

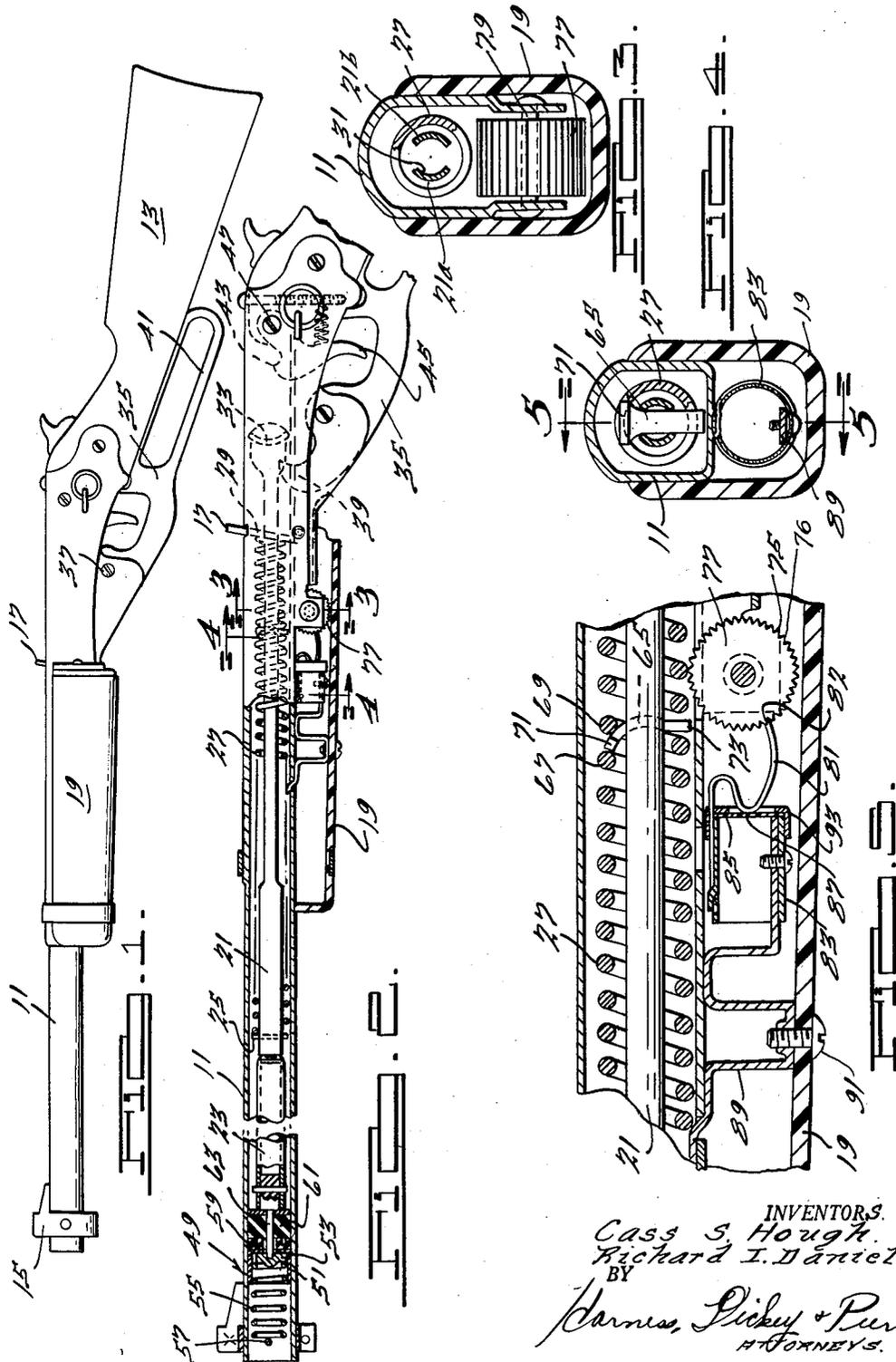
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C. S. HOUGH ET AL

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NOISE MAKING POPGUN

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INVENTORS
Cass S. Hough
Richard I. Daniel
BY
Carnes, Pickett & Purvis
ATTORNEYS.

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NOISE MAKING POPGUN

Cass S. Hough and Richard I. Daniel, Rogers, Ark., assignors, by mesne assignments, to Daisy Manufacturing Company, Rogers, Ark., a corporation of Nevada

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This invention relates generally to toy guns and particularly to a noise making popgun.

Toy popguns which produce noises simulating the firing of a real firearm have for many years been a source of amusement for small children. Parents have frequently provided their children with noise making popguns when they felt that they were too young to handle a firearm or other propellant firing guns. As in the case of many toys, the attractiveness of a particular popgun to children depends largely upon the measure of realism which it achieves. In one commercially successful toy noise making gun, for example, a plunger is cocked against a spring and upon being released compresses air within a chamber which is instantaneously opened by a projection on the end of the plunger to produce a markedly loud "bang" and, at the same time, generate a small amount of smoke. The details of this construction are shown in United States Patent No. 2,729,208, assigned to the assignee of the present invention.

