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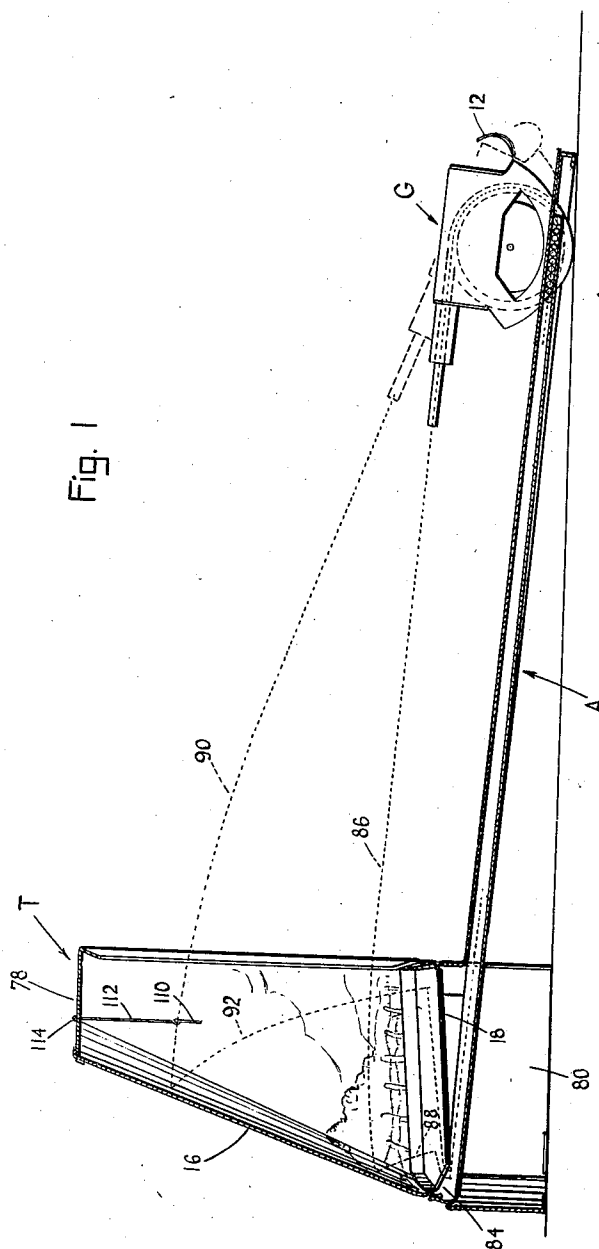
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2,295,225

