No. 885,358. PATENTED APR. 21, 1908.

C. E. MORRIS.

SHOOTING GALLERY.

APPLICATION FILED OCT. 11, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

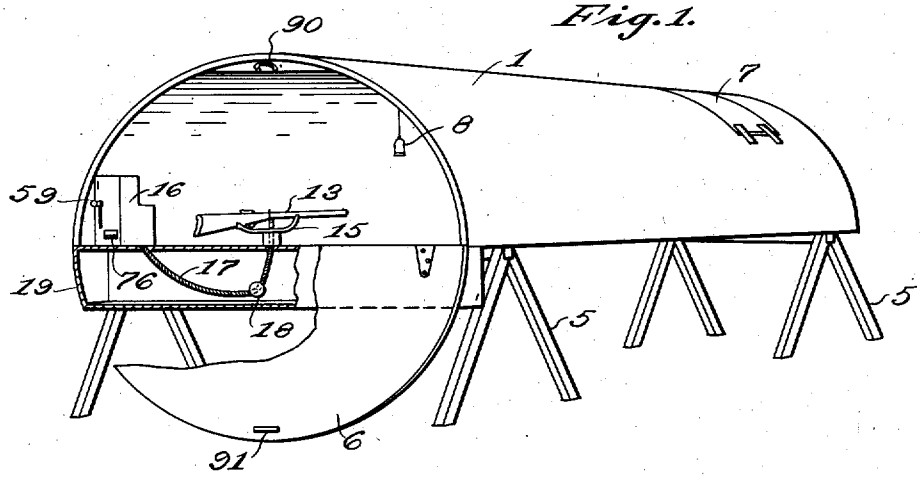


Fig. 4.

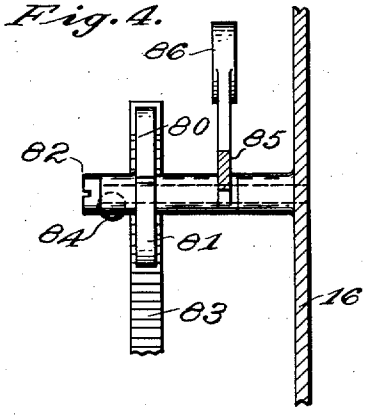


Fig. 5.

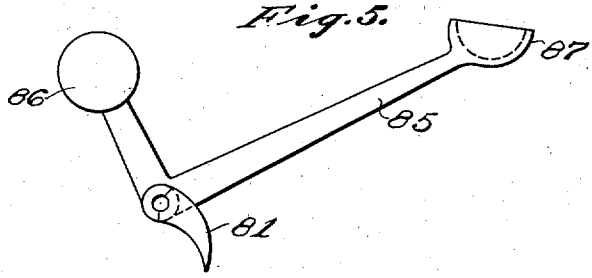


Fig. 6.

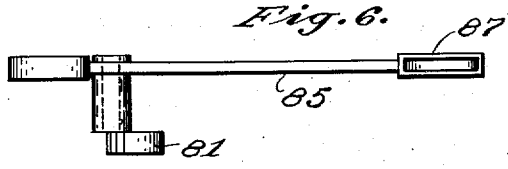


Fig. 10.

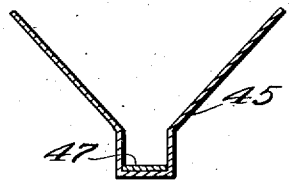


Fig. 7.

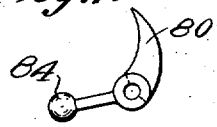


Fig. 8.

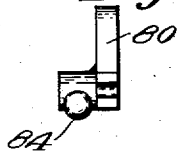
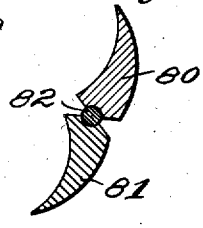


Fig. 9.



