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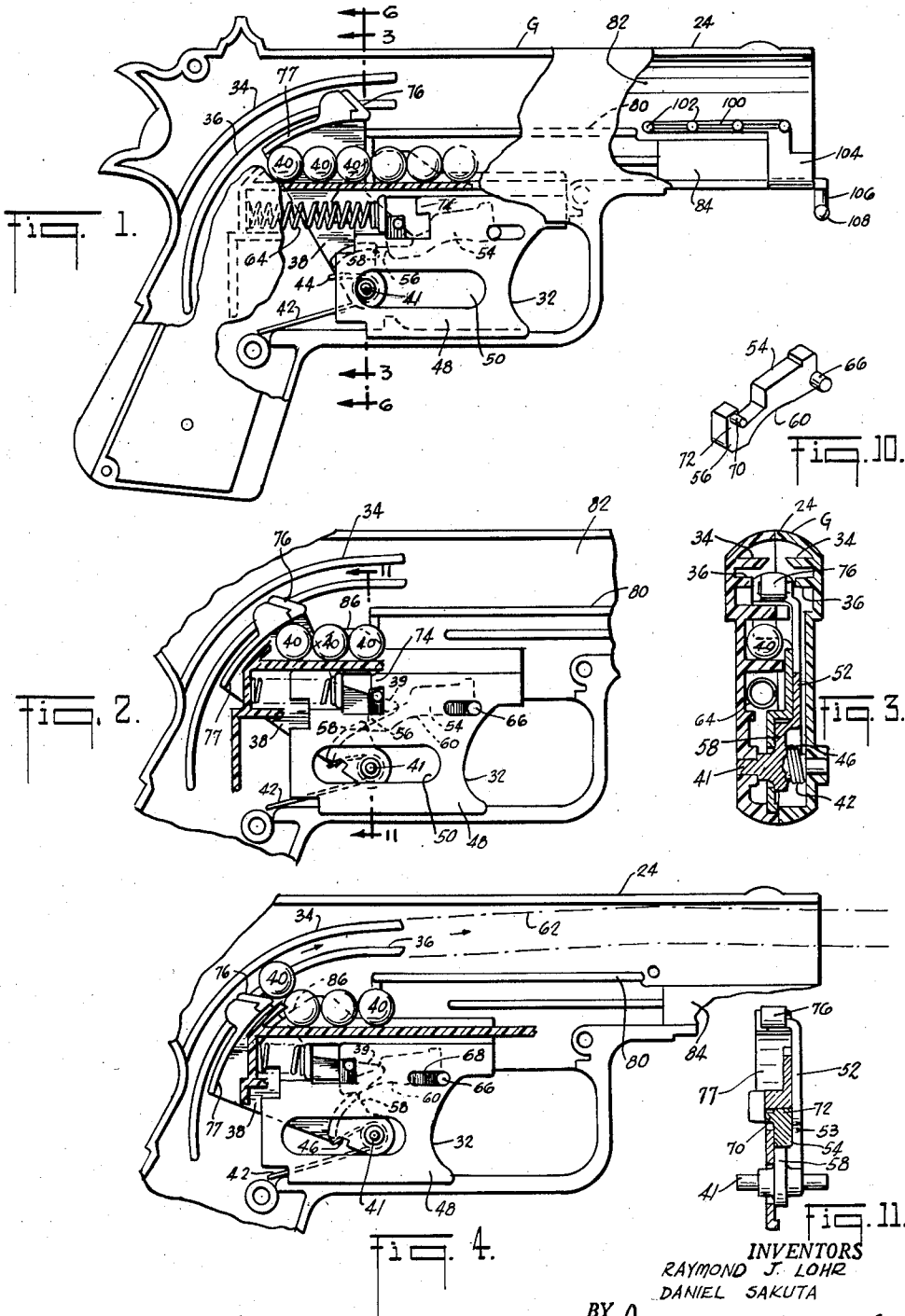
R. J. LOHR ET AL

