To all whom it may concern:

Be it known that I, BENEDET F. EDELIN, of Washington, in the District of Columbia,

have invented new and useful Improvements in Pneumatic Toy Pistols, of which the following is a specification.

My invention relates to toy pistols and

has for one of its objects to produce a pneumatic pistol in which the air is released by a hammer blow on the air release mechanism imparting a sudden impact to the shot or projectile.

Another object of my invention is to provide a toy pistol in which the mechanical parts are so arranged that the pistol simulates in form and action a real automatic pistol.

Another object of my invention is to provide a pneumatic toy pistol in which the air release means controls also the feed from the magazine.

Still another object of the invention is to produce a pneumatic toy pistol in which a selective range of power is provided.

With the above and other objects in view, my invention consists in the improved pneumatic toy pistol illustrated in the accompanying drawings, described in the following specification, and particularly claimed, and in such variations and modifications thereof as will be obvious to those skilled in the art to which my invention relates.

In the drawings accompanying and forming a part of this specification, and wherein the preferred embodiment of my invention is illustrated:

Figure 1 is a sectional elevation of my invention.

Figure 2 is a plan view in section showing my improved air mechanism.

Figure 3 is a plan view showing the air chamber partly in section.

Figure 4 is a section of the air chamber taken along the lines 4-4 of Figure 1.

Figure 5 is a perspective view of the key for operating the pistol.

In the drawings numeral 1 represents the air cylinder of the gun which is a hollow member permanently closed at the top, preferably oval in form as shown in Figure 2, and slightly inclined to form a convenient grip. Attached in any suitable manner to one side of the air cylinder is the barrel block 2 bored, as at 3 to form the barrel of the gun and provided with a hollow cylindrical bore 4 comprising a magazine for holding the round projectiles or shot 5. Below the magazine is the trigger loop 6 which connects with an elongated guard or cover 7 of U-shaped cross section extending down along the side of the grip and forming thereon an enclosure for the lower part 8 of the trigger mechanism. Extending rearwardly from the top of the grip member are the early 9 arranged in parallel relation, the space between them being preferably filled with a wooden block 10 appropriately shaped to finish the grip of the gun.

The bottom of the air cylinder is closed 70 by the metallic cover plate 11 of a shape corresponding to that of the air cylinder having flanges 12 entering within said air cylinder said flanges and cylinder being apertured with aligned threaded openings 75 for the reception of screws 14 which hold said cover plate in place. The middle of this cover plate is apertured at 15 and receives in sliding relation thereto a rod 16 of the piston 17 by which air is compressed within the air cylinder. Within the air cylinder and resting upon the flanges of the cover plate 12 is a flat oval abutment plate 18 against which lies one end of a heavy helical spring 19 the other end of which bears against the inner surface of the piston 17 maintaining the rod 16 in tensioned position inwardly of the grip member. The abutment plate 18 is apertured to allow passage therethrough of the rod 16.

The piston 17 comprises a plurality of washers arranged on the reduced end 20 of the rod 16 which end is flattened on one side as shown in Figure 2 to cooperate with like shaped apertures through the centers of the washers. By this means the rod 16 is prevented from rotation. One of the washers is preferably of flexible material flanged outwardly as at 21 in order to more effectively seal the space between itself and the inner wall of the air cylinder along which the piston is adapted to slide in substantially air tight, engagement when moved in the direction in which the flange extends and to permit a slight leakage of air by said flange when moved in an opposite direction.

The washers are retained in position on the reduced end 20 of the rod 16 by a nut 22 which has a sloping contour to its upper surface for a purpose hereinafter to be described. The rod 16 is notched at several points along the side facing of the trigger.
mechanism by means of notches 23, 24 and 25 having sloping faces as shown. These notches are adapted when the rod 16 is withdrawn to the dotted line position to act with an angular latch portion 26 of the trigger member 8. The rear end of the barrel block 2 is reduced in cross section as shown at 27 and fits into a bore 28 in the wall of the air chamber 7 into which it extends a short distance. Its inner end is closed as shown at 29 except for a squared aperture 30. Within the reduced portion of said barrel block is slidably arranged a valve block 31 which is round in cross section fitting the bore 3 of the barrel in tight relation thereto but freely slideable therein as best shown in Figure 2. The valve block 31 is open at its inner end and closed at its outer end from which projects a squared valve stem 32 fitting the squared opening 30 in the end 29 of the reduced portion, and slideable therethrough. A light spiral spring 33 surrounds this stem and abuts at one of its ends against the closed end 29, the other end being held under compression by a pin 34 by means of which spring the valve block is held normally against the closed end of the reduced portion of the barrel block. The length of this spring is sufficient to prevent the valve block from being opened by the pressure of the compressed air in the air chamber. The end of the valve stem is bevelled and adapted to coact, with the sloping contour of the nut, to open said valve block when the rod 16 is projected upwardly by release of the helical spring 19.