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3 SHEETS—SHEET 2.

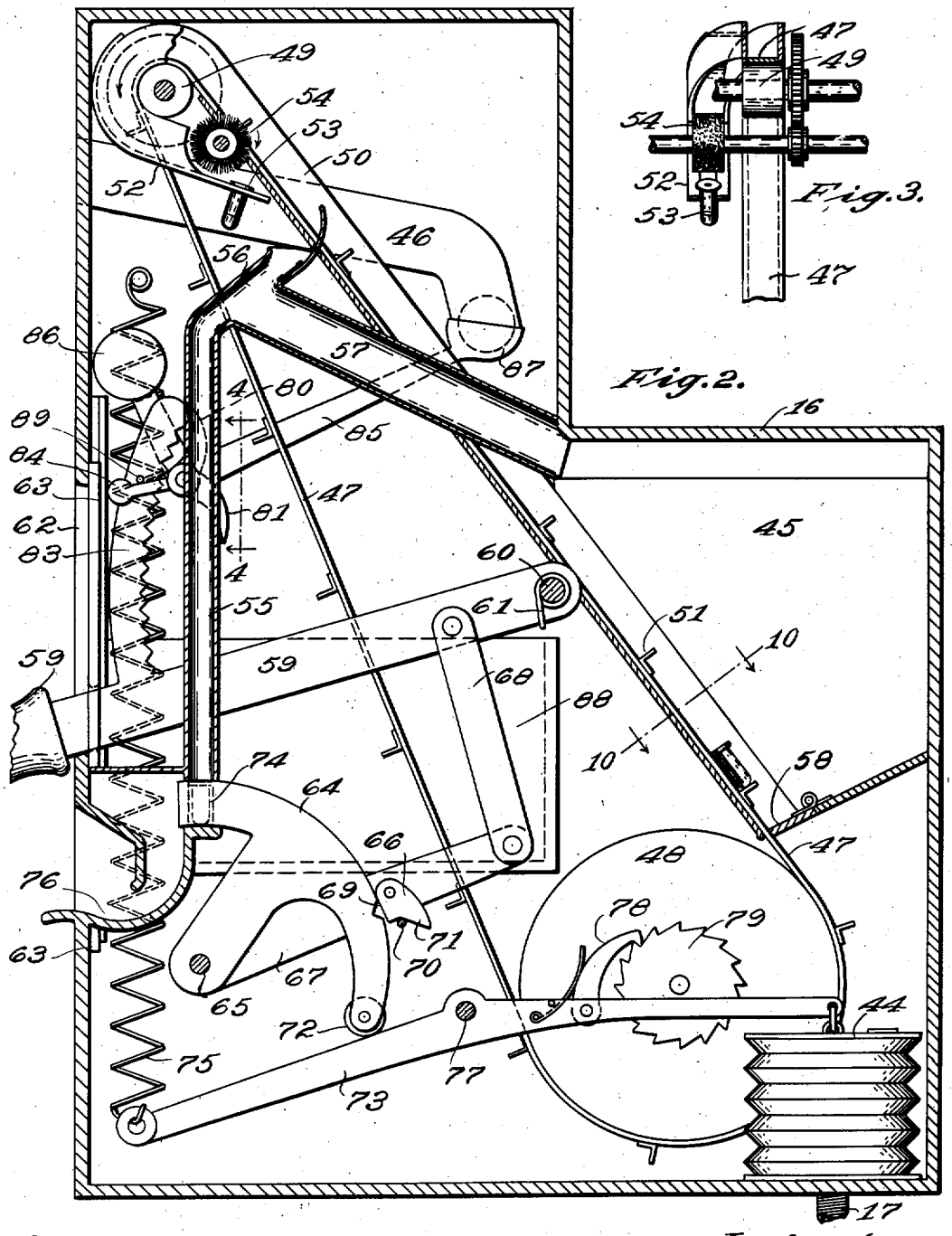


Fig. 3.

