

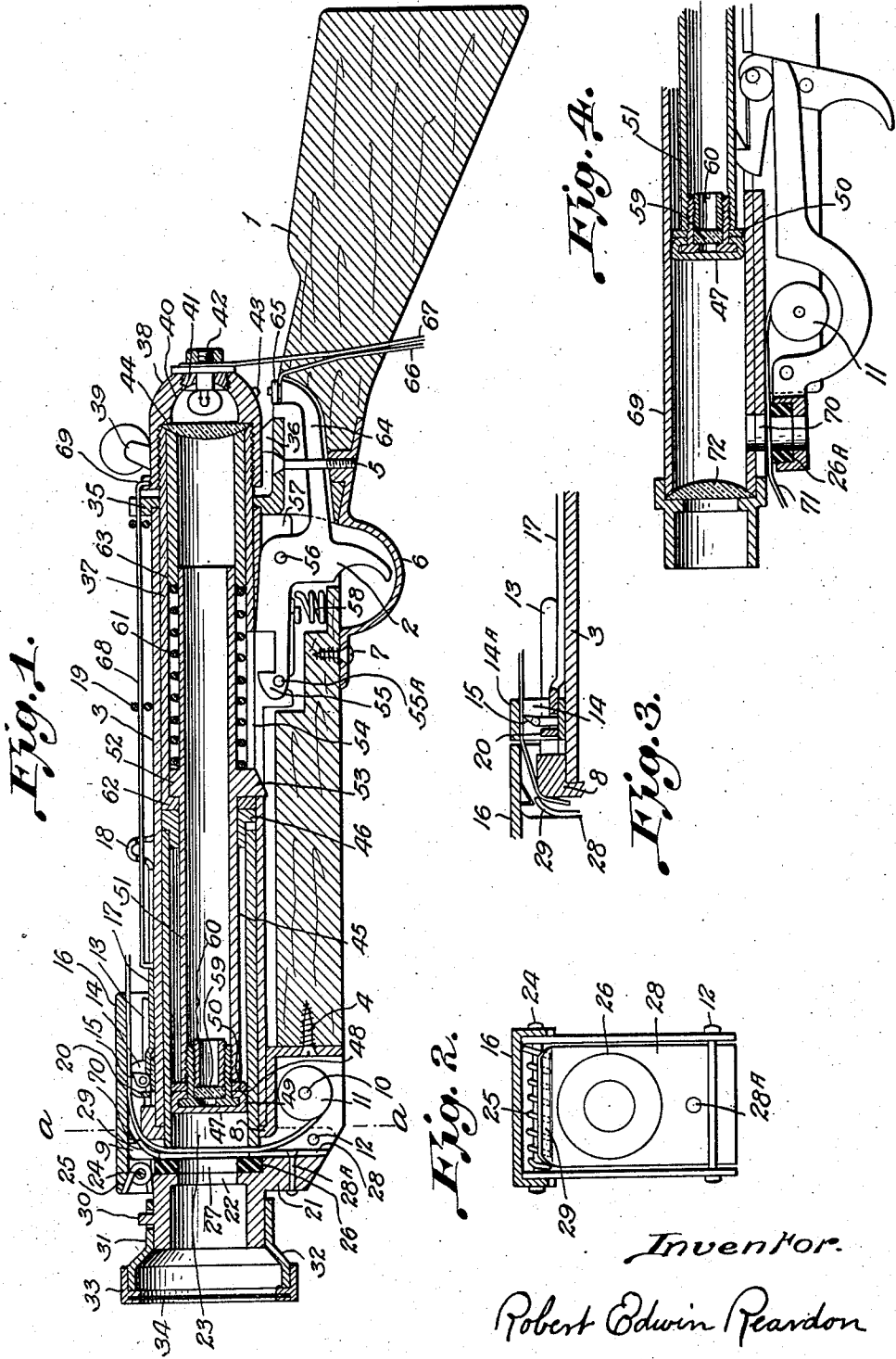
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PLAY GUN

