with the sheet metal casing 37 which forms a housing for the firing mechanism such as above described in connection with Figs. 1-11, inclusive. The stock 34' has a slot 36' 90 formed therein in which the upper end of the firing spring 38 operates. The portion of this spring 40 which strikes the rear end of the bullet 56 moves back and forth between the spaced lower end portions 61 of 95 the bullet magazine 48'.

From the above description of Figs. 12 to 15, inclusive, it is thought that the construction and operation of my modified device 100 will be apparent. It will be seen that the internal diameter of the tubing used to form the barrel 29' is considerably larger than the diameter of the bullet 56, but this does not affect the firing of the gun since it will be understood that the gun is not intended 105 to shoot very far or very accurately. The gun barrel could of course be constructed of smaller tubing or large bullets may be used. The principal object in constructing the gun barrel of relatively large tubing is that the 110 receiver 59 which forms the portion of the barrel that receives the bullets and which snugly receives the rear end of the barrel 29' will be of sufficient diameter to permit a rectangular slot to be formed therein large 115 enough to receive the lower end of the magazine 48'. This construction forms a very convenient means for supporting the magazine upon the gun which permits the magazine to be quickly and easily applied to the 120 gun and removed therefrom. If desired, lugs 65 may be formed upon the magazine 48' to limit its movement into the receiver 59 so that the lower end of the magazine will be properly positioned relatively to the 125 upper end of the propelling spring 40.

It will be apparent that numerous minor changes may be made in the above described devices without departing from the scope of my invention as defined in the claims. 130

I have not attempted to describe all the modifications of the construction which may be adopted without departing from the scope of the invention.

5 What I claim is:

1. In combination with a toy gun, a gun barrel, manually operable means for propelling bullets out of said barrel, and range elevating mechanism for adjustably supporting said gun barrel, comprising a support, a barrel supporting bracket pivotally mounted on said support to swing in a vertical plane, and a pinion cooperating with said bracket to swing the same about its pivot.

15 2. In combination with a toy gun, a gun barrel, manually operable means for propelling bullets out of said barrel, a bullet magazine removably mounted on said barrel, said magazine being constructed to support a number of bullets in a vertical stack above the gun barrel, and a follower mounted in said magazine above the bullets for feeding the same into the barrel.

25 3. In combination with a toy gun, a gun barrel, manually operable means for propelling bullets out of said barrel, a bullet magazine detachably mounted upon said barrel, said magazine being provided with means for preventing said bullets from dropping out of the bottom of said magazine.

30 4. In combination with a toy gun, a gun barrel having a bullet-receiving slot formed therein, manually operable means for propelling bullets out of said barrel, a bullet magazine mounted upon said barrel in alignment with said slot, said magazine having means at the lower end thereof for preventing bullets dropping out of the bottom of the same, whereby the magazine may be loaded before it is mounted on the gun barrel.

35 5. A toy gun, comprising a gun barrel and mechanical means for propelling bullets out of said barrel, said propelling means comprising a spring, and cams for compressing and releasing said spring, said cams being symmetrically arranged about a crank shaft and operatively secured thereto, and a housing separate from said barrel in which said spring and cams are operatively mounted.

40 6. A toy gun, comprising a gun barrel and mechanical means for propelling bullets out of said barrel, said propelling means comprising a substantially U-shaped spring having an offset portion, and a pivotally mounted cam for compressing and releasing said spring, said offset portion forming a clearance space for a portion of the cam when the spring is released thereby.

65 7. A toy gun, comprising a gun barrel and mechanical means for propelling bullets out of said barrel, said propelling means comprising a spring having an offset end portion extending into said barrel and a rotat-

ing cam for compressing and releasing said spring, said cam having a notch formed therein, said offset portion forming a clearance space for a portion of the cam, and the notch in the cam forming a clearance space for a portion of the spring when the spring is released; substantially as described.

8. In a toy gun, a gun barrel, mechanical means for propelling bullets out of said barrel, said propelling means comprising a bullet-engaging spring having an offset portion, a cam cooperating with said spring for compressing the same, said cam having a notched portion for releasing the spring, and an abutment for limiting the forward movement of the spring when released.

9. In combination with a toy gun, a gun barrel, a projectile for said gun, a projectile-propelling spring having an end thereof extending into the bore of said barrel, said projectile having a circumferential groove formed therein between the ends thereof to receive the projecting end of the spring, whereby said projecting end and groove cooperate to prevent the projectile from sliding out of the barrel due to the force of gravity when the muzzle of the barrel is lowered.

10. A projectile for a toy gun, having a cylindrical body and a circumferential groove formed therein substantially midway between the ends of the projectile.

11. In a toy gun, a gun barrel having a slot formed therein, a bullet magazine removably mounted in said slot for supporting the bullets in a stack one above the other, said magazine being constructed to prevent the bullets from dropping out of the bottom thereof and to permit the bullets to be discharged through a side thereof.

12. In a toy gun, a gun barrel having a slot formed therein, a bullet magazine removably mounted in said slot for supporting the bullets in a stack one above the other, said magazine having its lower end partially closed to prevent bullets from dropping therefrom and having a lateral opening formed therein to permit the bullets to be discharged through a side thereof.

13. In combination with a toy gun, a gun barrel, manually operable means for propelling bullets out of said barrel, and supporting means for said gun barrel, comprising a base plate, spaced brackets secured to said plate and projecting upward therefrom, a bracket carrying said gun barrel pivotally mounted between said spaced brackets, and means for forcing said spaced brackets into frictional engagement with said pivoted bracket, whereby the latter is retained in any desired angular adjustment.

14. In combination with a toy gun, means for adjustably supporting said gun, comprising a base plate, spaced brackets secured to said plate and projecting upwardly there-

from, a bracket secured to said gun and pivotally mounted between said spaced brackets, manually operable means mounted between said spaced brackets for adjusting said pivoted bracket, and means for forcing said spaced brackets into frictional engagement with said pivoted bracket.

15 15. In a toy gun, a gun barrel, mechanical means for propelling bullets out of said barrel, said means comprising a spring having a bullet engaging end projecting into said barrel from below the same, and a cam cooperating with said spring for compressing and releasing the same, said cam positioned below the upper end of said spring to operate upon an intermediate portion of said spring.

16. In a toy gun, a gun barrel, mechanical means for propelling bullets out of said bar-

rel, comprising a spring mounted below said barrel and having a bullet engaging end projecting into said barrel, and a cam for compressing said spring mounted in front of the same and positioned to operatively engage an intermediate portion of said spring.

17. In a toy gun, a gun barrel, mechanical means for propelling bullets out of said barrel, comprising a spring having a bullet engaging end projecting into said barrel and a cam for compressing said spring mounted to swing in the plane of said spring and to operatively engage an intermediate portion of said spring.

In witness whereof, I have hereunto set my hand on the 20th day of March, 1918.

ALFRED C. GILBERT.