Nov. 24, 1942. C. R. BROWN ET AL 2,303,017

TOY

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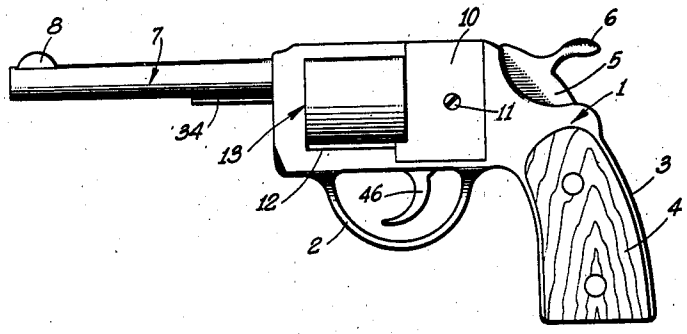


FIG. 1.

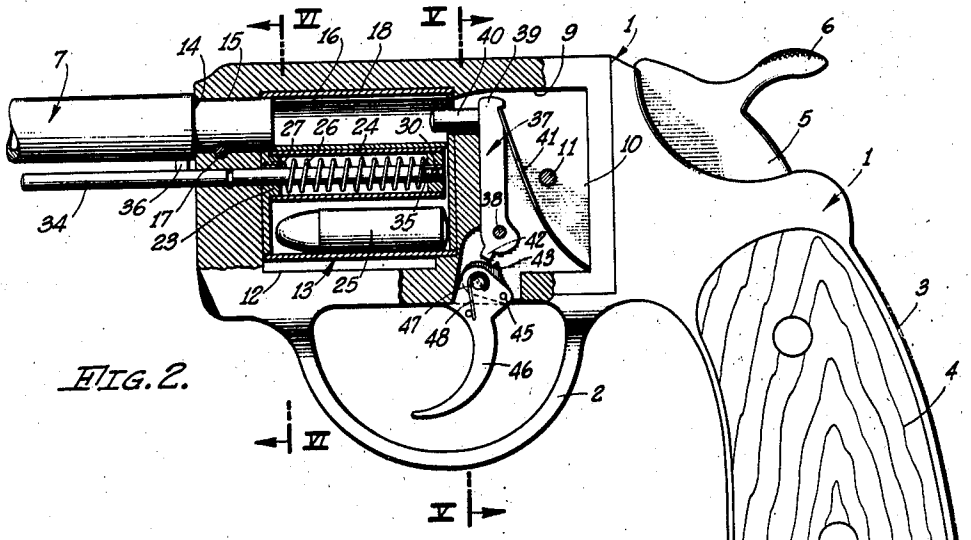


FIG. 2.

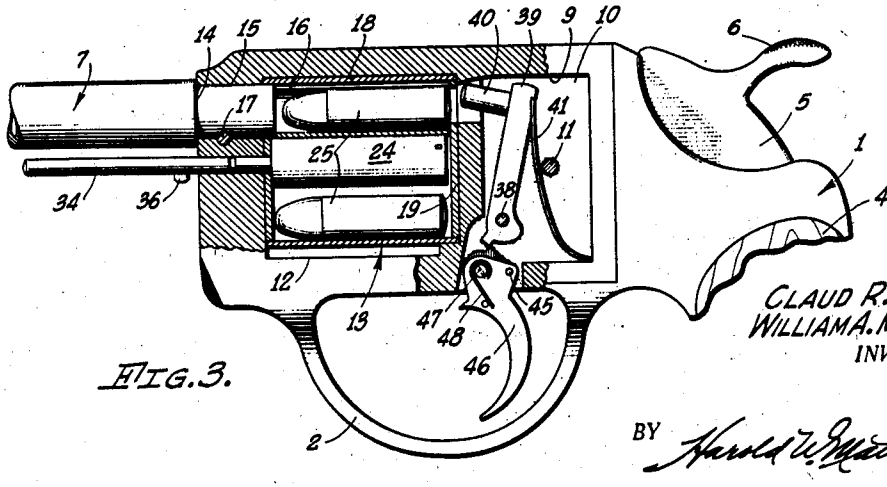


FIG. 3.