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 14.

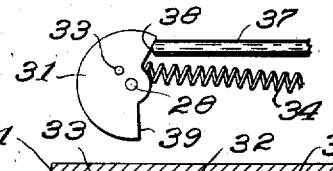


Fig. 11

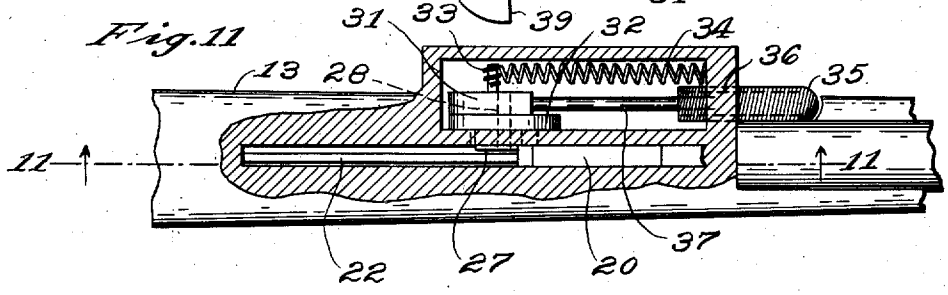


Fig. 12.

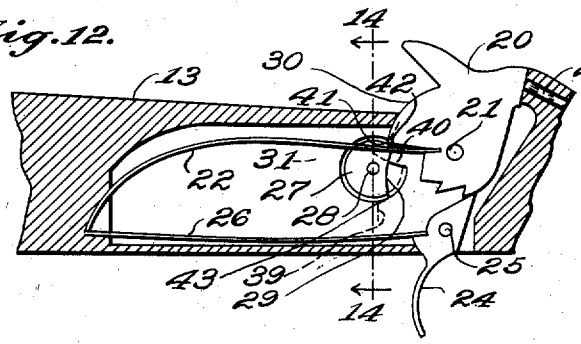


Fig. 15.

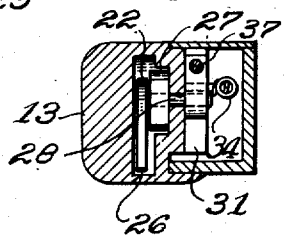
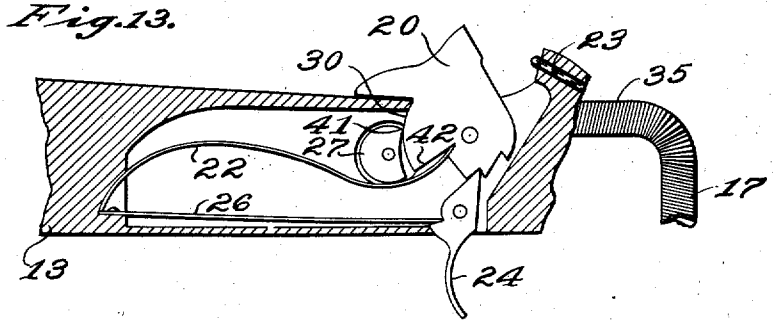


Fig. 13.



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UNITED STATES PATENT OFFICE.

CHARLES E. MORRIS, OF LANE, KANSAS, ASSIGNOR OF ONE-HALF TO THOMAS D. MORROW, OF LANE, KANSAS.

SHOOTING-GALLERY.

No. 885,358. Specification of Letters Patent. Patented April 21, 1908.

Application filed October 11, 1906. Serial No. 338,485.

To all whom it may concern:

Be it known that I, CHARLES E. MORRIS, a citizen of the United States of America, and a resident of Lane, in the county of Franklin and State of Kansas, have invented certain new and useful Improvements in Shooting-Galleries, of which the following is a specification.

This invention relates to shooting galleries and particularly those of a type which may be controlled by check-controlled mechanism so as to require little attention from an attendant.