MACHINE GUN AND TARGET TOY

Filed Dec. 27, 1939

3 Sheets-Sheet 1



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Fig. 2

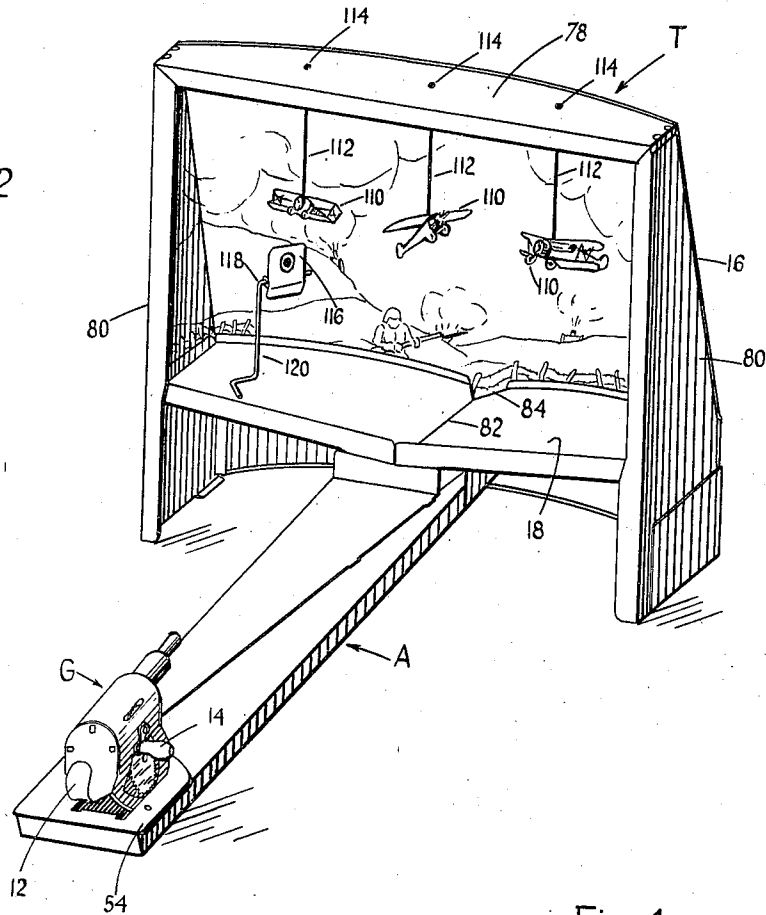


Fig. 4

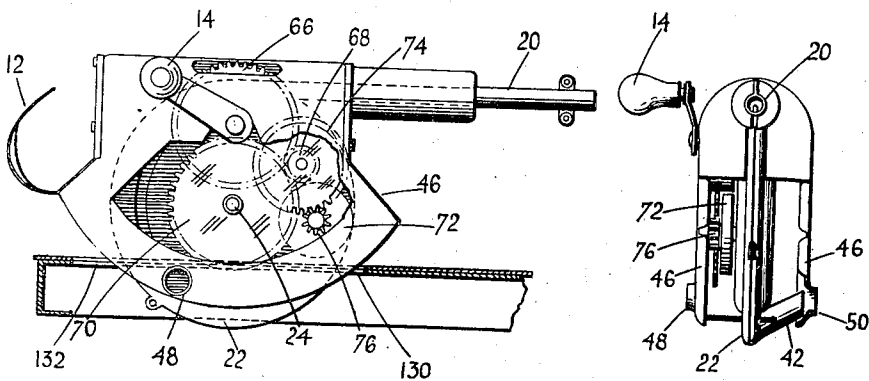


Fig. 3

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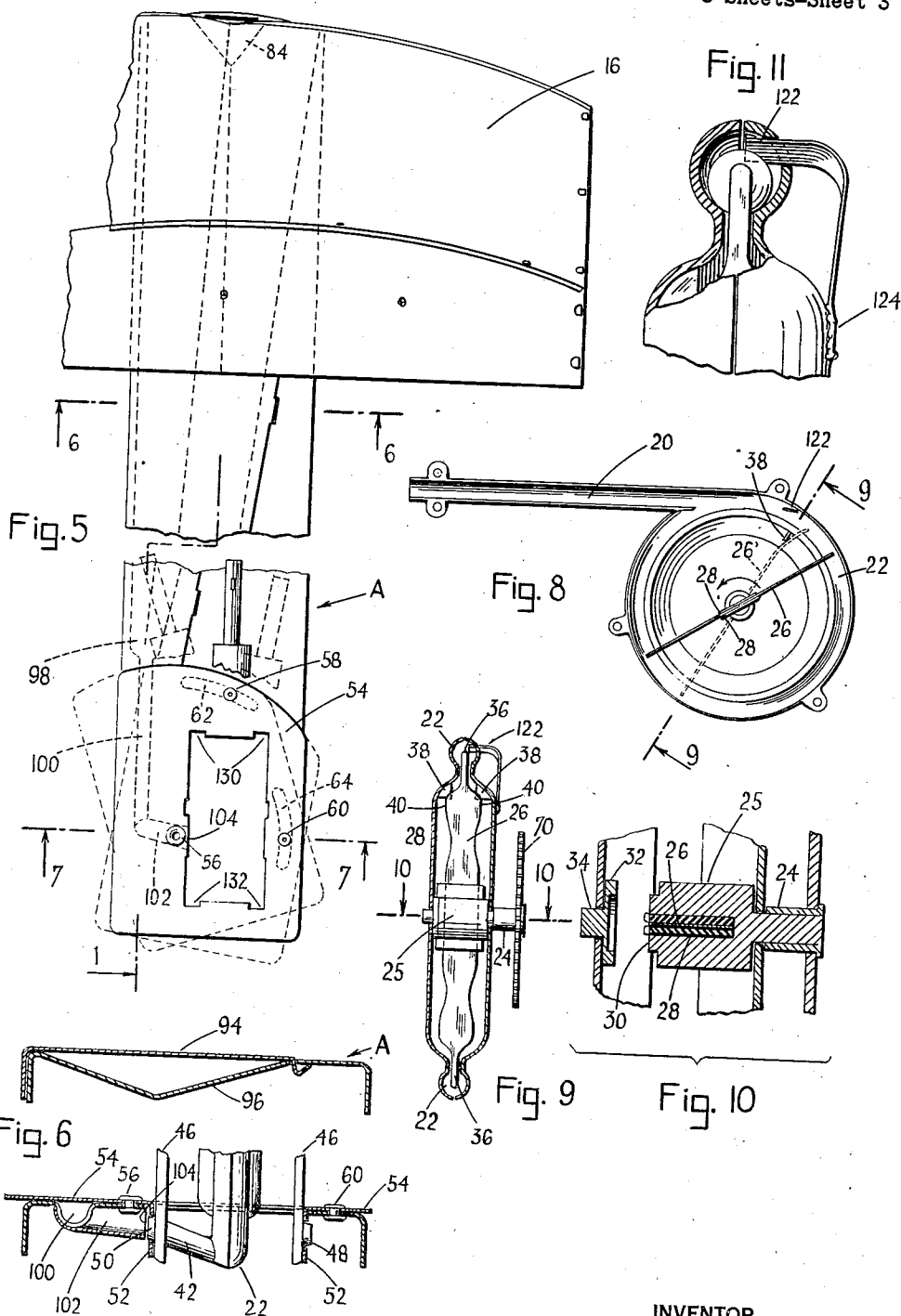