2,830,568

TOY GUN

Filed Jan. 10, 1955

2 Sheets-Sheet 1



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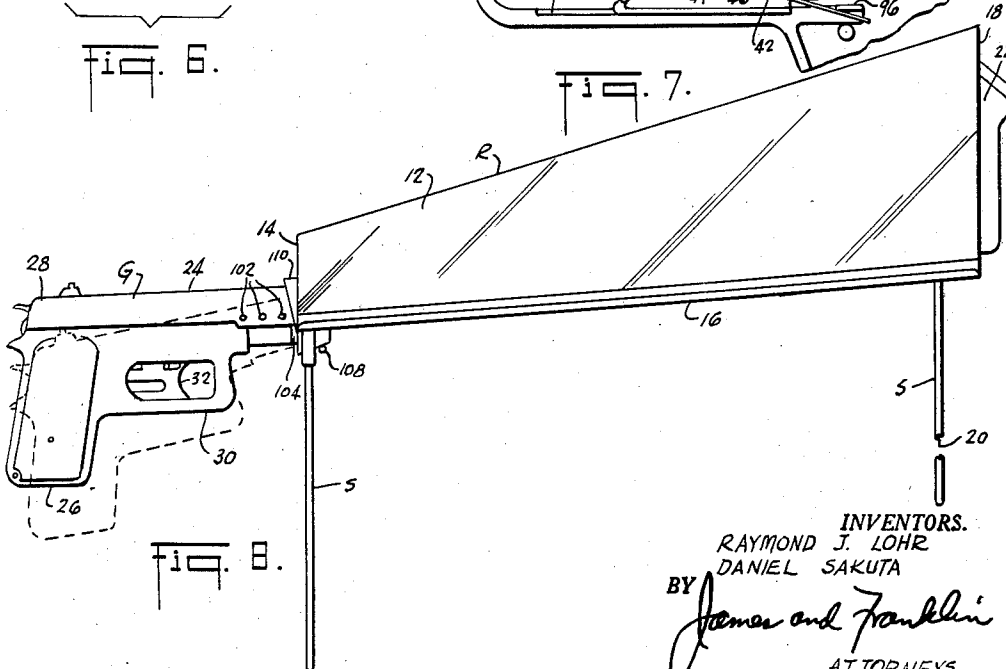
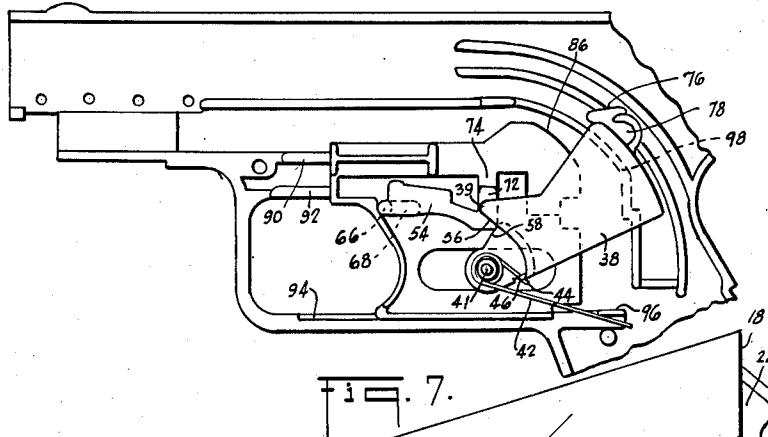
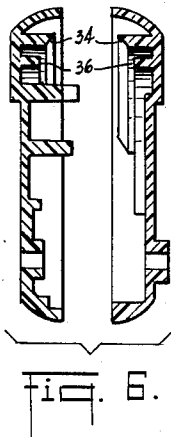
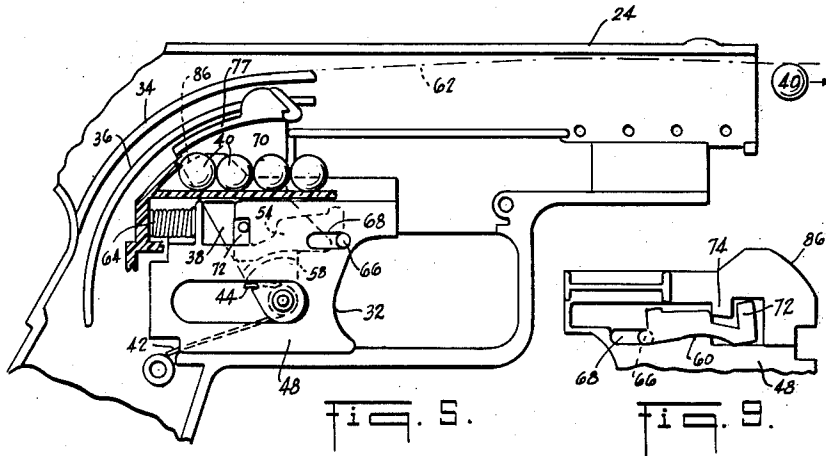
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TOY GUN

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Application January 10, 1955, Serial No. 480,728

13 Claims. (Cl. 124-7)

This invention relates to toys, especially toy guns, and more particularly a gun for use with a toy shooting range.