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PLAY GUN

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My invention relates to improvements in play guns and particularly to those designed to simulate a real firearm in shape, handling and explosive effect. The object of my invention is to provide such a play gun that is productive of a louder and better shot effect than is usual in play guns—it having a megaphonic amplification of shot sound as well as a greater volume of sound—and having a bolt action that closely approximates that of military rifles, so that it is to some extent educative in their use. Furthermore my play gun in employing a paper bursting device for sound production provides means for preventing the scattering of paper debris about the scene of its use. An additional feature of my gun is the provision of means for projecting a beam of light upon the target axially of the barrel at the moment of gun discharge, thus coincidentally with the shot effect, spotting on the target the point of aim, or actuating a photo-electric cell in the target, if it is desired to use the gun with target apparatus of that type to make the firing act more realistic. Another feature of my gun as a piston actuated air compressing device is that the light transmitting means may be detached and aim taken through the piston and cylinder as it operates by using a transparent bursting material for sound production, or by placing the air outlet in the side of the barrel and sealing the gun muzzle with a transparent air resistant closure.

I attain the object of my invention by the construction illustrated in the accompanying drawing, in which:

Figure 1 is a vertical section of the gun, showing the parts as positioned prior to rotation of the breech bolt downward to lock same for firing operation.

Figure 2 is a facial plan of the extension muzzle, as if detached, on line *a—*a** of Figure 1, showing the apertured rubber pad therein and the spring facial plate which retains it in place.

Figure 3 is an enlarged fragmentary section of the gun muzzle and paper feed means.

Figure 4 is a fragmentary section illustrating a gun modification having the muzzle closed by a lens and a side air outlet in the barrel with paper held over same.

In the drawing similar numerals denote similar parts.

The gun body as shown is of wood and sheet metal, with a few parts of cast or stamped metal. The stock 1 is of regular gun design and hollowed to receive a trigger member 2 and barrel 3, which latter is assembled to the stock at the muzzle

and breech by means of screw 4 and bolt 5, which bolt also secures one end of a trigger guard 6 to the under side of the stock, the other end of said guard being attached by a screw 7. The barrel at the muzzle end has a cast or pressed metal cross plate 8 fitted upon it, which plate is channelled by side flanges on its face, as 9, and recedes beneath the barrel to form a paper housing recess that has a stud 10 set in it for mounting a roll of paper or the like, as 11, and is apertured suitably for the barrel assembly screw 4 and a transverse hinge pin 12. The upper end of this gun muzzle plate 8 extends over the barrel top, maintaining its channelled form, and extends farther rearwardly in two parallel round rods, as 13, immediately above the gun barrel and horizontally paralleling same, on which rods a pawl carrier 14, with opposed upright side flanges, is slidably mounted. On said pawl carrier is transversely pivoted in said side flanges a pawl 15 which is adapted to engage paper with its upper edge and rotate to bear upon a feed plate 16 adjacently above it, and extends downward below its pivotal point farther than it extends above said point. Beneath the lower end of the feed pawl 15 lies a flat wire rod 17, slotted lengthwise beneath the pawl to admit the lower end of same and slotted farther rearward for an inch or two adjoining its rear terminal, which is humped as at 18. Said rod 17 is mounted slidably, longitudinally of the gun barrel, as in eyelets 19, and the forward tip of the rod is suitably bent up, as at 20, to engage the lower edge of said pawl 15 when the rod is moved rearwardly and swing the upper edge of the pawl against a strip of bursting paper passed over it from the roll on stud 10, up the channel formed by the gun muzzle plate. Hinged at 12 to swing vertically upward, embracingly across the channelled muzzle plate 8, is a wider channelled muzzle extension member 21, the face plate of which has an aperture 22 in it that is smaller than and concentric with the gun muzzle aperture 23, and has pivotally mounted in the upper end of its side flanges by a transverse pivot pin 24, a downwardly side flanged feed plate, 16, which extends longitudinally over the gun barrel top above the sliding feed pawl 15 and its carrier 14, as an inverted horizontal channel for the spent paper strip coming up from the gun muzzle. This feed plate 16 also engages by tooth and notch means, as at 16A, the upper end of the muzzle plate side flanges thereat, and thereby holds the channelled face of the muzzle extension member 21 in position upon the oppositely channelled muzzle plate 8, the wider channel of member 21