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FIG. 4.

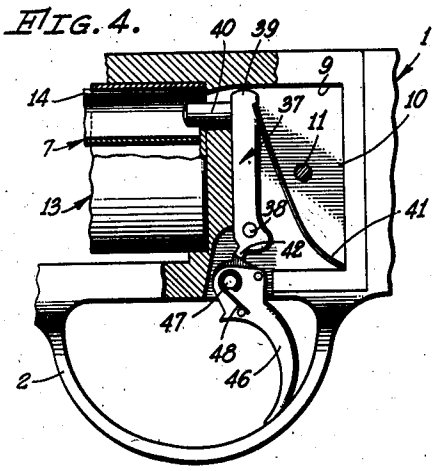


FIG. 5.

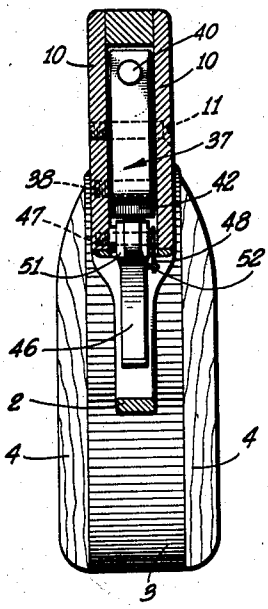
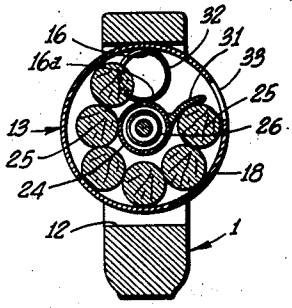


FIG. 6.



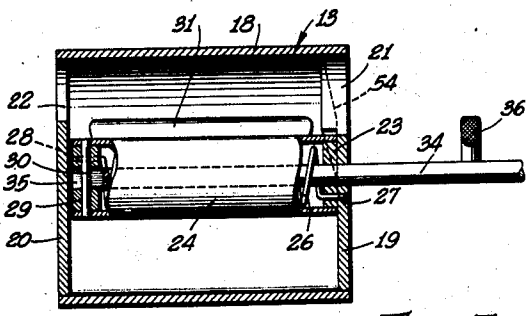


FIG. 7.

FIG. 8.

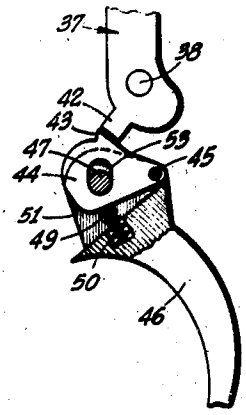
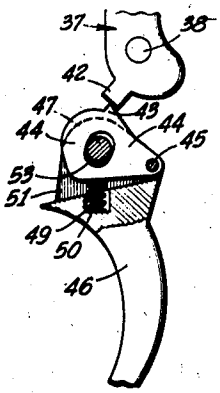


FIG. 9.



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UNITED STATES PATENT OFFICE

2,303,017

TOY

Claud R. Brown, Venice, and William A. Martel, Jr., Santa Monica, Calif., assignors to G. Man Six Shooter, Inc., Santa Monica, Calif., a corporation of California

Application March 17, 1941, Serial No. 383,774

3 Claims. (Cl. 124—48)

Our invention relates to toy fire arms and has particular reference to a toy fire arm which may, upon a single loading, be operated to successively project a plurality of projectiles.

Toy fire arms of the class to which this invention relates; namely, those in which projectiles made of wood or other light-weight material are impelled along a tubular barrel and out the muzzle end thereof, are usually of the single shot type requiring that the impelling mechanism be manually re-set before each pulling of the trigger.