At a point remote from its closed end 29 the reduced portion of the barrel is apertured as at 35 to place said barrel in communication with the air chamber 7. The valve block 28 is hollow and apertured at a point 36 which is normally out of registry with the aperture 35 when the valve block is in retracted position but adapted to be placed in registry with the aperture 35 when the valve block is moved forwardly a short distance, opening communication between the air chamber and the bore 3 of the barrel.

The magazine portion of the gun comprises the cylindrical bore 4 communicating near its inner end with a tubular portion 37 extending at first longitudinally thereof and then bending vertically upward. The end of the tubular portion facing the magazine is flared to facilitate the entrance of shot therein. This tubular portion opens into the bore 3 of the barrel member 2 at a point immediately adjacent the open end of the valve block 27 when the latter is in normally retracted position. When the valve block is actuated in the manner hereinafter described it is adapted to overrun the tube 37 and cut off its communication with the bore 3. Within the magazine is a spiral spring 38 attached at each end to an abutment 39 and 40 respectively. The abutment 39 has a flat face 41 adapted to push against the shot in the magazine and impel them into the tube 37 causing the foremost shot to position itself in the bore 3 of the barrel, adjacent the open end of the valve block. The other abutment has an external portion 42 serving as a knob or handle by which the magazine is opened, and is provided with a pin 45 working in a bayonet slot 44 adjacent the outer end of the magazine member by which the knob 43 is secured in place in the end of said member.

The upper end of the trigger mechanism 8 comprises a finger piece 45 integral therewith exposed within the trigger loop 6, said trigger being pivotally secured by the pin 46, within the tubular guard 7. A leaf spring 47 lies in a recess in the back portion of the finger piece 45 and reacts between said finger piece 45 and the outer wall of the air chamber 1. This leaf spring maintains the lower end 26 of the trigger in engagement with the rod 16 and impels it into engagement with one of the notches 23, 24 or 25 when the rod 16 is pulled outwardly from the lower end of the air chamber 1. The lower end of the rod 16 is provided with a head 48 transversely apertured at 49 for the reception of the key or operating member shown in detail in Figure 5. This comprises a short vertical piece 50 having transverse handles 51 on opposite sides thereof and an angular projection 52 adapted to fit within the aperture 49.

In the operation of the device the rod 16 is withdrawn until the lower end of the trigger 26 falls into one of the notched portions of the rod, the notches being selectively chosen by the operator according to the degree of compression in the finger piece 45. When the finger piece 45 is pressed inwardly the trigger piece 26 will be withdrawn from the notch with which it was engaged permitting the piston to be forcibly impelled by the helical spring 19. This compresses air in that portion of the air chamber between the piston and the upper closed end of said air chamber. At the moment the sloping surface of the nut comes in contact with the valve stem 31 it causes the valve block to be moved outwardly against the tension of the spring 33 putting the aperture 36 of said valve block into registry with the operture 35 in the reduced portion of the barrel permitting a sudden release of the compressed air through said apertures against the shot which lies adjacent the open end of said valve block driving said shot through the barrel of the gun. The same forward motion of the valve block closes the upper end of the feed tube 37 and prevents another shot from taking the place of the one just fired until said valve block is again permitted to retract by with...
beveled end of the same. . . . . with the longitudinal portion of the bayonet slot then withdrawing the knob 42 with the spring 38 and the abutment 41. The tubular chamber 4 is then filled with shot to within a short distance of its end. The abutment 41, spring 38 and knob 42 are then replaced as a unit with the spring in compressed position the knob 42 being inserted within the end of the magazine and retained in place by turning it until the pin 43 lies within a transverse portion of the bayonet slot. The force of the spring will push the abutment 41 against the shot forcing one of them as shown at 6 into operative position relative to the valve block 23.

The position of this one shot prevents the feeding of more than one shot into the barrel at a time.

It is obvious that the specific details of construction and configuration of parts described herein may be modified in various ways without sacrificing the advantages of the invention or departing from the scope thereof as defined in the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a pneumatic pistol, an air compressor having a movable element, a barrel communicating with said air compressor, a valve controlling the communication between said barrel and air compressor, said movable element being constructed to deliver a hammer blow to said valve at the peak of compression to open said valve.