The popgun shown in the aforementioned Patent No. 2,729,208 is in the form of a rifle simulating in appearance the early western carbine. While this popgun has achieved substantial commercial success, it has been discovered that there is yet another noise which children associate with a firearm and particularly with a rifle. This is the high-pitched whine of a bullet passing through the air after it has ricocheted or glanced off of a stone or other object. It has been found that children occasionally attempt to produce this noise with their voices, and experimentation has shown that a gun capable of producing such a noise when shot possesses tremendous "child appeal." Accordingly, it is an object of the present invention to provide a toy popgun capable, not only of producing the "bang" or noise of a firearm being discharged, but also capable of producing a "bullet ricochet" noise following the firing noise.

It is another object of the present invention to provide a noise making popgun of the above character in which the plunger which produces the firing noise or bang is also utilized to actuate the means for generating the bullet whine noise.

It is still another object of the present invention to provide a noise making popgun of the above character incorporating a vibration producing drum which is automatically rotated to actuate the ricochet noise producing mechanism upon each firing of the gun without the necessity of any separate adjustments or settings other than the normal cocking of the gun.

It is still another object of the present invention to provide a noise making popgun of the above character which is sturdy in construction, inexpensive of manufacture and may be expeditiously incorporated in popguns of a rifle or western carbine simulating exterior appearance.

These and other objects of the present invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings wherein:

FIGURE 1 is a side elevational view of a noise making popgun embodying the principles of the present invention;

FIG. 2 is an enlarged view partially in longitudinal

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vertical section and partly in side elevation of the structure illustrated in FIG. 1;

FIG. 3 is an enlarged sectional view of the structure illustrated in FIG. 2 taken along the line 3-3 thereof;

FIG. 4 is an enlarged sectional view of the structure illustrated in FIG. 2 taken along the line 4-4 thereof; and

FIG. 5 is a sectional view of the structure illustrated in FIG. 4 taken along the line 5-5 thereof.

Referring now to the drawings, it will be seen that the toy gun of the present invention includes a barrel and frame member 11 connected to a stock 13. Front sights 15 and rear sights 17 are provided on the barrel 11 as is a forearm 19. The forearm 19 and stock 13 may be conveniently formed from either molded plastic or wood, while the barrel and frame member 11 is desirably made from sheet metal. An elongated plunger 21 is enclosed within the barrel and frame member 11 and is provided with a tubular extension 23 at the forward end thereof. A pin 25 is fitted transversely across the forward end of the plunger 21 and serves as an abutment for the forward end of a coil spring 27. The rear end of the spring 27 seats against an abutment 29 which is an extension of the rear sight 17 and is connected to the barrel and frame member 11. The rear end of the plunger 21 is split or bifurcated into segmentally cylindrical opposed wall portions 21a and 21b, so as to define a vertically disposed slot 31 therebetween. The rear ends of the plunger portions 21a and 21b are rigidly interconnected by a plate 33.

A cocking lever 35 is pivotally connected intermediate its ends to the barrel frame at 37 and the forward end 39 thereof is adapted to engage the plate 33 at the back of the plunger, so that when the rear end or handle portion 41 of the lever 35 is swung downwardly, the forward end 39 of the cocking lever will move upwardly and rearwardly to move the plunger tube rearwardly and compress the spring 27. As the plate 33 moves rearwardly, it rides over a sear 43 on a trigger 45 which is pivotally connected to the barrel frame at 47 so that the sear engages the plate 33 and holds the plunger in a retracted position. When the trigger is pulled the sear 43 swings downwardly away from the plunger plate 33 and permits the plunger to be propelled forwardly by the spring 27.

The forward end of the barrel 11 is provided with a valve mechanism generally indicated at 49. The valve mechanism 49 includes an apertured housing 51, the aperture of which is covered with a valve element 53 held in place by a spring 55 seated against a pin 57 secured transversely across the barrel 11 at the forward end thereof. An annular resilient packing seal 59 seats against the housing 51 at the rear end thereof and is adapted to be engaged by a resilient packing member 61 carried at the forward end of the tubular plunger extension 23. A rod 63 extends through and forwardly of the packing member 61 so as to project through the annular seal 59 and engage the valve element 53 at the end of the forward movement of the plunger 21. As is fully explained in the aforementioned United States Patent No. 2,729,208, the packing member 61 compresses the air forwardly thereof and between it and the valve mechanism 41 within the barrel, which compressed air is instantaneously released by forward displacement of the valve element 53 by the plunger rod 63, which displacement releases the compressed air and produces a loud bang to simulate the firing noise of a rifle.