The present invention is directed to providing a toy fire arm which is so constructed as to realistically resemble actual fire arms, and which includes a simple and inexpensive mechanism capable of successively projecting a plurality of projectiles from the fire arm upon a single loading and without requiring that the impelling mechanism be re-set each time the trigger is pulled.

It is, therefore, an object of our invention to provide a toy fire arm having the shape and realistic appearance of a revolver type of fire arm and which includes a simple and inexpensive projectile impelling mechanism.

It is also an object of our invention to provide a fire arm of the character set forth in the preceding paragraph which includes a spring urged impelling mechanism and trigger mechanism so arranged that the pulling of the trigger first cocks the impelling mechanism and then releases the same to impel a projectile from the barrel.

It is a still further object of our invention to provide a toy fire arm of the character set forth hereinbefore which includes a magazine for holding a plurality of projectiles at a single loading and feeding the same one at a time into a position to be impelled through the barrel.

It is also an object of our invention to provide a toy fire arm of the character set forth hereinbefore in which a spring urged pusher member is employed to feed the projectiles along a magazine channel and into alignment with the barrel and projectile impelling mechanism.

It is a still further object of our invention to provide a toy fire arm of the character set forth hereinbefore which includes a manually actuatable control means for withdrawing the pusher member to permit re-loading of the magazine.

It is also an object of our invention to provide a fire arm of the character set forth hereinbefore in which the force with which the projectiles are impelled therefrom may be readily adjusted, thus permitting the fire arm to be used by small children without danger of injury from the projectiles or, alternatively, permits the fire arm to be used for reasonably accurate target shooting by increasing the force with which the projectiles are impelled.

It is also an object of our invention to provide a fire arm construction of the character set forth in the preceding paragraphs which comprises a minimum number of parts which are of simple construction, thus permitting the fire arm to be manufactured at low cost and to be operated over a long period of time without necessitating repairs or adjustments.

Other objects and advantages of our invention will be apparent from a study of the following specifications, read in connection with the accompanying drawings, wherein:

Fig. 1 is a side elevational view of the preferred form of our invention;

Fig. 2 is an enlarged view similar to Fig. 1 with parts broken away and other parts shown in section to illustrate the details of construction, this figure also illustrating the relative positions of the parts prior to the pulling of the trigger for the purpose of firing the fire arm;

Fig. 3 is a view similar to Fig. 2 but illustrating the positions of the parts at the time the trigger is pulled sufficiently far to move the impelling mechanism to a cocked position and ready to be released;

Fig. 4 is a fragmentary view similar to Fig. 3 but illustrating the relative positions of the parts immediately after the impelling mechanism is released by a complete pull of the trigger;

Fig. 5 is a cross sectional view taken substantially along the line V—V of Fig. 2 to illustrate the relative locations of the parts;

Fig. 6 is a cross sectional view taken substantially along the line VI—VI of Fig. 2 to illustrate additional details of construction employed in the magazine;

Fig. 7 is a longitudinal sectional view through the magazine illustrating additional details of construction;

Fig. 8 is a fragmentary view of the trigger and a part of the impelling mechanism illustrating the details of construction of the trigger and trigger pawl and illustrating the relative positions of the parts after the fire arm has been fired but before the trigger is released; and

Fig. 9 is a view similar to Fig. 8 but illustrating the relative positions of the parts during the return movement of the trigger to its released position.

Referring to the drawings, we have illustrated in Fig. 1 our invention as embodied in a hand arm or pistol. The piston illustrated in Fig. 1 includes a main frame 1 having formed integrally therewith a trigger guard 2 and a depending handle or stock portion 3 with which may be integrally formed grip members 4, the stock portion 3 of the main frame and the grip portions 4 being preferably rounded and contoured to provide the conventional form of pistol grip. If desired, the grip portions 4 may comprise separate elements formed of wood, molded plastic, or other suitable material and attached to the stock portion 3 of the frame 1 by suitable attaching means.