2. In a pneumatic pistol, a compression cylinder having a closed end, a barrel communicating with said cylinder adjacent its closed end, a piston within said cylinder having a piston rod extending throughout the cylinder, means impelling said piston rod inwardly to compress air between itself and the closed end of the cylinder, a cam member on said piston, a valve normally closing communication between said compression chamber and barrel, a member projecting from said valve and into the path of said cam member, said cam member being so located as to coact with said cam member at the top of the compression stroke of said piston to open said valve.

3. In a pneumatic toy pistol, a hollow member forming an oval compression chamber having a closed top and an apertured bottom, a rod extending through said apertured bottom, into said compression chamber, said rod having a non-circular inner end, a piston secured to said non-circular end including a washer fitting the shape of the compression chamber and having an aperture fitting the non-circular end of the rod by which means rotation of the rod relative to the compression chamber is prevented.

4. In a pneumatic toy pistol, a hollow member forming an oval compression chamber having a closed top and an aperture at its bottom, a rod extending through said apertured bottom into said compression chamber, said rod having a non-circular inner end, a trigger pivotally mounted on said hollow member arranged to swing in the path of said rod, a notch in said rod on the side adjacent said trigger, a piston on said non-circular end including a washer fitting the shape of the compression chamber and having an aperture fitting the non-circular end of the rod by which means rotation of the rod relative to the compression chamber is prevented.

5. In a pneumatic toy pistol, a hollow member forming a compressed air chamber, a gun barrel having an extension projecting within said chamber provided with a closed end and a lateral port, a valve having a port adapted to be moved into and out of registry with the port in said barrel to control communication between said air chamber and barrel, the closed end of the extension having a non-circular aperture, a non-circular valve stem secured to said valve and extending slidable through said aperture, a spring cooperating with said valve stem to hold the valve in closed position and means engaging with said valve stem for opening said valve.

6. In combination a hollow member forming an air compression chamber, a magazine for holding shot arranged adjacent said chamber, a barrel having adjacent ports communicating respectively with the air compression chamber and with the shot magazine, a valve in said barrel movable to simultaneously open the port to the air chamber and obstruct the port to the shot magazine, means for compressing air in said compression chamber, means in said magazine for feeding shot to said barrel said valve being actuated by said air compressing means.

7. In a pneumatic toy pistol, a hollow member forming a compression chamber closed at its upper end and apertured at its lower end, a barrel in valve controlled communication with the compression chamber, a valve in said barrel, a valve operating rod extending through said apertured lower end of the compression chamber, a guide secured to the inner end of said rod and making a substantially air tight joint with the inner wall of said compression chamber, a spring between said guide and lower end of said chamber normally holding said rod in inward position, a cam on said rod for actuating said valve and means external to said hollow chamber for withdrawing said rod to put said spring under compression.
8. In a toy pistol, a hollow member comprising a compression chamber having a closed top and an apertured bottom, an apertured partition extending across said chamber in spaced relation to the bottom of the hollow member, an elongated casing extending longitudinally of the hollow member, a barrel block extending angularly of said hollow member and projecting at one end thereinto, said barrel block being provided with a bore and embracing a magazine chamber, ports in said bore communicating respectively with said compression chamber and magazine chamber, a trigger loop connected to said barrel block and said elongated casing, a rod reciprocably mounted in said hollow member passing through the apertures in said partition and the bottom of said hollow member, a notch on said rod on the side adjacent said elongated casing, a piston secured to said rod near its upper end, a cam member secured to the upper end of said rod, a spring surrounding said rod bearing at its respective end against said partition and piston, means on an external portion of said rod adapted to cooperate with withdrawing means for putting said spring under compression, a trigger mounted in the elongated casing having a latch portion operating between said partition and the bottom of the hollow member for engagement with the notch in said rod, said trigger being provided with a finger piece exposed within said trigger loop having a recess in its rear portion, resilient means in said recess engaging said trigger to hold said latch portion in engagement with the notch in said rod, a valve in said barrel block controlling simultaneously the ports leading to the compression chamber and magazine and a valve stem for said valve lying in the path of said cam member to be struck thereby for operating said valve when the latch means are released by pressing the finger piece of the trigger.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

BENEDICT F. EDELIN.

Witnesses:

CATHERINE EDELIN,

LAWRENCE EDELIN.