The main objects of this invention are to provide a shooting gallery in which a gun is mounted in a suitable manner to permit a customer to shift it within certain limits for aiming and firing it, and at the same time prevent the operation of the gun until after a coin of a certain denomination has been placed into a certain coin-receiving device; to provide improved locking means for preventing the firing of the gun and adapted to be applied to a gun without materially increasing its bulk or the facility with which a gun may be aimed and fired; to provide an improved check-controlled mechanism adapted to be placed at a distance from the gun and adapted upon the deposit of a coin therein to deliver a cartridge to the customer and at the same time release the firing mechanism of the gun so as to permit the gun to be freely loaded and fired; and to provide self-setting means for the locking device which will automatically lock the gun immediately after it is fired. These objects are accomplished by the device shown in the accompanying drawings, in which:

Figure 1 is a perspective view of a rifle range provided with a gun and check-operated controlling means constructed according to this invention. Fig. 2 is a vertical section of the check-controlled mechanism by which the cartridges are delivered to the customer and by which the gun is released to permit of its being fired. Fig. 3 is a detail in elevation showing the mechanism for delivering the cartridges to the cartridge chute in a certain definite upright position. This view shows such mechanism as viewed from the right of Fig. 2. Fig. 4 is a detail showing the arrangement of the pawls which control the movement of the operating lever. Fig. 5 is a detail of the arm which carries the coin from the coin chute to the coin receptacle and which moves under the weight of a coin resting in the pocket thereof and releases the operating lever. Fig. 6 is a top plan of the same. Fig. 7 is a detail of the pawl which prevents the operation of the operating lever until such pawl has been released through the movement of the arm shown in Fig. 5 under the action of a coin. Fig. 8 is an elevation of the same viewed from the right of Fig. 7. Fig. 9 is a section through the pawls 80 and 81 showing their relation to each other. Fig. 10 is a section on the line 10—10 of Fig. 2 and showing the relative arrangement of the conveyer belt with respect to the walls of the cartridge hopper. Fig. 11 is a top plan partly broken away and partly in section of the locking and firing mechanism of the gun. Fig. 12 is a longitudinal section on the line 11—11 of Fig. 11 and showing the hammer in its locked position. Fig. 13 is a corresponding view with the hammer cocked. Fig. 14 is a detail of the mechanism which sets the member which controls the operation of the hammer. Fig. 15 is a section on the line 14—14 of Fig. 12.

In the construction shown in the drawings, the gallery is in the form of a horizontally disposed tubular range 1, mounted upon suitable supports 5, and having a hinged lid 6 arranged for closing the front end. The lid 6 is adapted to swing down as in Fig. 1 when the gallery is in use. A target not shown in the drawings, is mounted at the extreme rear end of the range. The top of the range is provided with one or more doors 7 for admitting light to the target. The handle 8 is connected by a cord passing over suitably arranged pulleys and extending to the target for operating the mechanism which effaces the marks of the shot from the target. Such mechanism is in common use in shooting galleries and is therefore not shown or described herein.

A rifle 13 is mounted within the range at its front end and normally rests loosely upon a support 15. At the front end of the range and at one side of said support is located a check-controlled cartridge delivery device 16 which is connected with the gun by means of a flexible tube 17, the purpose of which will be hereinafter described. The tube 17 passes loosely upward through the support 15 and is provided with a shoulder 18 to limit the lifting of the gun 13 above the support.

The flexible tube 17 is incased in a suitable housing 19 below the floor of the range.

The hammer 20 of the gun is pivotally mounted at 21 and is normally urged by the spring 22 against the firing pin 23. The trigger 24 is pivotally mounted at 25 and has ratchet engagement with the hammer 20 as in a well known form of rifle. The spring of the trigger is indicated at 26.