The main frame 1 may also have formed integrally therewith a dummy hammer 5 and thumb-piece 6, these members being provided solely for the purpose of imparting a realistic appearance to the toy and having no function in the operation of the device. The main frame 1 also serves as a support for a tubular barrel 7 which may, if desired, be fitted with the usual front sight 8.

The main frame 1, trigger guard 2, dummy hammer 5 and the pistol grip 4 are all preferably formed in a single manufacturing operation as by a die stamping or die casting process, these processes permitting the frame structure to be manufactured in large quantities at low cost and permitting the parts to be formed and contoured to provide a realistic representation of an actual fire arm.

As is clearly shown in Fig. 2, the main frame 1 is apertured as indicated at 9 to receive the "firing" or projectile impelling mechanism of the gun. The aperture 9 may normally be covered as by means of covers 10 secured to each other by an attaching screw 11. The forward part of the main frame 1 is provided with a rectangular laterally extending aperture 12 in which is fitted a cylindrical magazine 13 formed to represent the cylinder of a revolver type of pistol. The magazine 13 may be secured within the aperture 12 in any suitable manner and is preferably so positioned that the upper side of the cylindrical magazine is disposed in alignment with the upper side of the barrel 7.

The rear end of the barrel 7 is preferably reduced in external diameter as indicated at 14 and received within an aperture 15 provided in the forward part of the main frame 1. The reduced diameter portion 14 of the barrel 7 extends rearwardly through the upper part of the magazine 13 and is cut away on one side as indicated at 16 in Fig. 2 to provide a trough-like portion 16a (see Fig. 6). The barrel may be secured within the frame 1 as by means of a transversely extending pin 17.

The magazine 13 preferably includes a cylindrical outer shell 18 (see Figs. 2, 6 and 7) within which are secured front and rear end members 19 and 20, respectively. The front end member is apertured at 21 to receive the barrel portion 14 and the rear end member 20 is provided with a similarly located aperture 22 for the purposes to be fully apparent hereinafter.

The front end member 19 is provided with an inwardly extending boss portion 23 providing a bearing upon which is rotatably supported an inner sleeve 24, the sleeve 24 having a diameter such that the annular space defined between the sleeve 24 and the magazine shell 18 will be of such axial length and radial thickness as to loosely receive a projectile 25 usually formed of wood or other suitable material.

The sleeve 24 is spring urged in a clockwise direction as viewed in Fig. 6 by means of a torsion spring 26, one end 27 of which is fixed relative to the front end plate 19 as by being received in an aperture formed therein, and the opposite end 28 of which is secured to the sleeve 24 as by being extended through an aperture formed in a plug member 29 which may in turn be secured to the sleeve 24 as by means of a transversely extending pin 30.

Formed integrally with the sleeve 24 or secured thereto as by soldering or brazing we provide a wing member or pusher 31 which extends radially outward from the sleeve 24 so as to engage projectiles 25 placed within the magazine and urge those projectiles in a clockwise direction around the interior of the magazine and up against a stop member 32 formed by the fragmentary portion of the barrel 7 which is passed axially through the magazine. Projectiles may be loaded into the magazine through an elongated slot or aperture 33 formed in one side of the magazine shell 18.

Provision is made for manually rotating the sleeve 24 so as to position the pusher 31 more or less as indicated in Fig. 6 so that projectiles 25 inserted through the slot 33 will lie on the front side of the pusher 31. For this purpose an axially extending shaft 34 is journaled for rotation in the front of the main frame 1 and extended axially through the interior of the sleeve 24. The innermost end of the shaft 34 may be drivably connected to the sleeve 24 as by bifurcating the end thereof as indicated at 35 in Fig. 2 and disposing the two ears of such bifurcation on opposite sides of the pin 30. The outer end of the shaft 34 preferably carries a handle member 36 which may be employed for turning the shaft 34.

When the magazine is emptied, the handle 36 and the shaft 34 may be employed to rotate the sleeve 24 against the force of the torsion spring 26 to dispose the pusher 31 in a position such as that illustrated in Fig. 6 to thereby permit a new supply of projectiles to be loaded into the slot 33 and into a position in front of the pusher 31.