The primary object of the present invention is to generally improve toy guns. A more particular object is to provide a gun which, although a toy, and although used with round balls, will nevertheless accurately repeat the trajectory taken by the ball from one shot to the next, so that the gun may be used for target shooting purposes.

With these objects in view we have devised a gun which operates on a catapult principle. However, the trajectory is determined not by the catapult alone, but rather is accurately determined by arcuate guide surfaces or rails, so that the catapult arm provides only the propulsion, whereas the curved guide rails determine the direction of flight.

A further object of the invention is to secure accurate guidance by means of rails without introducing appreciable friction, and with this object in view we provide top guide surfaces which are disposed at an upwardly convergent angle when viewed in cross-section, and the driving portion of the catapult is disposed at an angle such as to tend to urge the ball upwardly against the top guide surfaces.

A further object is to embody the mechanism in a gun of realistic appearance, and for this purpose the gun body is shaped like an automatic pistol, and the arcuate guide surfaces are disposed in the breech portion of the gun. The barrel of the gun is made so large in cross-section and is so positioned relative to the arcuate guide surfaces that a projected ball does not even touch the barrel during its flight. Thus there is neither friction nor change in trajectory, and instead the flight of the ball is kept free.

In accordance with a further feature and object of the invention, the gun is designed to act as an automatic repeating gun, and for this purpose it is provided with another barrel, specifically, a lower barrel which receives a series of balls and acts as a magazine. The rearmost ball is fed to the catapult, and a further object of the invention is to provide means for insuring this feed of the rearmost ball.

To accomplish the foregoing objects, and other more specific objects which will hereinafter appear, our invention resides in the toy gun elements, and their relation one to another, as are hereinafter more particularly described in the following specification. The specification is accompanied by drawings, in which:

Fig. 1 is an elevation of a toy gun embodying features of our invention, with most of the nearer half of the gun body removed to expose the mechanism;

Fig. 2 is a fragmentary section showing the relation of the parts as the trigger is pulled partway back;

Fig. 3 is a transverse section taken approximately in the plane of the line 3-3 of Fig. 1;

Fig. 4 is a view similar to Fig. 2, but showing the relation of the parts when the trigger has been pulled back far enough to release the catapult;

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Fig. 5 is a similar view showing the relation of the parts as the catapult finishes its firing stroke;

Fig. 6 is a transverse section through the molded halves of the gun body, with the halves separated somewhat, and corresponds to a section taken approximately in the plane of the line 6-6 in Fig. 1;

Fig. 7 is a view similar to Fig. 2 in showing the trigger pulled partway back, but viewing the mechanism from the opposite side;

Fig. 8 is a side elevation of a toy shooting range with which the gun may be used;

Fig. 9 is a fragmentary view similar to a part of Fig. 7 but showing the sear in a different position relative to the trigger plate;

Fig. 10 is a perspective view of the sear; and

Fig. 11 is a fragmentary section taken approximately in the plane of the line 11-11 of Fig. 2.

Referring to the drawing, and more particularly to Fig. 8, the toy shooting range there shown comprises an enclosed range R raised by supports S and having a gun G secured thereto. The range R has a transparent plastic housing 12, preferably including a transparent end wall 14. The enclosure is completed by means of a sheet metal bottom wall 16, which may be formed integrally with a sheet metal end wall or target wall 18.

In Fig. 8 the righthand support S has been shown broken away at 20, but in practice is long enough to support the range in the position shown, and indeed the righthand end of the range is somewhat higher than the lefthand end, in order to secure automatic return of the balls to the gun. The gun is pivotally connected to the range so that it may be aimed upward and sideward enough to cover the entire target area. The elevation of the range by the supports S provides room for the pistol grip, and for aiming the pistol.

It will be understood that the enclosed range is provided with a quantity of balls, and that the gun may be fired repeatedly at the targets in the range, the balls returning automatically to the gun to be fired again, except that certain targets may be so constructed as to trap and retain the balls, as indicated by the compartment 22 (Fig. 8), and even the trapped balls may be released when desired, at the conclusion of a series of shots. The gun G simulates a standard automatic pistol, and comprises the usual barrel portion 24, grip portion 26, breech portion 28, trigger guard 30, and trigger 32.

The shooting range need not be described here in greater detail, it forming the subject matter of our companion application Serial No. 480,649, filed concurrently herewith, which describes the shooting range in much greater detail, and claims the same.