Fig. 7

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2,295,225

MACHINE GUN AND TARGET TOY

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Application December 27, 1939, Serial No. 311,224

6 Claims. (Cl. 273—101)

This invention relates to toys, and more particularly to a machine gun and target toy.

The primary object of the present invention is to generally improve toys of the class involving the use of a gun and target. A more particular object is to provide such a toy of modern character and present day significance by making the gun in the form of an anti-aircraft gun or machine gun discharging projectiles in rapid succession, and by making the target with one or more simulated airplanes movably mounted or freely suspended in front of a war background.

Other objects of our invention are to so arrange the target as to collect all of the shot fired thereat, although the gun is spaced a substantial distance in front of the target, with no housing or box-like enclosure around the space between the gun and target. The shot are seen flying through the open air at the target, thus giving the toy a high degree of realism. This realism would be lost if the toy were enclosed.

A further object is to so mount the gun that it may be freely aimed in elevation and in traverse, but the angle over which it may be aimed is purposely limited to confine the projectiles to the area of the target or target background. This eliminates the danger and nuisance of having the projectiles fly all over, and prevents loss of the same, for all projectiles striking the target are collected thereby.

Still another object is to automatically and continuously return all of the shot or projectiles to the gun for reuse therein, so that there is no shortage of shot despite the extremely rapid fire from the gun.

Further objects of the invention center about the gun and the supply of shot thereto, and are to provide a gun which will effectively serve the desired purpose; which is simple and inexpensive in construction; and which is so mounted that aiming the same in different directions does not interfere with the free flow of shot into the gun.

To the accomplishment of the foregoing, and other objects which will hereinafter appear, our invention consists in the toy gun and target elements and their relation one to the other, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawings, in which

Fig. 1 is a section taken in elevation longitudinally of the toy;

Fig. 2 is a perspective view of the toy;

Fig. 3 is a side elevation of a toy gun forming a part of the toy;

Fig. 4 is a front elevation of the gun;

Fig. 5 is a plan view explanatory of some features of the toy;

Fig. 6 is a transverse section taken in the plane of the line 6—6 of Fig. 5;

Fig. 7 is a transverse section taken in the plane of the line 7—7 of Fig. 5;

Fig. 8 illustrates the interior of the gun with one half of the casing removed;

Fig. 9 is a section taken in the plane of the line 9—9 of Fig. 8 with the two halves of the casing assembled;

Fig. 10 is a section drawn to enlarged scale and taken in the plane of the line 10—10 of Fig. 9; and

Fig. 11 is a section through the gun casing drawn to enlarged scale to show a detail of the construction.