The "firing" or impelling mechanism for the gun is mounted in the aperture 9 and includes an impact member 37 pivotally mounted as at 38 for movement of its upper end 39 generally in the direction of the length of the barrel 7. The upper end 39 supports a cylindrical projection 40 in a position to be extended through the opening 22 into the cut away portion 16 of the barrel 7 and engage the rear end of a projectile resting against the stop member 32 and in the trough-like portion 16a when the impact member 37 is moved to a fired position such as that illustrated in Fig. 2. The impact member 37 is preferably spring pressed to this position by means of a leaf spring 41.

The lower end of the impact member 37 carries a downwardly projecting tail-piece 42 adapted to be engaged by a tooth 43 of a pawl member 44 pivotally supported as by means of pivot pin 45 upon a trigger 46. The trigger 46 is pivotally supported upon the main frame 1 as by means of a pivot pin 47 and is spring urged to a released position such as that illustrated in Fig. 2 as by means of a hairpin spring 48.

The pawl 44 is normally urged to an upper position such as that illustrated in Figs. 2 and 3

by means of a small compression spring 49 seated within a counter-bore 50 formed in the upper part of the trigger 46, this upper part being slotted or bifurcated to receive the pawl 44 between the arms 51 and 52 forming such bifurcated end. The trigger pivot pin 47 is preferably passed through an aperture 53 in the pawl 44 and serves to limit the movement of the pawl about its pivot 45, the aperture 53 being elongated in the direction of pawl movement to define the limits of such movement.

The spring 49 serves to normally position the pawl in such location that the tooth 43 is disposed above the tail-piece 42, whereupon a retracting movement of the trigger 46 serves to engage the tooth 43 with the tail-piece 42 and force the impact member 37 to be withdrawn toward a cocked position such as that illustrated in Fig. 3.

Since the movement of the tail-piece 42 and the pawl tooth 43 are both about spaced pivot points, they also move vertically relative to each other as the trigger and impact member are moved from the positions illustrated in Fig. 2 to the positions illustrated in Fig. 3. A slight additional retraction of the trigger 46 from the position illustrated in Fig. 3 serves to lower the tooth 43 relative to the tail-piece 42 a sufficient distance to permit the tail-piece 42 to pass rearwardly over the top of the tooth 43. Thus, the impact member is released and the spring 41 impels the same to its fired position as is illustrated in Fig. 4 to cause the cylindrical projection 40 to forcibly strike the end of a projectile 25 and impel the same through the tubular barrel 7.

When the pressure on the trigger 46 is released, the trigger spring 48 will return the trigger to its released position as is illustrated in Fig. 2, such movement of the trigger being permitted by the pivotal mounting of the pawl 44, whereby the tooth 43 is caused to pass under the tail-piece 42 in the manner illustrated in Fig. 9. Immediately upon the impelling of the projectile out of the magazine and along the barrel 7, the magazine spring 28 serves to move the pusher member 31 a sufficient distance to place a new projectile against the cylindrical projection 40. A second pull of the trigger 46 withdraws the projection 40 and allows the magazine spring 26 to move the projectile up against the stop member 32 and into the trough-like portion 16a where it is struck by the projection 40 upon the completion of the trigger pull in the manner above described. Thus, the entire magazine may be emptied by merely pulling the trigger a number of times corresponding to the number of projectiles contained within the magazine. Whenever the magazine is exhausted, it may be reloaded as previously described through the use of the shaft 34 and its handle 36.

In order that the projectiles 25 may be easily fed through the arcuate channel formed between the magazine shell 18 and the sleeve 24, the exterior of the sleeve and the interior of the shell are preferably made very smooth and the axial length of the magazine is made somewhat longer than the length of the projectiles to be enclosed therein, so that a relatively light-weight spring 26 may be employed. Thus, the pressure of one projectile against the projectile being impelled by the impact member does not seriously impair the impelling of that projectile through the barrel.