embracing the muzzle plate channel, with the apertures in same concentric, opposed and spaced apart. The said feed plate 16 is held in engagement with the muzzle plate 8 and operatively close to the sliding feed pawl 15 by a spring 25 mounted on the feed plate pivot pin 24 to bear up beneath the fore end of the feed plate, anterior of its pivotal mounting, and downward against the muzzle extension body thereat. A rubber pad 26 is mounted in the face of the muzzle extension member 21 and has an aperture 27 therein that is concentric with the apertures in said muzzle plate 8 and extension member 21. Said rubber pad 26 is replaceably mounted in its recessed position in the face of extension member 21 by means of a frame plate of thin spring metal, 28, which is pinned at its lower end, as at 28A, to the member 21, and overlies the rubber pad 26, and has its upper end outwardly inclined to bear resiliently upon the rounded top corner of the muzzle plate 8 when the extension member 21 is assembled thereto, and thus act as a brake or retaining pawl for paper strip passing up the muzzle plate feedway. The forward end of the extension member 21, which may be termed the fore muzzle, is a cylindrical extension of the gun barrel 3 and has a stud 30 mounted upon it, somewhat as a foresight. On said fore muzzle is detachably mounted, by a bayonet jointed neck band 31, a bell mouth 32 which gives a blunderbuss muzzle finish to my play gun. This bell mouth 32 has detachably fitted upon it by means of a marginal band 33, a wire mesh screen 34, which does not prevent air or light transmission or lessen sound effect, yet prevents exit of and collects the broken paper blown out the muzzle by each gun discharge, allowing same to collect in the lower side of the flared mouth to be discharged in bulk when desired, by detaching the wire screen 34, or the entire bell mouth by means of said bayonet joint. Adjacent the breech end of the barrel in the gun stock is the trigger recess. The breech end of the barrel 3 is housed in an end piece 35 of L shape, the base of which, rearward of assembly bolt 5, bears a rearwardly sloped locking flange or stud 36 and is secured to the gun stock 1 by said bolt 5 engaging the trigger guard 6. Slidably housed in the breech of the gun barrel 3 is a tubular bolt cover 37, the threaded on butt piece of which, 38, bears on its right side a right angularly extended knobbed locking arm 39 that is adapted to be rotated limitedly downward to engage the locking flange 36 of the barrel end piece 35. The said lock arm bearing butt piece 39 of the tubular bolt cover 37 has an ovoid termination and is interiorly hollowed to form a bowl reflector 40, in which is set, in a threaded in detachable end piece socket, an electric light bulb 41 of suitable power. A binding post 42 and a button 43 exteriorly of the bowl connect with the bulb circuit. Set in the bowl 40, facing the electric bulb 41 and assembled between the rear end of bolt cover 37 and the screwed on butt piece 38 of same, is a plano-convex lens 44 adapted to throw light through the gun barrel 3 within said bolt cover. The said locking flange 36 is shaped and sloped to permit of the bolt locking arm 39 riding easily up its rear slope and descending easily into locking engagement with its forward edge, this wedge action combining with the rounded bearing of the bolt arm 39 to make the locking operation of my play gun easy, even against the tension of a compression spring of considerable operative energy. Slidably mounted in the barrel 3 is a cylinder 45 which has a bearing ring 