Referring now to Fig. 1, the gun comprises arcuate guide surfaces 34 and 36 to determine the trajectory of a ball propelled along said surfaces. There is a catapult arm 38 which is pivoted at 41, and normally urged forward to the position shown by means of a spring 42, which is coiled about the pivot, and the opposite end of which bears against the arm 38, as shown at 44. The other side of catapult 38 (see Fig. 7) is provided with a tooth 46 forming a slot or recess into which the end 44 of the spring is received and anchored.

Reverting to Fig. 1, the trigger 32 forms part of a trigger plate 48 which is slidable in mating guide channels formed between the opposite sides of the gun body. The trigger plate is slotted at 50 to clear the pivot 41 of the catapult. The arm of the catapult is sidewardly offset, as is best shown at 52 in Fig. 3, in order to clear the trigger plate and the lower barrel or magazine, so that there is no interference with rearward movement of the balls 40 toward the guide rails of the catapult.

The trigger functions to retract the catapult and at the

same time to tension its spring 42. At the end of its rearward movement the catapult is released. For this purpose the trigger plate carries a dog or sear 54, best shown in Fig. 10. The rear end 56 of the sear is adapted to bear against a mating abutment surface 58 of the catapult arm (see Figs. 1, 7 and 11). In Fig. 1 these parts are not yet in contact. In Fig. 2 the trigger 32 has been moved rearwardly, and it will be seen that the parts 56 and 58 are in contact, and that the sear has moved the catapult arm 38 rearward. This motion continues until the catapult has moved so far rearward and downward as to receive the rearmost ball 40 from the magazine or lower barrel. Finally the bottom surface of the sear at the rear end of the sear moves over and beyond the abutment part 58 of the catapult, and the latter begins to fly forward, as shown in Fig. 4. To aid this purpose the lower part of the sear is cut away arcuately, as shown at 60 in Figs. 2 and 10.

Referring now to Fig. 5, the catapult arm 38 has flown all the way forward, and has thrown the ball 40 out of the gun, the ball following a trajectory somewhat as indicated by the broken line 62. At this time the trigger 32 is still in rearward position, it having meanwhile compressed a compression spring 64, which acts as a restoring spring for the trigger. In Fig. 1 the spring is expanded because the trigger is in forward position.

It will be noted in Fig. 7 that the catapult arm 38 has a forwardly extending lip 39. This lies in the plane of the offset part 52 of the catapult arm, and comes alongside or just outside the rear end of the sear. It functions to hold the sear against sideward movement during its working stroke, the sear being positioned between the trigger plate on one side, and the part 39 of the catapult on the other.

During the return or forward movement of the trigger the sear 54 readily passes over the abutment portion 58 of the catapult, and for this purpose the sear is upwardly movable relative to the trigger plate 48. For this purpose the sear has a trunnion 66 which is received in a bearing slot 68 in the trigger plate. The sear has another integral pin 70 and an upstanding lug 72, best shown in Figs. 7, 9 and 10. The lug 72 bears against a support stop 74 (Fig. 7) when the trunnion 66 is at the left end of its bearing slot 68 (Fig. 7), which is the situation as the trigger is pulled rearwardly, with surfaces 56 and 58 in contact.

However, after the gun has been fired, and when the trigger is moving forwardly, the sear simply shifts from the position shown in Fig. 7 to the position shown in Fig. 9, with the trunnion 66 at the righthand end of the slot 68, and at that time the lug 72 moves alongside the stop 74. This permits the sear to rise to an elevated position as shown in Fig. 9, and it readily passes over the part 58 of the catapult arm. When the trigger has moved all the way forward the sear is free to drop gravitationally, and does so. On the next pull of the trigger the sear again acts to force the catapult arm back, as previously described.

In Figs. 4 and 5 it will be noted, from inspection of the line 62 indicating the trajectory of the ball, that the barrel portion 24 is so large in cross-section, and so positioned relative to the arcuate guide surfaces, that the projected ball does not touch the barrel during its flight. We consider this important, if a uniform trajectory is to be maintained.

Reverting now to Figs. 1 and 6, the guide surfaces 34 may be called top guide surfaces, and the guide surfaces 36 may be called side guide surfaces. The top guide surfaces are the more important, and they are disposed at an upwardly convergent angle when viewed in cross-section, as shown in Figs. 3 and 6. The driving portion 76 of the catapult arm is disposed at an angle such as to tend to urge the ball upwardly against the top guide surfaces 34 (see any of Figs. 1, 2, 4 and 5). Thus the top guide surfaces alone determine the path of the ball, and the

side guide surfaces 36 may be designed with adequate clearance on each side of the ball. They introduce little if any friction because the ball tends to be centered by the angular surfaces of the top guide rails 34.