Referring to the drawings, and more particularly to Figs. 1 and 2, the complete toy comprises a gun, generally designated G, a target, generally designated T, and a rigid arm or base-like member A extending therebetween. In the present case the gun may be aimed by means of a handle 12 and operated by means of a crank 14. As the crank is turned, pellets or round shot are fired in rapid succession from the gun toward the target T. The angle over which the gun may be aimed is limited to confine all of the shot to the target area. The background wall 16 of the target is inclined at such an angle that any shot striking the same is deflected onto a bottom wall 18 from which it is guided into the arm A, the latter acting as a trough for guiding the shot back to the gun G.

Considering the arrangement in greater detail, and referring now to Figs. 8, 9 and 10 of the drawings, the gun comprises a casing made up of two oppositely dished halves which are secured together in edge to edge relation. The resulting casing comprises a barrel portion 20 and an annular portion 22. The barrel portion 20 is tangentially related to the annular portion 22. A shaft 24 passes through the center of the annular casing, and its enlarged or hub portion 25 is slit to receive a spring blade 26. This is preferably gripped between pieces of sheet rubber 28. The end 30 of hub 25 is received in a cap 32 having a trunnion or bearing 34 rotatable in the opposite casing wall. In Fig. 10 the parts have been axially separated to better show the construction.

In the present case there are two diametrically arranged spring blades formed out of a single piece of spring metal, and this represents the

simplest construction, but it will be understood that a lesser or greater number of spring blades may be employed. The ends of the spring blades are reduced or necked down to form fingers 36 which move in the annular casing 22. A pair of stops 38 are provided at a point somewhat ahead of the top of the annular casing. These stops are dimensioned to engage the shoulder portions 40 of the spring blade 26, and to thereby restrain and bend the spring blade, as is indicated in dotted lines at 26' in Fig. 8. Finally after the blade has been bent a sufficient amount, the shoulders 40 escape from the stops 38, whereupon the blade straightens with a forcible blow which impels a projectile through the barrel 20 toward the target.

The shot are supplied to the gun at the bottom of the annular casing 22, a supply tube 42, best shown in Figs. 4 and 7. Each spring blade sweeps a ball away from the supply tube 42 at the bottom of the casing. The ball is carried upward by the spring blade until the latter is restrained and flexed by the stops 38. Finally when the blade is again released, it impels the ball forcibly through the barrel 20.

In order to prevent premature discharge of the ball, and to hold it in position until release of the blade 26, we provide a detent or restraining spring 122 which is disposed in the annular casing 22 just ahead of the stops 38. This spring passes through a slot in the side of the casing, as is best shown in Fig. 11, and its outer end is bent downwardly and secured to the casing at 124. The detent offers only a little resistance to movement of the ball, but it is enough to prevent the ball from moving beyond the detent until the driving blade is released. The detent means is important when the action of the gun is very rapid, because the balls are apt to be thrown into or even through the barrel 20 by inertia alone. The balls would in such case be moved out of the range of action of the driving blades, and would fall short at the muzzle of the gun.

With the present construction, however, the ball is restrained until the spring blade impels it, and it is then driven in a forcible and realistic manner. In fact, it strikes the target with a very substantial impact, and makes a rather loud noise or report as it hits the background wall of the target. The rapid succession of percussive sounds produced during the operation of the toy adds greatly to its realism.

Referring now to Figs. 3 and 4, the annular casing 22 and the rear portion of barrel 20 are concealed within a suitable housing to improve the appearance of the gun. The housing includes side plates 46 having trunnions 48 and 50 which act as pivots for elevation of the gun. These are received in bearing ears 52 (Fig. 7), which are turned downwardly from a base plate 54 on which the gun is mounted. Referring now to Fig. 5 the base plate 54 is pivoted on the top of arm A by means of a suitable pivot or eyelet 56. Additional eyelets 58 and 60 are provided, these being movable in slots 62 and 64, respectively, said slots being cut through the top wall of arm A. The eyelets 58 and 60 function to hold the base plate 54 flat on top of arm A, and the slots 62 limit the angle over which the gun may be aimed in azimuth about the pivot 56. The range of movement is selected to confine the shot to the target area.

The base plate 54 is cut away to receive the lower part of the gun structure, including the

side plates 46. The trunnions 48 and 50 are concealed below base plate 54, as is shown in Fig. 7. The angular movement of the gun in a vertical direction is also limited by appropriate means in order to confine all projectiles to the target area. In the present case the motion limiting means consists of the stop surfaces 130 and 132 (Fig. 5), which are spaced further apart than the dimension of the side walls 46 at these surfaces. This is shown in Fig. 3, and it is obvious that the gun may be rocked about the trunnions 48 and 50 over an angle which depends upon the clearance between the stop surfaces 130 and 132 and the curved lower edges of the side walls 46. This clearance is so selected as to properly limit the aim of the gun so that all projectiles will fall below the top wall 78 and above the bottom wall 18 of the target.