46 mounted in its rear end, to form a bearing in the gun barrel for the cylinder and a bearing flange in the cylinder head for a piston rod or shank. Sliding within the cylinder 45 is a piston head 47 formed by an exteriorly and interiorly threaded ferrule 48, with its head flanged exteriorly and interiorly, that is thrust through a rubber or leather washer 49 of larger diameter than the cylinder interior but compressible within same, and a metal backing washer 50, of diameter to slide freely within the cylinder, and screwed into the threaded forward end of a tube which forms a piston rod or shank 51 that extends through the cylinder head bearing ring 46 and breech bolt cover 37 and has encircling it within said bolt cover a circumferential stop band 52, from the lower side of which a fin 53 projects downwardly through longitudinal slots, as 54, thereat in the under side of the tubular bolt cover 37 and the barrel 3, said fin being rearwardly sloped and adapted to travel back and forth in the said slots and be engaged by the nose 55 of trigger member 2, which is mounted on a transverse pivot pin 56 between two longitudinal flanges, as 57, extended downward thereat from the under side of the gun barrel 3. The trigger member nose 55 is sloped on its forward side and has lateral studs as 55A to prevent its excessive entry into said longitudinal slots 54 into which it is normally extended by means of trigger spring 58. Within the threaded ferrule 48 which assembles and helps form the piston head 47, and seated against the inward flange in the head of said ferrule, is a disk 59 of clear glass, flat sided in this case—but the same mounting might hold a lens—which is held in place by means of an exteriorly threaded band or ring 60 that is screwed into the ferrule 48 to abut said glass disk 59, thus closing and completing the piston head for its function of air compression but allowing transmission of light through the piston and the tube which constitutes its shank 51. Surrounding the piston shank or rod 51 within the bolt cover 37 is a compression coil spring 61 which abuts at its forward end the stop band 52 on the piston shank, which in turn normally contacts an engaging flange 62 extended inwardly from the forward end of the bolt cover 37. At the breech end said coil spring 61 abuts a wall abutment 63 formed by a bit of tubing set within the tubular bolt cover 37 thereat, which serves also to hold in place, by abutting same with its rearward end, the plano-convex lens 44 that is set within the butt piece 38 of the bolt cover, facing the electric light bulb 41. The trigger member 2, which is approximately Y shaped, has a rear arm 64 that extends somewhat diagonally up through the gun stock recess therefor and emerges adjacently below the ovoid butt piece 38 of the bolt cover, and is adapted to contact, by rotation thereagainst, a button, as 43, upon said butt piece which connects with the electric light bulb within same whenever the spring trigger is pressed for gun operation. Said rear arm 64 of the trigger member terminates in a screw post and binding nut, as 65, to which an electric wire, as 66, may be attached, adapted to be connected with the light bulb by contact of the screw post 65 with the button, as 43, by trigger rotation. To the other binding post 42, set on the ovoid butt piece of the bolt cover exteriorly of the light bulb and connected with same, the other wire, as 66A, of an electric lighting circuit may be attached. As a means of automatically feeding a strip of paper or the like across the gun muzzle apertures from