The driving portion 76 of the catapult is preferably made of a frictional material. In the specific structure here shown it is a pad of rubber, and it is secured firmly in position, as by means of the undercut relation shown at 78 in Fig. 7. Perhaps because of its resilience, or perhaps because of its frictional surface, the rubber pad 76 improves the operation of the gun.

As so far described the gun might be used to fire a single ball. However, it is a repeating gun, and referring to Fig. 1 the barrel 24 is divided by a partition 80 into an upper barrel 82 and a lower barrel 84, the latter acting as a magazine to receive a series of balls 40. The rearmost ball tends to move gravitationally between the spaced side guides 36 to the top guides 34, and as previously explained, there is no interference by the catapult arm because the latter is offset sidewardly between its upper portion at pad 76, and its lower portion at abutment 58 and pivot 41. The latter preferably consists of trunnions die cast integrally with the catapult arm, as is best shown in Fig. 3. Premature feed is prevented by the arcuate flange or skirt 77 of the catapult.

However, in the present structure the feed of the rearmost ball to the arcuate guides is made relatively positive by the provisions of a ball feed cam on the trigger plate. Specifically, reference may be made to the cam surface 86, perhaps best shown in Figs. 7 and 9. This forms a part of the trigger plate 48, and it moves rearwardly with the trigger. It is so located relative to the parts 56 and 58 of the sear and catapult, that the skirt 77 and the driving pad 76 of the catapult move rearward behind or beneath the endmost ball just as the cam 86 reaches the endmost ball, and then moves it upward and rearward to the arcuate guide surfaces, and above the pad 76, preparatory to the firing stroke of the catapult. In Fig. 7 there is a ball stop ridge 98 which may be added to stop the rearmost ball. The cam 86 moves the ball sideward around the ridge 98.

The body of the gun is preferably made of two molded halves, and we prefer to mold the same out of one of the known plastics, for example "styrene." Thus the exterior may be given appropriate configuration, ornamentation and knurling, to rather realistically simulate a real automatic pistol. At the same time the interior of the molded halves may be provided with substantially all of the guide surfaces and bearing surfaces needed for the moving parts of the gun.

The latter are preferably diecast, and there are only three diecast parts and two springs. The three parts are the trigger plate, the catapult arm, and the sear, and the springs are the catapult spring 42 and the trigger restoring spring 64. The pistol halves as molded may include several distributed dowel pins and mating holes to insure registration of the halves when they are secured together, as by cementing or welding. The pistol halves as molded include the arcuate guide rails 34 and 36, the partition 80 between the upper and lower barrels of the gun, and the appropriate trigger plate guide surfaces indicated at 90, 92 and 94 in Fig. 7. The motion of the trigger plate is limited by the ends of these guide tracks. There is also an anchorage 96 for the lower end of the main catapult spring 42. One side of the gun as molded further includes the ball stop ridge 98, which serves to prevent premature rearward movement of the balls from the magazine to the arcuate guide rails. When cam 86 reaches the ball it shifts it around the stop ridge 98.

The gun in the particular form here shown includes one additional diecast part which is secured at the muzzle of the gun, and which serves to strongly yet pivotally anchor the gun to the target range, as shown in Fig. 8 of the drawing. Specifically, there is a diecast plate 100 (Fig. 1) which

acts as a continuation of the partition 80 between the upper and lower barrels 82 and 84. It has a series, in this case four, rivets 102 molded along each side edge, and these pass through mating holes in the sides of the gun, and are riveted at their outer ends, thus serving to additionally hold together the halves of the gun.

The forward part 104 is U-shaped in section, and acts as the lower part of the muzzle of the gun. It is this part which receives the balls running back along the bottom of the range. There is additionally an inverted T-shaped part having a stem 106 and a crossbar 108. This acts as the fulcrum which anchors the gun to a mating part of the target range, and at the same time affords adequate universal movement or aiming of the gun.

The range housing preferably has a visor-like part 110 (Fig. 8). The relation of the parts is preferably so made, by proper location of the visor-like part 110, that the gun cannot be raised beyond a horizontal position of the gun barrel. In other words, the gun can be aimed upward and sideward but not downward, and this is convenient because it simplifies the construction of the lower barrel or magazine of the gun, in that it is not necessary to provide means to prevent the balls from rolling forwardly out of the muzzle of the gun, such as would be needed if the gun could be aimed downward.