The gun is driven by crank 14 which turns a gear 56 (Fig. 3) meshing with a pinion 68, which in turn meshes with a gear 70, the latter being mounted directly on the shaft 24 carrying the spring blades of the gun. In the specific arrangement here shown, there is no great change in rotative speed between the crank and the gun shaft 24, and the gearing here described is used primarily to bring the crank up to a high enough elevation for comfortable use. However, a change in rotative speed may also be provided, if desired.

Additional gearing is provided for high-speed rotation of a fly-wheel 72. Specifically, the pinion 68 has fixed to it a gear 74 which meshes with a pinion 76 mounted on the shaft of fly-wheel 72. The operation of the fly-wheel levels the load on crank 14, and the latter may be smoothly turned, even though the spring blades of the gun constitute an intermittent load.

The target T comprises the background wall 16, a top wall 78, and side walls 80, in addition to the bottom wall 18, previously referred to. The top, bottom and side walls are preferably flanged at their forward edges in order to stiffen the same, and also to help prevent accidental escape of shot from the toy. The back wall 16 is preferably curved somewhat, as is shown in Fig. 5, and it and the side walls 80 extend downwardly substantially further than the bottom wall 18. The bottom wall 18 slopes from each side toward the center and is, in reality, a broad shallow trough having a center guide channel indicated at 82 (Fig. 2) and leading downwardly to an opening 84. The bottom 18 thus slopes downwardly toward the center, and also slopes rearwardly toward the background wall 16, so that any shot falling on the bottom wall rolls to the opening 84. The parts of the target are so dimensioned, and the angle of the background wall 16 is so selected, that all of the shot striking the target is deflected downwardly onto the bottom wall 18. Thus, referring to Fig. 1, the low angle trajectory 86 results in the ball being deflected as indicated by the line 88, while the high angle trajectory 90 results in the ball being deflected as is indicated by the line 92.

All of the balls flowing through the opening 84 run into the hollow arm A, and the latter slopes downwardly toward the gun G, as is clearly shown in Fig. 1. Referring now to Fig. 6, it will be seen that while the top wall 94 of arm A is flat, the bottom wall 96 is trough-like in configuration. The center of this trough is disposed at an angle relative to the arm A. Thus, at a point immediately beneath the discharge opening 84 at the bottom of the target, the center or lowest point of trough 96 is at the center of the

arm. At the section 6—5 it has already moved somewhat toward the left. By the time the point 98 (Fig. 5) is reached, the trough has narrowed and is disposed entirely at the left-hand edge of the arm A. It then continues as a constricted trough 100 in which the balls follow one another in single file. The balls are then turned side-wardly at 102, and are guided to the trunnion 50. The latter is hollow, as is clearly shown in Fig. 4, and the balls flow through trunnion 50 to supply tube 42, and thence into the gun.

Because the supply of shot is taken through trunnion 50, there is no disturbance or interference with this supply as the gun is aimed upwardly or downwardly, for the axis of the trunnions and the axis of supply coincide. For the same reason the eyelet 56 is disposed almost directly above the trunnion 50. There is practically no relative movement of trunnion 50 and the end 104 of the trough. Hence there is no interruption of supply when the gun is aimed from side to side.

Reverting now to Figs. 1 and 2, the target T may be completed by simulated airplanes 110 suspended on cords 112 from the top wall 78 of the target. The cords pass through holes in the top wall and are knotted at 114. The airplanes may be disposed at any desired angle by simply turning the knot 114 at the upper end of the cord. More elaborate means for movably suspending the airplanes may be provided, but that here described is inexpensive and effective. The gun is aimed, and a steady stream of shot is fired therefrom until one of the airplanes is struck. It is small enough and light enough, so that it is violently moved when struck, whereupon the gun may be aimed at the next airplane, and so on.

A movable target element of different type is shown at 116. This is a bull's eye painted on a piece of sheet metal pivoted on a pin 118 carried on a support 120. In the present case the support 120 and the pin 118 are formed out of a single piece of wire. The target is so balanced as to normally remain upright, but it is knocked over when hit by a shot fired from the gun.