the paper roll stud 10, through the channel formed by the assembled, overlapped side flanges of the muzzle plate 8 and the muzzle extension member 21, I provide an extension of the feed pawl rod 17 along the gun barrel, by means of a round wire rod, as 68, headed forwardly to engage a slot in rod 17, which permits adjustment of movement, distance, and running through the hump 18 in the flat rod and eyelets such as 19 on the barrel top to terminally engage by its bent rear end a slotted circumferential rib, on the bolt cover butt piece 38, as at 69. This rod, moving rearward with the butt piece, pulls along one space the strip of paper engaged between the sliding pawl 15 and the feed plate 16 above it, whenever the bolt piece is drawn back for gun setting.

Operation of my play gun is simple. First the bolt is released from locked position, to release the cylinder muzzle from pressure on the rubber pad 26 and paper on the face of same. Then the gun muzzle extension member is released from assembly, by lifting the rear end of the feed plate 16, thus rocking it on its pivot pin 24 against the tension of the spring 25 until it is out of locking engagement with the upper end of the muzzle plate 8, as at 70. The muzzle extension member 21 is then swung downward on its pivot hinge 12; a roll of strip paper is mounted on stud 10, if necessary to do so, and the fore end of the paper passed up through the gun muzzle channel feedway and over the feed pawl 15. The muzzle extension member is then swung up into assembly again and the channelled feed plate 16 allowed to snap back into engagement with the top of the muzzle plate 8 and the feed pawl 15. The bursting paper is thus set in position for gun operation and held in the feedway by the brake spring bearing thereon of the upper terminal of the spring plate 28 which holds the rubber pad in place, this spring bearing the paper against the rounded top corner of the muzzle plate over which it passes. The several muzzle apertures are thus aligned and the cylinder muzzle in position to bear the paper against the rubber pad marginally of the aperture therein. The bolt piece is then drawn fully back, by means of the knobbed arm 39, drawing back with it the hollow piston rod and the compression coil spring mounted on the piston shank within the bolt cover, by engagement of the front flange on the bolt cover margin with the stop band 52 on the piston rod. Pull on the knobbed arm 39 is then continued until the stop fin 53 on the piston rod rides over and clicks on the nose 55 of the spring trigger, thus preventing return of the bolt cover 37 except by compression of the coil spring mounted on the hollow piston rod or shank within the bolt cover, between the forward marginal flange 62 and the rear abutment 63 in same. The bolt cover is then shoved forward again, by means of the knobbed arm 39, until it almost abuts the end piece 35 of the gun barrel, and rotated downwardly—its fore end bearing within the barrel on the head ring 46 of the cylinder and forcing the cylinder muzzle against the paper strip and the rubber pad behind it—until the locking arm 39 rides down the forward edge of the locking flange 36 on the base of the barrel end piece, sufficiently to engage same. The coil spring 61 on the piston shank is then compressed against the stop band 52 on said shank, by the abutment 63 in the breech end of the bolt cover. The spring trigger 2 being then pressed, the trigger nose 55 depresses to release the stop fin 53 of the piston shank, and the piston is driven forward in the cylinder by expansion of

the coil spring, compressing the air in the cylinder and bursting the paper strip which closes the muzzle aperture, the wire screen on the flared mouth collecting the blown out paper debris. During this action of the spring trigger, its rear arm 64, connected as by wire 66 in an electric circuit, rotates upwardly into contact with a button, as 43, on the under side of the bolt cover butt piece 38, to the binding post 42 on which the other wire, as 67, of the electric lighting circuit may be attached, thus completing a current circuit which illuminates the electric bulb within the bolt cover and, by aid of the reflecting bowl in which the bulb is set and the lens 44 in front of same, projects a beam of light through the bolt cover, the hollow piston shank and glass disk 59 in the piston head, to emerge from the cylinder and gun muzzle as the bursting paper which closes same is shattered by air compression, and throw a spot of light upon the target, to show the point of aim thereby or actuate a photo-electric cell. The paper strip may then be advanced across the gun muzzle by releasing the locking arm 39 and cylinder pressure on the paper and then either sliding the hand along the gun barrel top in engagement with hump 18 of the pawl rod 17, or by drawing back the butt piece for resetting of the gun, incidentally pulling rearward the wire rod 68 that is attached to the butt piece 38, thus swinging the pawl 15 up against the paper strip above it, to engage same and draw it along a space as the pawl slides with it upon the rod 13 on which the latter is mounted, the feed pawl pulling the paper strip along the feed plate 16 overhead. When desired the spent paper strip may be torn off against the end of feed plate 16, where it emerges from beneath same.

While I present the foregoing construction as the preferred embodiment of my invention, it is obvious that the form may be varied and yet come within the spirit of it.

The detachable screen and bell muzzle may of course be removed and the gun used without them. Bursting paper may be dispensed with and a suitable light projectile placed in the muzzle tension aperture and blow out by the air discharge.

If it be desired to use a transparent bursting material to permit of aiming through the hollow piston rod and windowed piston head, the screwed in detachable butt plug which carries the electric lamp, and the lens which faces that lamp, may be removed at will, thus leaving the gun breech open for aiming through the barrel as through a tubular gun sight.

The paper feeding pawl carrier 14, may in a modification shown in Figure 3, have a top cross plate 14A and the feed pawl 15 bear up against this top plate which travels with the paper, instead of scraping along the overhead feed plate 16 as shown in Figure 1 in the preferred form.

The barrel, likewise, in another modification illustrated in Figure 4, may have a side outlet 70 over which bursting paper 71 is held by a trigger applied leverage pressure, and the gun muzzle closed by a lens 72 or plain glass, thus permitting constant transmission of light, and aiming, through the barrel, glass closed piston head, hollow piston shank and bolt cover.

