PATENT SPECIFICATION 834,461

DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

Toy Guns.

We, BRITAINS LIMITED, a Company organised under the laws of Great Britain, of Sutherland Road, Walthamstow, London, E.17, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to toy or model guns and is concerned with an improved firing mechanism therefor.

Most toy guns are muzzle loaded, the projectile being fired by a spring actuated striker, this striker consisting of a lever arm which is freely movable within a slot formed in the barrel of the gun at the breech end. Normally the lever member is formed with an extension and projects above the barrel so that it can readily be withdrawn and released by the person firing a projectile.

According to the present invention a toy or model gun, comprises a barrel structure including a barrel portion and a breech block portion, a bore through which a projectile is fired extending from the muzzle end to the breech end of the barrel, a second bore forming a chamber and extending substantially parallel to the first bore for housing a striker rod having an offset arm and a compression spring which engages the rod, a slot provided in the breech block portion to receive the offset arm and to permit movement of the striker rod against the action of the spring to cock the gun, a recess or shoulder for receiving the offset arm to hold it in the cocked position preparatory to firing a projectile, and stop means for preventing contact between the breech end of the barrel and the arm of the striker rod when the rod is released, by movement of the offset arm, for firing, the striker rod being of such length and configuration that it serves as the cocking handle, the trigger, and the striker of the gun.

The invention is illustrated in the accompanying drawings in which:—

Figure 1 is a side elevation of a toy gun constructed in accordance with a preferred embodiment of the invention, the barrel structure being shown in section to illustrate the operation of the firing mechanism; and

Figure 2 is a transverse section on an enlarged scale on the lines 2—2 of Figure 1.

Referring to the drawings, there is shown a model toy gun comprising a mobile carriage C supported by wheels W. The carriage C has upstanding bracket arms B, each arm having a trunnion T for supporting the barrel structure S so that it is capable of elevation and depression. A is the usual gun shield.

The barrel structure comprises a barrel 1 and a breech block 2 the breech block 2 having a rearward extension 3 thereby providing a breech block portion; extending from the muzzle end to the breech end of the barrel is a longitudinal bore 4 which continues through the breech block 2 into the extension 3 where it is terminated by a shoulder 5. Where the barrel 1 joins with the breech block 2 the bore 4 is curved upwardly as at 6 so as to provide an entrant recess 7 for insertion of projectiles, one of which is shown in position at 8. Extending longitudinally of the bore 4 and arranged preferably beneath it is a second bore or chamber 10 in which is slidably carried a striker rod 11.

The striker rod 11 is urged forwardly by means of a coil spring 12, one end of which is seated against the end 13 of chamber 10, while its other end engages an enlarged head

[*Price*

14 on the striker rod 11. Formed in the extension 3 of the breech block is a vertical slot 15 to receive an offset arm portion 17 of the striker 11. The offset arm portion 17 extends transversely of the bore 4 of the barrel and is adapted to function as the cocking handle and trigger by means of which the gun is fired.

For this purpose the extension 3 of the breech block is cut away as at 18 to provide a shoulder or recess behind which the arm 17 of the striker rod can be engaged when the striker is pulled rearwardly preparatory to loading and firing the gun. To assist the firer in operating the offset arm 17, it is preferably, as shown, formed with a finger piece 19.

In the embodiment illustrated as clearly shown in Figure 2, the barrel structure is constructed in two halves, which separate along a vertical plane, the purpose being to enable insertion of the spring 12 and striker rod with chamber 10. The two halves of the barrel structure may be united by a muzzle collar 29 and rivets or screw studs 31 at the breech end.

Provision may be made for adjusting the angle of elevation of the barrel and for this purpose, the barrel structure is formed on its underside with a depending lug 20 having a detent 21 adapted to engage between one or other of a series of teeth 22 formed on the upper face of one arm 23 of a two-armed lever, the other arm being indicated at 24.

The two-armed lever is mounted to pivot about a fulcrum 25 carried by a bracket 26 on the undercarriage C. On the rear arm 24 of the two-armed lever is a circular head 28 having on its inside a stud to locate one end of a coil spring 30, the other end of the spring being located by a seating such as a stud at the rear of the two brackets B constituting the trunnion mounting for the barrel structure S.

It will be seen that the thrust of the compression spring 30 tends to urge the two-armed lever 23 — 24 in a clockwise direction about its fulcrum 25, thus causing one or other of the grooves between the rack teeth 22 to engage the detent 21. In effect the two-armed lever functions as an adjustable rack member on the carriage for engagement by the detent 21 on the barrel structure.

It will be obvious, however, that by applying pressure in the direction of the arrow X on the finger piece 28, that the lever can be moved to allow the detent to disengage when the elevation of the gun can be adjusted to fire high or low as the case may be.