It will be understood that in one sense the target consists of the freely suspended airplanes 110 or/and the movable target element 116. In that sense the wall 16 is merely a background wall, and this background wall, together with the top, bottom and side walls, may be considered as a housing in back of the targets to catch the projectiles. However, the background wall may itself be appropriately painted (for example, with an advancing soldier, as shown in Fig. 2), and may, if desired, itself be used as a target. In a broader sense, therefore, the term "target" may be used as referring to the entire target structure, and in that sense the arm A is rigidly secured to the target.

It is believed that the construction and operation, as well as the many advantages of our improved machine gun and target toy, will be apparent from the foregoing detailed description thereof. It will also be apparent that while we have shown and described our invention in a preferred form, many changes and modifications may be made in the structure disclosed without departing from the spirit of the invention as sought to be defined in the following claims.

We claim:

1. A machine gun and target toy comprising an open target, a gun having a bottom feed, an arm extending from said gun to said target and

secured rigidly to the target, said arm sloping downwardly from the target to a lower portion of the gun and containing a concealed trough-like magazine for returning shot from the target to the gun through the bottom feed, said gun being pivotally mounted on said arm for universal movement, means to limit the angular movement of the gun both in elevation and in traverse to an amount which confines the projectiles discharged therefrom to the target area, said target comprising a background wall, and top, bottom and side walls surrounding said background wall, said background wall being disposed at an angle which deflects the projectiles hitting said wall downwardly onto said bottom wall, said bottom wall sloping downwardly to a discharge point leading into the aforesaid return trough-like magazine, whereby all shot fired from the gun is continuously returned to the gun, said gun comprising an annular casing, a feed tube to feed shot from the magazine to the casing, a shaft passing through said casing, a crank to rotate said shaft, one or more spring blades projecting radially from said shaft to the annular part of said casing for carrying the shot around the casing from the feed tube to the top of the casing, a gun barrel extending tangentially from the top of said casing, a detent for restraining the shot, and a stop for restraining a blade at the upper part of the casing until it has been tensioned and bent a substantial amount by the shaft, whereupon it escapes past the stop and forcibly ejects the shot through the barrel of the gun, the horizontal axis for elevation of the gun and the vertical axis for traverse of the gun being located substantially at the point of connection of said feed tube with the magazine, so that the said connection is maintained during elevation and traverse of the gun.

2. A machine gun and target toy comprising an open target, a gun having a bottom feed, an arm extending from said gun to said target and secured rigidly to the target, said arm sloping downwardly from the target to a lower portion of the gun and containing a concealed trough-like magazine for returning shot from the target to the gun through the bottom feed, said gun being pivotally mounted on said arm for universal movement, means to limit the angular movement of the gun both in elevation and in traverse to an amount which confines the projectiles discharged therefrom to the target area, said target comprising a background wall, and top, bottom and side walls surrounding said background wall, said background wall being disposed at an angle which deflects the projectiles hitting said wall downwardly onto said bottom wall, and said bottom wall sloping downwardly to a discharge point leading into the aforesaid return trough-like magazine, whereby all shot fired from the gun is continuously returned to the gun.

3. A machine gun and target toy comprising an open target, a gun having a bottom feed, an arm extending from said gun to said target and secured rigidly to the target, said arm sloping downwardly from the target to a lower portion of the gun and containing a concealed trough-like magazine for returning shot from the target to the gun through the bottom feed, said gun being pivotally mounted on said arm for universal movement, means to limit the angular movement of the gun both in elevation and in traverse to an amount which confines the projectiles discharged therefrom to the target area,

said target comprising a background wall, and top, bottom and side walls surrounding said background wall, said background wall being disposed at an angle which deflects the projectiles hitting said wall downwardly onto said bottom wall, said bottom wall sloping downwardly to a discharge point leading into the aforesaid return trough-like magazine, whereby all shot fired from the gun is continuously returned to the gun, said gun comprising an annular casing, a feed tube to feed shot from the magazine to the casing, a shaft passing through said casing, means to rotate said shaft, one or more spring blades projecting radially from said shaft to the annular part of said casing for carrying the shot around the casing from the feed tube to the top of the casing, a gun barrel extending tangentially from the top of said casing, and a stop for restraining a blade at the upper part of the casing until it has been tensioned and bent a substantial amount by the shaft, whereupon it escapes past the stop and forcibly ejects the shot through the barrel of the gun.