It is believed that the construction and operation as well as the advantages of our improved gun will be apparent from the foregoing detailed description. The gun is a harmless toy of short range, and fires simple round balls, yet accurately repeats the trajectory taken by the ball from one shot to the next, and thus makes it possible to hit a target by corrective repeat firing. The gun operates on a catapult principle, but the trajectory is determined by arcuate guide surfaces or rails. The gun simulates an automatic pistol in appearance, but the parts are so designed that the ball does not touch the barrel during its flight. The gun is reloaded at the muzzle, so that the balls may be returned to the gun without opening an enclosed range. When working with a shooting range which automatically returns the balls, the supply of shots seems to be inexhaustible.

It will be understood that while we have shown and described our invention in a preferred form, changes may be made in the structure shown, without departing from the scope of the invention, as sought to be defined in the following claims.

We claim:

1. A repeating toy gun for use with a target game, said gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, said upper barrel being relatively large in section, the breech portion of said gun having arcuate guide surfaces to receive the rearmost ball from said lower barrel and along which surfaces a ball being expelled from the gun is guided, said guide surfaces serving to determine the trajectory of said ball after it is propelled along and leaves said surfaces, a pivoted catapult for projecting a ball along said arcuate guide surfaces and through the upper barrel, resilient means for actuating said catapult, and a trigger for retracting said catapult and tensioning said resilient means and thereafter releasing said catapult, the upper barrel of said gun being so large in cross-section and so positioned ahead of the aforesaid arcuate guide surfaces that a projected ball does not touch the barrel during its flight, said trigger forming a part of a trigger plate slidably received in said gun, a compression spring urging said trigger plate forwardly, a sear carried by said trigger plate and adapted to bear against said catapult arm when pulled rearward, said catapult arm being offset sidewardly in order to clear the lower barrel for rearward movement of balls toward the breech of the gun.

2. A repeating toy gun for use with a target game, said gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel act-

ing as a magazine to hold a series of balls, said upper barrel being relatively large in section, the breech portion of said gun having arcuate guide surfaces to receive the rearmost ball from said lower barrel and along which surfaces a ball being expelled from the gun is guided, said guide surfaces serving to determine the trajectory of said ball after it is propelled along and leaves said surfaces, a pivoted catapult for projecting a ball along said arcuate guide surfaces and through the upper barrel, resilient means for actuating said catapult, and a trigger for retracting said catapult and tensioning said resilient means and thereafter releasing said catapult, the upper barrel of said gun being so large in cross-section and so positioned ahead of the aforesaid arcuate guide surfaces that a projected ball does not touch the barrel during its flight, said trigger forming a part of a trigger plate slidably received in said gun, a compression spring urging said trigger plate forwardly, a sear carried by said trigger plate and adapted to bear against said catapult arm when pulled rearward, said catapult arm being offset sidewardly in order to clear the lower barrel for rearward movement of balls toward the breech of the gun, and said trigger plate having a cam portion for lifting the rearmost ball upwardly to the guide surfaces preparatory to release of the catapult.

3. A repeating toy gun for use with a target game, said gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, said upper barrel being relatively large in section, the breech portion of said gun having arcuate top guide surfaces to receive the rearmost ball from said lower barrel and along which surfaces a ball being expelled from the gun is guided, said guide surfaces serving to determine the trajectory of said ball after it is propelled along and leaves said surfaces, said top guide surfaces being disposed at an upwardly convergent angle when viewed in cross section, a pivoted catapult for projecting a ball along said arcuate guide surfaces, resilient means for actuating said catapult, and a trigger for tensioning said resilient means and thereafter releasing said catapult, said gun having a gun body simulating an automatic pistol, the barrel of said gun being so large in cross-section and so positioned relative to the aforesaid arcuate guide surfaces that a projected ball does not touch the barrel during its flight, said trigger forming a part of a trigger plate slidably received in said gun, a compression spring urging said trigger plate forwardly, a sear carried by said trigger plate and adapted to bear against said catapult arm when pulled rearward, said catapult arm being offset sidewardly in order to clear the lower barrel for rearward movement of balls toward the breech of the gun, and said trigger plate having a cam portion for lifting the rearmost ball in the magazine upwardly to the guide surfaces preparatory to release of the catapult.