The locking member 27 is mounted on a shaft 28 in the stock of the gun and is of crescent-shape having a concave surface 29 at one side arranged to fit the convex surface 30 of the hammer. The surface 30 is arranged concentrically of the pivot 21. The shaft 28 has a sector 31 rigidly mounted on the part which projects beyond the bearing 32. This sector is provided with a stud 33 to which a toggle spring 34 is connected. An air cylinder 35 is mounted on the stock of the gun with its axis in the plane of the sector 31. The cylinder has a plunger 36 with a rod 37 bearing against the shoulder 38 of the sector as seen in Figs. 11 and 14. The rod 37 is adapted, when forced toward the left of Figs. 11 and 14, to rock the sector 31 until the stud 33 passes the straight line between the axis of the shaft 28 and the opposite end of the spring 34. The oscillation of the sector 31 is limited in both directions, as will hereinafter appear, and the toggle spring 34 is so arranged as to urge the sector toward either of its limits of movement after it has passed the position midway between such limits. Now when the rod 37 has pushed the sector beyond its middle position, the spring 38 will continue the rotation of the sector until it reaches the corresponding limit of its movement. The member 27 rocks with the sector 31 and this rocking movement is limited by a stop shoulder 40 shown in Fig. 12. The full lines in Fig. 12 show the member 27 turned to the position in which it locks the hammer 20 against movement. The corner 41 of the member 27 has passed below the shoulder 42 of the hammer, thus effectually preventing the cocking of the hammer. When the member 27 is turned until the corner 43 engages the stop 40, then the hammer is free to be cocked. The act of cocking the hammer causes the shoulder 42 to swing the member 27 so that the corner 41 of said member rides on the surface 30 of the hammer as in Fig. 13. In this position the stud 33 is above the shaft 28 so that the spring 34 normally urges the member 27 toward its locking position. When the gun is fired, the hammer assumes the position shown in Fig. 12, and the spring 34 throws the member 27 to the position shown by full lines in said Fig. 12, as soon as the surface 30 has passed clear of the surface 29.

The operation of the gun lock is as follows: When the air is blown through the flexible tube 17 into the cylinder 35, the piston 36 shifts, causing the rod 37 to rock the member 27 into the position shown by dotted lines in Fig. 12. This releases the hammer and permits it to be cocked. The act of cocking the gun swings the member 27 to the position shown in Fig. 13. As soon as the gun is fired, the corner 41 of the member 27 passes under the shoulder 42 and locks the gun against further operation.

In the construction shown in the drawings, the check-controlled mechanism comprises a casing 16 within which is located a bellows 44 for forcing air through the tube 17, a hopper 45 for storing a quantity of cartridges, together with mechanism for delivering cartridges one at a time in return for a coin, and for operating the bellows to release the hammer. The coin chute is indicated at 46.

The walls of the hopper 45 converge toward a conveyer belt 47 carried by drums 48 and 49. The portion of the belt which passes the throat of the hopper 45 is surrounded by a trough 50 along which the cartridges are carried by means of cleats 51 on the belt. The side walls of the trough 50 are twisted toward one side as they pass around the drum 49 and form a downwardly inclined chute 52, extending at one side of the belt 47. The bottom of the chute 52 is slotted so as to permit the body part of the cartridge to fall through the slot and hang by the head 53 with the bullet end down, as indicated in Fig. 3. A rotating brush 54 geared to the drum 49 serves to agitate the cartridges in the chute 52 and prevents any cartridges from passing out of the chute 52 until they have assumed the proper upright position. A storage chute 55 is disposed in a vertical position below the chute 52 and is inclined toward one side at its upper end. The chute 55 is circular in cross section and of just sufficient diameter to permit the heads 53 of the cartridges to loosely pass through the same. The inclined part 56 of the chute 55 has a gap in its lower side connected by an inclined chute 57 with the hopper 45. Cartridges falling from the chute 52 into the open end of the chute 55 pass the mouth of the chute 57 on account of their momentum. When the chute 55 is filled with cartridges up to the mouth of the chute 57, then the excess of cartridges will fall through the chute 57 into the hopper 45. This arrangement prevents clogging at the top of the chute 55 and permits the belt 47 to be driven at a sufficient rate of speed as to feed an excess of cartridges and thereby insure that the chute 55 will always be full as long as there are sufficient cartridges in the machine to fill it. The floor of the hopper 45 is provided with a trap door 58 to permit the cleats 51 to enter the throat of the hopper without permitting the cartridges to fall out of the hopper.