4. A machine gun and target toy comprising an open target, a gun having a bottom feed, an arm extending from said gun to said target and secured rigidly to the target, said arm sloping downwardly from the target to a lower portion of the gun and containing a concealed trough-like magazine for returning shot from the target to the gun through the bottom feed, said gun being pivotally mounted on said arm for universal movement, means to limit the angular movement of the gun both in elevation and in traverse to an amount which confines the projectiles discharged therefrom to the target area, said target comprising a background wall, and top, bottom and side walls surrounding said background wall, said background wall being disposed at an angle which deflects the projectiles hitting said wall downwardly onto said bottom wall, said bottom wall sloping downwardly to a discharge point leading into the aforesaid return trough-like magazine, whereby all shot fired from the gun is continuously returned to the gun, said gun comprising an annular casing, a feed tube to feed shot from the magazine to the casing, a shaft passing through said casing, a crank to rotate said shaft, a flywheel, step-up gearing between said crank and said flywheel, one or more spring blades projecting radially from said shaft to the annular part of said casing for carrying the shot around the casing from the feed tube to the top of the casing, a gun barrel extending tangentially from the top of said casing, a detent for restraining the shot, and a stop for restraining a blade at the upper part of the casing until it has been tensioned and bent a substantial amount by the shaft, whereupon it escapes past the stop and forcibly ejects the shot through the barrel of the gun.

5. A machine gun and target toy comprising an open target, a gun having a bottom feed, an arm extending from said gun to said target and secured rigidly to the target, said arm sloping downwardly from the target to a lower portion of the gun and containing a concealed trough-like magazine for returning shot from the target to the gun through the bottom feed, said gun being pivotally mounted on said arm for uni-

versal movement, means to limit the angular movement of the gun both in elevation and in traverse to an amount which confines the projectiles discharged therefrom to the target area, said target comprising a background wall, and top, bottom and side walls surrounding said background wall, said bottom wall sloping downwardly to a discharge point leading into the aforesaid return trough-like magazine, whereby all shot fired from the gun is continuously returned to the gun, said gun comprising an annular casing, a feed tube to feed shot from the magazine to the casing, a shaft passing through said casing, means to rotate said shaft, one or more spring blades projecting radially from said shaft to the annular part of said casing for carrying the shot around the casing from the feed tube to the top of the casing, a gun barrel extending tangentially from the top of said casing, and a stop for restraining a blade at the upper part of the casing until it has been tensioned and bent a substantial amount by the shaft, whereupon it escapes past the stop and forcibly ejects the shot through the barrel of the gun, the horizontal axis for elevation of the gun and the vertical axis for traverse of the gun being located approximately at the point of connection of said feed tube with the magazine.

6. A machine gun and target toy comprising an open target, a gun having a bottom feed, an arm extending from said gun to said target and secured rigidly to the target, said arm sloping downwardly from the target to a lower portion of the gun and containing a concealed trough-like magazine for returning shot from the target to the gun through the bottom feed, said gun being pivotally mounted on said arm for universal movement, means to limit the angular movement of the gun both in elevation and in traverse to an amount which confines the projectiles discharged therefrom to the target area, said target comprising a concave background wall, and a bottom wall in front of said background wall, said background wall being disposed at an angle which deflects the projectiles hitting said wall downwardly onto said bottom wall, said bottom wall sloping downwardly to a discharge point leading into the aforesaid return trough-like magazine, whereby all shot fired from the gun is continuously returned to the gun, said gun comprising an annular casing, a feed tube to feed shot from the magazine to the casing, a shaft passing through said casing, means to rotate said shaft, one or more spring blades projecting radially from said shaft to the annular part of said casing for carrying the shot around the casing from the feed tube to the top of the casing, a gun barrel extending tangentially from the top of said casing, and a stop for restraining a blade at the upper part of the casing until it has been tensioned and bent a substantial amount by the shaft, whereupon it escapes past the stop and forcibly ejects the shot through the barrel of the gun, the horizontal axis for elevation of the gun and the vertical axis for traverse of the gun being located approximately at the point of connection of said feed tube with the magazine.

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