4. A repeating toy gun for use with a target game, said gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, said upper barrel being relatively large in section, the breech portion of said gun having arcuate top guide surfaces to receive the rearmost ball from said lower barrel and along which surfaces a ball being expelled from the gun is guided, said guide surfaces serving to determine the trajectory of said ball after it is propelled along and leaves said surfaces, said top guide surfaces being disposed at an upwardly convergent angle when viewed in cross-section, a pivoted catapult for projecting a ball along said arcuate guide surfaces, the driving portion of said catapult being disposed at an angle such as to tend to urge a ball upwardly against the top surfaces, resilient means for actuating said catapult, and a trigger for retracting said catapult and tensioning said resilient means and then releasing said catapult, the upper barrel of said gun being so large in cross-section and so

positioned ahead of the aforesaid arcuate guide surfaces that a projected ball does not touch the barrel during its flight, said trigger forming a part of a trigger plate slidably received in said gun, a spring urging said trigger plate forwardly, a sear carried by said trigger plate and adapted to bear against said catapult arm when pulled rearward, a part of said catapult arm being offset sidewardly in order to clear the lower barrel for rearward movement of balls toward the breech of the gun, and said trigger plate having a cam portion for lifting the rearmost ball in the magazine upwardly to the guide surfaces preparatory to release of the catapult.

5. A repeating toy gun comprising a gun body having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, the breech portion of said gun having arcuate guide surfaces which curve upward and forward in an arcuate path about an axis transverse to and well below the barrels and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, a catapult arm pivoted near said transverse axis for projecting said rearmost ball along said arcuate guide surfaces and through the upper barrel, resilient means for actuating said catapult arm, and a trigger for retracting said catapult arm and tensioning said resilient means and thereafter releasing said catapult, said catapult arm being shaped with a sidewardly offset portion so that its motion is not obstructed by the balls in the magazine ahead of the rearmost ball.

6. A repeating toy gun for use with a target game, said gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel being open at its muzzle end for receiving balls and acting as a magazine to hold a series of balls, said upper barrel being relatively large in section, the breech portion of said gun having arcuate guide surfaces which curve upward and forward in an arcuate path about an axis transverse to and well below the barrels and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, said guide surfaces serving independently of said upper barrel to determine the trajectory of said ball after it is propelled along and leaves said surfaces, a catapult arm pivoted near said transverse axis for projecting a ball from the rear end of the magazine along said arcuate guide surfaces and through the upper barrel, resilient means for actuating said catapult arm, and a trigger for retracting said catapult and tensioning said resilient means and thereafter releasing said catapult, said catapult arm being so shaped with a sidewardly offset portion that its motion is not obstructed by the balls in the magazine ahead of the rearmost ball, the upper barrel of said gun being so large in cross-section and so positioned ahead of the aforesaid arcuate guide surfaces that a projected ball does not touch the barrel during its flight.

7. A repeating toy gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, said upper barrel being relatively large in section, the breech portion of said gun having spaced top guide surfaces which curve upward and forward in an arcuate path and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, said guide surfaces serving independently of said upper barrel to determine the trajectory of a ball after it is propelled along and leaves said surfaces, said top guide surfaces being disposed at an upwardly convergent angle when viewed in cross section, a pivoted catapult for projecting a ball from the rear end of the magazine along said arcuate guide surfaces, said catapult being so shaped that its motion is not obstructed by the balls in the magazine ahead of the rearmost ball, the driving portion of said

catapult being disposed at an angle such as to tend to urge a ball upwardly against the top surfaces, and said ball tending to center itself between said top guide surfaces, resilient means for actuating said catapult, and a trigger for releasing said catapult.

8. A repeating toy gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, said upper barrel being relatively large in section, the breech portion of said gun having spaced top guide surfaces and spaced side guide surfaces which curve upward and forward in an arcuate path and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, said guide surfaces serving independently of said upper barrel to determine the trajectory of a ball after it is propelled along and leaves said surfaces, said top guide surfaces being disposed at an upwardly convergent angle when viewed in cross section, a pivoted catapult for projecting a ball from the rear end of the magazine along said arcuate guide surfaces, the driving portion of said catapult being disposed at an angle such as to tend to urge a ball upwardly against the top surfaces, said ball tending to center itself between said top guide surfaces, said side guide surfaces having adequate clearance therebetween to permit said ball to freely center itself between the top guide surfaces, resilient means for actuating said catapult, and a trigger for retracting said catapult and tensioning said resilient means and thereafter releasing said catapult.