I claim:

1. In a play gun, a stock and barrel, a cylinder slidable in said barrel, an aperture in said barrel and means for clamping a strip of air fracturable material over said aperture, a breech member movable in said barrel to effect said clamping, a

piston member transparent longitudinally and slidable in said cylinder, and spring means for forcing said piston member forward in said cylinder.

5 2. In a play gun, a stock and barrel, an aperture in said barrel and means for clamping air fracturable material over same, cylinder and piston means for compressing air against said material, said cylinder and piston and barrel being transparent longitudinally, spring means for moving said piston forward in the cylinder, and spring trigger means for stopping and releasing said piston.

10 3. In a play gun, a stock and barrel, an aperture in the barrel and means for clamping air fracturable material over said aperture, cylinder and piston means for compressing air against said material, said cylinder and piston being transparent longitudinally.

15 4. In a play gun, a stock and barrel, an aperture in the barrel and means for clamping paper over said aperture, cylinder and piston means for forcing air against said paper, spring means for moving said piston, spring trigger means for stopping and releasing said piston, and a detachable bell mouth on said barrel having a wire screen thereon to intercept and collect paper debris blown out said aperture.

20 5. In a play gun, a stock and barrel, an aperture in the barrel, means for clamping paper over said aperture and means for moving paper across same, cylinder and piston means for compressing air against said paper, said cylinder and piston being transparent longitudinally, spring means for forcing said piston forward in said cylinder, spring trigger means for stopping and releasing said piston, and a wire screened detachable flared muzzle on said barrel to intercept and collect paper debris blown out said aperture.

25 6. In a play gun, cylinder and piston means for compressing air against a barrel aperture, an aperture in the piston closed by a transparent substance, a hollow shank on said piston, and electric lamp and lens means for projecting light through said hollow shank and the transparent closure in said piston.

30 7. In a play gun, a barrel, an aperture in said barrel and means for holding a strip of air fracturable material across said aperture and feeding it across same, cylinder and piston means for compressing air in said barrel, an aperture in the piston closed by a transparent substance, a hol-

low shank on said piston, electric lamp means for projecting light through said piston and hollow shank, and spring trigger means for releasing said air compressing means and completing an electric circuit through said lamp.

5 8. In a play gun, a stock and barrel, means for holding a strip of paper over an aperture in said barrel to close same, a hollow bolt member slidable in the breech of said barrel and lockable therein, a detachable butt on said hollow bolt member having an electric lamp seated therein and exterior means for electric circuit connection, reflector and lens means for projecting light from said lamp through said hollow bolt member and barrel, a hollow cylinder slidable in the barrel to abut said paper holding means, a piston in said cylinder having an aperture therein closed by transparent substance, a hollow shank on said piston extending into said hollow bolt member, an opening in said paper holding means opposite the muzzle of said hollow cylinder, spring means for forcing the piston forward in said hollow cylinder, and spring trigger means for engaging and releasing said piston and completing and breaking an electric circuit in said lamp.

10 9. In a play gun, a stock and barrel, an aperture in the barrel, means for holding and feeding a strip of air fracturable material across said aperture in the barrel a piston in said barrel, an aperture in said piston closed by a transparent closure, a hollow piston rod on said piston, electric lamp means for projecting a beam of light through said piston rod and piston closure, compression spring means for forcing said piston forward in said cylinder, spring trigger means for engaging and releasing said piston and completing and breaking an electric circuit through said lamp, and means for detaching the lamp holding means to permit vision through the gun barrel.

15 10. In a play gun having a stock and barrel, an electric lamp and lens mounted in same to project light through said barrel, a normally open electric circuit including said lamp, means in said gun for producing a gun shot sound, and trigger means movable to close said electric circuit and release said sound producing means.

20 11. In a play gun having a stock and barrel, means for projecting a beam of light longitudinally of the barrel of said gun and means for producing a gun shot simulative sound coincidentally with the projection of said beam of light.

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