It is desirable, in order that all of the projectiles be impelled from the gun with the same force, that each of the projectiles be moved to a position abutting the rear end member 20 of the magazine at the time they are struck by the impact member. For this purpose the front end member 19 is thickened somewhat at its upper portion and provided with a tapering cam-like surface indicated by dotted lines 54 in Fig. 7. This surface is engaged by the nose of the projectiles as they are moved along the magazine channel and functions to urge each of the projectiles rearwardly a distance sufficient to bring the rear ends thereof substantially against the rear end member 20. As soon as the projectile is moved into the trough-like portion 16a of the barrel, the nose of the projectile is aligned with and received within the opening through the barrel so that the force tending to urge the projectile rearwardly is removed. This insures that each projectile will be impelled from the gun with the same force as all other projectiles.

While we have described our invention as being applied to a pistol, it will be readily appreciated that the same type of firing and magazine mechanism could also be used with equal facility on other types of toy fire arms, such as automatic pistols, rifles, and machine guns.

Furthermore, while we have illustrated the use of a cylindrical magazine, it is to be understood that our invention also comprehends the use of a straight linear type of magazine, such as that at present employed on automatic pistols.

From the foregoing it will be observed that we have provided a toy fire arm closely resembling in form and appearance the current types of revolvers and that the firing mechanism therefor is so arranged as to permit the toy gun to be used with complete safety by small children.

The magazine and firing mechanism of our invention permits the manufacture of an automatic type of toy fire arm at low cost, the relatively small number of parts employed and the simplicity of construction permitting the inexpensive manufacture and relatively long life operation without necessitating repairs or adjustments.

While we have shown and described the preferred embodiment of our invention, we do not desire to be limited to any of the details of construction shown or described herein, except as defined in the appended claims.

We claim:

1. In a toy fire arm including a tubular barrel and an impelling mechanism actuatable to impel a projectile along said barrel, the combination of: a cylindrical magazine for receiving a plurality of projectiles and having an axial length substantially equal to the length of said projectiles and having an opening through which projectiles may be inserted into said magazine; a cylindrical member mounted coaxially in said magazine for defining therewith an arcuate projectile guiding channel surrounding said member; means mounting said magazine in such position below said barrel that the inner end of said barrel extends transversely across the width of the uppermost portion of said channel, the inner end of said barrel being cut away along one side on a generally vertically disposed but sloping plane to define a trough-like lower barrel portion disposed below an opening through which projectiles moved along said channel may pass to rest in said trough-like barrel portion; and means in said channel for urging said projectiles along said channel toward said barrel.

2. In a magazine for a toy fire arm including a tubular barrel and an impelling mechanism actuatable to impel a projectile along said barrel, the combination of: a cylindrical housing on said fire arm for receiving a plurality of projectiles having an axial length exceeding the length of said projectiles and having an opening through which projectiles may be inserted into said housing; a cylindrical member mounted coaxially in said housing for defining therewith an arcuate projectile guiding channel surrounding said member; stop means extending across said channel; spring urged means in said channel for urging said projectile toward said stop means; and a camming surface formed along one side of said guiding channel and engageable by one end of each of said projectiles for moving said projectiles axially in said housing toward the impelling mechanism of said fire arm as they are moved toward said stop member.

3. In a magazine for a toy fire arm, the combination of: a hollow cylindrical housing for receiving a plurality of projectiles; a hollow cylindrical sleeve mounted coaxially within said housing for defining in said housing an arcuate projectile guiding channel surrounding said sleeve; a pivot shaft extending axially through said sleeve and secured to said sleeve; means journaling said shaft for rotation in said housing; a torsion spring in said sleeve surrounding said shaft having one end engaged with said housing and having the other end engaged with said sleeve for urging rotation of said sleeve in said housing; and a wing member carried by said sleeve extending across said channel for engaging and feeding said projectiles therealong, said shaft being extended also exteriorly of said housing whereby said wing member may be manually moved out of engagement with said projectiles against the urging of said torsion spring.

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