9. A repeating toy gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, the breech portion of said gun having arcuate guide surfaces which curve upward and forward in an arcuate path about an axis transverse to and well below the barrels and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, a catapult arm pivoted near said transverse axis for projecting a ball from the rear end of the magazine along said arcuate guide surfaces, resilient means for actuating said catapult arm, and a trigger for retracting said catapult arm and tensioning said resilient means and thereafter releasing said catapult arm, said trigger forming a part of a trigger plate slidably received in said gun, a compression spring urging said trigger plate forwardly, a sear carried by said trigger plate and adapted to bear against said catapult arm when pulled rearward, said catapult arm being offset sidewardly in order to clear the magazine so that its motion is not obstructed by said magazine.

10. A toy gun comprising a gun body including a barrel, spaced top guide surfaces which curve upward and forward in an arcuate path and along which arcuately curved guide surfaces a ball being expelled from the gun is guided, said guide surfaces serving independently of the barrel to determine the trajectory of a ball after it is propelled along and leaves said surfaces, said spaced top guide surfaces being disposed at an upwardly convergent angle when viewed in cross section, said guide surfaces being tangential to said ball, a pivoted catapult for projecting said ball along said arcuate guide surfaces, the driving portion of said catapult being disposed at an angle such as to tend to urge said ball upwardly against the top guide surfaces, said ball tending to center itself between said top guide surfaces, resilient means for actuating said catapult, and a trigger for releasing said catapult, the barrel of said gun extending forward of said guide surfaces but being so large in cross-section and so positioned relative to the aforesaid arcuate guide surfaces that said projected ball does not touch the barrel during its flight after leaving said guide surfaces.

11. A repeating toy gun comprising a gun body having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, the breech

portion of said gun having arcuate guide surfaces which curve upward and forward in an arcuate path about an axis transverse to and well below the barrels and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, a catapult arm pivoted near said transverse axis for projecting said rearmost ball along said arcuate guide surfaces and through the upper barrel, resilient means for actuating said catapult arm, and a trigger for retracting said catapult arm and tensioning said resilient means and thereafter releasing said catapult arm, said catapult arm being shaped with a sidewardly offset portion so that its motion is not obstructed by the balls in the magazine ahead of the rearmost ball, and the driving portion of said catapult arm being provided with a pad made of a relatively soft frictional material for engaging the ball being projected thereby.

12. A repeating toy gun for use with a target game, said gun comprising a gun body having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, the breech portion of said gun having arcuate guide surfaces which curve upward and forward in an arcuate path about an axis transverse to and well below the barrels and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, a catapult arm pivoted near said transverse axis for projecting said rearmost ball along said arcuate guide surfaces and through the upper barrel, resilient means for actuating said catapult arm, and a trigger for retracting said catapult arm and tensioning said resilient means and thereafter releasing said catapult arm, said catapult arm being shaped with a sidewardly offset portion so that its motion is not obstructed by the balls in the magazine ahead of the rearmost ball, the gun body being molded out of two halves on either side of a vertical parting plane, the muzzle end of said gun having a horizontal metal plate disposed between the upper and lower barrels, said plate having projections along its longitudinal side edges, said projections being received in mating apertures in the molded sides of the gun in order to fixedly position the plate, the forward end of said plate having a U-shaped portion acting as the bottom of the lower barrel at the muzzle end of the gun, and said U-shaped portion having a pivot means acting as a pivot

to afford aiming of the gun when mounted in said target game.

13. A repeating toy gun comprising a body simulating a pistol and having a lower barrel and an upper barrel, said lower barrel acting as a magazine to hold a series of balls, the breech portion of said gun having arcuate guide surfaces which curve upward and forward in an arcuate path about an axis transverse to and well below the barrels and which receive the rearmost ball from said lower barrel and along which arcuately curved surfaces said ball is guided when projected, a catapult arm pivoted near said transverse axis for projecting a ball from the rear end of the magazine along said arcuate guide surfaces, resilient means for actuating said catapult arm, and a trigger for retracting said catapult arm and tensioning said resilient means and thereafter releasing said catapult arm, said catapult arm being offset sidewardly in order to clear the magazine so that its motion is not obstructed by said magazine, said trigger forming a part of a trigger plate slidably received in said gun, a compression spring urging said trigger plate forwardly, a sear carried by said plate, said sear having a trunnion at its forward end and an upstanding lug at its rear end, said sear being disposed alongside of the plate, said plate having a horizontal slot, and having a downwardly directed stop, said trunnion being received in said horizontal slot, the rear end of said sear serving to bear against a cooperating part of the catapult arm to push the same rearwardly, with the trunnion at the forward end of the slot, and with said lug bearing upward against said stop on said plate, until the sear slips over said cooperating part of the arm to release the arm, and said lug thereupon slipping upward alongside the rear of the stop, with the trunnion at the rear end of the slot.

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