The ricochet or bullet whine noise making mechanism of the gun is enclosed by the forearm 19 and is actuated by a pawl or finger 65 loosely carried by the plunger 21 between an adjacent pair of convolutions 67 and 69

of the spring 27 in a manner permitting the pawl to flex or pivot relative to the longitudinal axis of the plunger. The pawl 65 has an upper widened head portion 71 of greater width than the slot 31 through which the body of the projection 65 extends. The head 71 thus serves to prevent the projection from dropping through the slot 31. In addition, the abutment of the head portion 71 against the convolutions 67 and 69 of the spring 27 prevents substantial rotation or angular movement thereof. In addition, the pawl 65 is curved or bent whereby the upper end of the head portion 71 will engage the forward convolution 67, while the body of the pawl will engage the convolution 69 to prevent upward movement of the projection out of its slot 31. As will be seen in FIG. 5, the lower terminus 73 of the pawl 65 depends beneath the spring 27, in axial alignment with the toothed or serrated periphery 75 of a wheel or drum 77 rotatably supported by the frame and barrel member 11 on a pivot pin 79. The grooves or serrations in the periphery 75 thus form a large number of radially extending teeth or projections 76 spaced circumferentially around the wheel 77. When the plunger 21 is cocked, the lower terminus 73 of the finger 65 will engage one of the projections 76, but is free to tilt forwardly and upwardly so as to slide easily across the top of the wheel periphery 75. Thus, when the gun is cocked, the finger 65 is positioned to the rear of the wheel 77. When the gun is fired, the spring 27 uncoils to move the plunger 21 forwardly, and carries the finger 65 with it so that the terminus 73 of the finger 65 rides across the periphery 75 of the wheel 77 in engagement with a tooth or projection 76 thereof and rapidly rotates the wheel 77.

The rotation of the wheel 77 serves to vibrate a reed 81 in the form of a sinusously bent wire, the free end 82 of which is in engagement with the serrated periphery 75 of the wheel. The vibrations of the reed 81 are detected by and amplified in a sound chamber formed by a cylinder 83 which is open at its forward end and closed at its rear end by a flexible diaphragm 85. As may be seen in FIG. 5, the reed 81 is supported on the cylinder 83 and is provided with a curved shoulder 87 in contact with the diaphragm 85. The cylinder 83 is supported at one end of a bracket 89 which is secured at its opposite end to a frame and barrel member 11 and to which the forearm 19 may be attached as by a screw 91. The diaphragm 85 may be formed of a thin sheet of flexible plastic or any other convenient material and may be held to one end of the cylinder 83 by any suitable means, such as a flanged collar 93.

It will be seen that when the gun is cocked by the lever 35, the spring 27 will be sufficiently compressed in a rearward direction that the pawl 65 will be positioned rearwardly of the serrated drum 77. As the gun is fired, the plunger moves rapidly forward in the barrel, compressing the air in the forward end of the barrel and producing a loud bang by the instantaneous release of said compressed air. At the same time, the pawl 65 moves forwardly and engages the periphery of the wheel 77 to impart a rapid rotation thereto. The rotation of the wheel 77 causes vibration of the reed 81, which in turn vibrates the diaphragm 85. The vibrating of the diaphragm 85 and the sound chamber 83 serve as a loud speaker to produce a loud, high pitched "whine." Due to the loud bang, which tends to drown out the high-pitched whine and because of the extremely high frequency of the initial noise of the "bullet ricochet noise" producing mechanism, the "ricochet noise"

is not audible until after the firing noise produced by the opening of the valve mechanism 49. Thus, the total noise produced by the gun of the present invention is first a loud bang simulating the discharge of a firearm, followed by a somewhat prolonged and high-pitched whine or whir simulating the noise made by a bullet passing through the air after it has ricocheted off of an object.

While it will be apparent that the preferred embodiment herein illustrated is well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. A toy gun including means for producing a noise simulating the discharge of a firearm, said means having a cockable plunger for effecting actuation thereof, means for holding said plunger in a cocked position, a spring adapted to be compressed when said plunger is cocked for actuating said plunger upon the release thereof, a wheel mounted for rotation adjacent said plunger, a pawl loosely mounted on said plunger and movable longitudinally of said plunger across the periphery of said wheel under the influence of said spring for producing free spinning rotation of said wheel, and a mechanism actuated by rotation of said wheel for producing a noise simulating the ricochet of a bullet.

2. A toy gun including means for producing a noise simulating the discharge of a firearm, said means having a cockable plunger for effecting actuation thereof, a spring adapted to be loaded when said plunger is cocked for actuating said plunger, a drum having projections on the periphery thereof supported for rotation adjacent said plunger, a pawl flexibly mounted on said plunger and movable across the periphery of said drum upon the release of said plunger from a cocked position to produce free spinning rotation of said drum, a sound chamber having a diaphragm, and a flexible wire engageable with said diaphragm and with the periphery of said drum so as to be vibrated by said drum upon the rotation thereof.

3. A toy gun including a cockable plunger having a longitudinally extending slot therein, a coil spring disposed about said plunger and adapted to be compressed when said plunger is cocked for actuating said plunger, a wheel supported for rotation adjacent said plunger, a pawl extending through the slot in said plunger and loosely carried between adjacent convolutions of said spring, said pawl having a terminal portion movable across the periphery of said wheel for imparting a free spinning rotational movement thereto, and a noise producing mechanism adapted to be actuated by rotation of said wheel.

4. The structure set forth in claim 3 in which said pawl is provided with a head of a greater width than said plunger slot and is bent to provide portions thereof engageable with the adjacent convolutions of said spring to maintain said pawl between said convolutions.

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