In Fig. 2, the parts are shown in the position which they occupy at the instant after the operating lever 59 has been depressed. This lever is pivoted at 60 and is normally urged toward a lifted position by a spring 61. The lever 59 extends through a slot 62 in the front of the casing and said slot is closed by a slide 63. The lower end of the chute 55 is normally closed by the periphery of the sector 64 which is pivotally mounted at 65. The sector 64 is swung down by a pawl 66 carried by the arm 67 which is loosely journaled on the shaft 65 and connected to the lever 59 by a link 68. The pawl 66 engages a notch 69 on the periphery of the sector and is thrown out of engagement with said notch by a stop 70 when the lever 59 reaches the position shown in Fig. 2. The pawl 66 is normally urged by gravity into position for engaging the notch 69 and is provided with an inclined surface 71 which engages the stop 70 for retracting the pawl 66. The lower corner of the sector 64 is provided with a roller 72 which rides loosely upon the lever 73. The sector 64 is provided with a pocket 74 which is brought into alinement with the chute 55 when the sector is in the position shown in Fig. 2. A spring 75 urges the lever 73 upward and causes the sector to swing so as to discharge the cartridge from the pocket 74 into the delivery chute 76.

The lever 73 is fulcrumed at 77 and has an arm connected with the bellows 44 and adapted to expand and retract the same through the swinging of the lever. A pawl 78 on the lever 73 engages a ratchet wheel 79, which is rigidly connected with the drum 48 and serves to rotate said drum for driving the conveyer belt.

The movement of the lever 59 is controlled by a pair of pawls 80 and 81. Both of these pawls are loosely mounted upon a spindle 82 and engage a curved rack 83 carried by the lever 59. The pawls 80 and 81 are provided with abutting shoulders which engage each other for causing one of the pawls to swing through the movement of the other pawl, but at the same time permitting one of the pawls to have a slight movement without affecting the other pawl. This is best shown in Fig. 9 which shows a section through the two pawls. The pawl 80 is provided with a counter-weighted arm 84 which normally urges said pawl into engagement with the rack 83. The pawl 81 is rigidly connected with the arm 85 and has a counter-poised arm 86 which, in the position shown in Fig. 2, normally tends to lift the pawl 81 out of engagement with the rack and to lift the arm 85. The arm 85 has a pocket 87 at its end for receiving a coin from the coin chute 46. The counter-poise 86 is of suitable mass to be over-balanced when a coin of the proper denomination rests in the pocket 87. This causes the arm 85 to swing down until the coin is discharged into the coin-receiving receptacle 88. This movement of the arm 85 swings the counter-poise 86 to a position on the opposite side of a vertical line through the spindle 82, so that the effect of the counter-poise 86 is then to hold the pawl 81 in engagement with the rack 83. This pawl serves to prevent the lifting of the arm 59 until it has been depressed to the lower limit of its movement causing the pawl 66 to be withdrawn from the notch and thereby releasing the sector 64 so as to discharge a cartridge into the delivery chute 76 when the lever 73 swings up under the action of the spring 75. This movement of the lever also advances the conveyer belt and operates the bellows for releasing the hammer of the gun. The movement of the belt 47 is sufficient to discharge more than one cartridge into the chute 52 at each operation of the machine so as to insure that there is always a cartridge in the chute 55 ready for the next succeeding operation of the machine.

When the lever 59 is depressed to its full limit as indicated in Fig. 2, a stop pin 89 on the rack 83 engages the counter-poised arm 84, swinging the pawl 80 into engagement with the rack and returning the arm 85 to its normal initial position. The slight play between the pawls 80 and 81 permits the pawl 81 to ride over the teeth of the rack without admitting of the possibility of rocking the counter-poise 86 past the vertical position through a sudden lifting movement of the lever 59 and thus preventing the manipulation of the machine so as to discharge a second cartridge without the insertion of a second coin.

When the device is not in service, the lid 6 may be closed and locked by means of a padlock on the staple 90 which extends through a slot 91 on the lid. By locking the light apertures 7, the device is entirely closed up and can not be tampered with.

What I claim as my invention and desire to secure by Letters Patent is:

1. A shooting gallery comprising an inclosed range, a gun mounted at one end of said range and having a limited movement therein to permit the same to be aimed, a lock for preventing the firing of the gun, mechanism for delivering cartridges to a customer, and means controlled by said mechanism for releasing said lock to permit the firing of the gun.

2. The combination of a support, a gun mounted on said support and having a limited range of movement to permit the gun to be aimed and fired, a lock mounted on the gun for preventing the firing of the gun, and pneumatic means for releasing said lock, said lock being adapted to remain released until said gun is fired and to automatically relock the gun through the act of firing it.

3. The combination of a support, a gun

mounted on said support and having a limited range of movement to permit the gun to be aimed and fired, a lock for preventing the firing of the gun, pneumatic means for releasing said lock, and a cartridge delivery apparatus located at a distance from the gun and adapted to operate said pneumatic means.

4. The combination of a gun having a hammer movable into and out of firing position, a rotatable member coacting with said hammer and adapted to be turned into and out of position for preventing a certain movement of said hammer, and pneumatic means adapted to shift said member to permit such certain movement of said hammer.

5. The combination of a gun having a hammer movable into and out of firing position, a rotatable member co-acting with said hammer and adapted to be turned into and out of position for preventing a certain movement of said hammer, and pneumatic means adapted to shift said member to permit such certain movement of said hammer, said member being adapted to be set through the movement of the hammer so as to prevent a succeeding movement thereof.

6. In a gun, the combination of a movable hammer, a member co-acting with said hammer and adapted to be shifted into and out of position for preventing a certain movement of said hammer, a cylinder located in the gun and having a plunger arranged to shift said member so as to permit such certain movement of the hammer, said member and plunger being arranged to return to a certain initial position upon the firing of the gun.

7. The combination of a gun having a hammer, an oscillating member co-acting with said hammer and adapted to be oscillated into and out of position for preventing a certain movement of said hammer, a spring adapted to hold said member in each of said positions, pneumatic means adapted to shift said member to its position for permitting such certain movement of the hammer, and means operated through the movement of said hammer for returning said member to its position for preventing a repetition of said certain movement of the hammer.

8. A shooting gallery, comprising a range, a gun mounted at one end of said range, a lock for preventing the firing of said gun, a cartridge delivery apparatus, and mechanism connecting said delivery apparatus and gun lock and adapted to control said lock so as to release the same through the operation of said cartridge delivery apparatus.

9. A shooting gallery, comprising a range, a gun mounted at one end of said range, a lock for preventing the firing of said gun, a cartridge delivery apparatus adapted to deliver cartridges one at a time, and mechanism connecting said delivery apparatus and lock and adapted to release the lock through each operation of said delivery apparatus.

10. A shooting gallery, comprising a range, a gun mounted at one end of said range, a lock for preventing the firing of said gun, a cartridge delivery apparatus adapted to deliver cartridges one at a time, mechanism connecting said delivery apparatus and lock and adapted to release the lock through each operation of said delivery apparatus, and means automatically locking said lock after each firing operation of said gun.

Signed at Chicago this 5th day of October 1906.

CHARLES E. MORRIS.

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