In operation and assuming that the elevation has been adjusted to suit the required range, all the firer has to do is to pull the trigger arm 17 rearwardly when the firing pin will move from the dotted line position shown in Figure 1, to the full line position where it is held by swinging the arm 17 to engage the recess 18. A projectile 8 is then inserted in the open breech and the gun is fired by releasing the trigger arm 17 which in its forward movement ejects the projectile.

The firing mechanism of this invention has the advantage that the action is simple and effective in operation.

The barrel structure of this invention has numerous advantages. Since the gun of this invention is breech loaded it is more realistic as a toy and in use there can be no damage to the barrel since when the striker moves forwardly under the action of its spring, the striker pin head 14 engages the stop formed by the forward end of the chamber 10, at which moment the striker arm 17 is arrested at a position shown in dotted lines, which is clear of the breech block 2 so that it comes to rest slightly behind the part 6.

From a manufacturing standpoint the gun has the advantage that different gauge springs and different lengths of springs can be fitted without any change in the construction of the gun.

The barrel structure being self-contained, can be fitted as the firing mechanism to any existing design of toy gun without disturbance of its general layout.

The firing mechanism is simple and effective in operation and due to the location of the mechanism outside the bore of the barrel of the gun, it reduces manufacturing costs. The barrel structure can be fabricated as a moulding in plastic material.

WHAT WE CLAIM IS:—

1. A toy or model gun, comprising a barrel structure including a barrel portion and a breech block portion, a bore through which a projectile is fired extending from the muzzle end to the breech end of the barrel, a second bore forming a chamber and extending substantially parallel to the first bore for housing a striker rod having an offset arm and a compression spring which engages the rod, a slot provided in the breech block portion to receive the offset arm and to permit movement of the striker rod against the action of the spring to cock the gun, a recess or shoulder for receiving the offset arm to hold it in the cocked position preparatory to firing a projectile, and stop means for preventing contact between the breech end of the barrel and the arm of the striker rod when the rod is released, by movement of the offset arm, for firing, the striker rod being of such length and configuration that it serves as the cocking handle, the trigger, and the striker of the gun.

2. A toy or model gun as claimed in Claim 1, in which the bore of the barrel is

provided at the breech end with an entrant recess to receive the projectile.

3. A toy or model gun as claimed in Claim 1 or Claim 2 in which the chamber for the striker rod and spring is located beneath the bore of the barrel.

4. A toy or model gun as claimed in any of Claims 1 to 3 in which the barrel structure including the breech block portion, is formed in two halves to permit of insertion of the striker rod and spring within its chamber.

5. A toy or model gun as claimed in any of the foregoing claims having a carriage in which the barrel structure is mounted so as to be capable of elevation and depression movements and elevating means comprising an adjustable rack member on the carriage for engagement by a detent on the barrel structure.

6. A toy or model gun as claimed in Claim 5 in which the rack member comprises a two-armed lever mounted for rocking movements in which one arm is provided with teeth and functions as a rack for engagement with the detent and the other co-operates with a spring by which the rack is normally held in interengagement with the detent.

7. A toy or model gun substantially as described and illustrated in the accompanying drawings.

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PROVISIONAL SPECIFICATION.

Toy Guns.

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This invention relates to toy or model guns and is concerned with an improved firing mechanism therefor.

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According to the present invention firing mechanism for a toy or model gun comprises a coil spring and striker pin associated therewith, both housed in a bore or chamber at the breech end of the barrel of the gun, the pin having an offset portion which extends transversely of the bore constituting the barrel proper end is adapted to function as the cocking handle and trigger by which the gun is fired, means being provided on the breech block to retain the said offset portion in its cocked position.

In carrying out the invention there is provided a breech block piece having two parallel bores, one bore of which, when the piece is incorporated in the gun, forms part of or provides the bore or barrel proper of the gun and the other houses a helical coil spring and a wire rod arranged within the spring and having preferably an enlarged head by which it is anchored at one end to the spring. At the breech end both bores merge to form a common slot within which is slidable a crank or offset portion on that end of the wire rod opposite the head. The crank may be formed by bending the rod at right-angles and is of sufficient length to project externally of the slot, the projecting portion functioning as the cocking handle.

The slot at the rear end may be extended sideways at an angle to form a recess so that the handle end of the wire rod can be directed into the recess and held there until it is required to be released in the action of firing the gun.

The breech block of this invention has the following advantages:—

1. That being self-contained, it can be fitted as the firing mechanism to any toy gun without disturbance of its general layout.

2. That the action is simple and effective in operation and due to the location of the mechanism outside the barrel of the gun, it reduces manufacturing costs.

3. That it permits any simple type toy gun to be breech loaded instead of muzzle loaded.

4. That it permits of different gauge springs to be used, and also different lengths of springs without difficulty.

5. That when the spring goes forward it comes up against a definite stop which prevents damage to the barrel.

6. The breech block can be fabricated as a moulding in plastic material.

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834,461 COMPLETE SPECIFICATION
1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

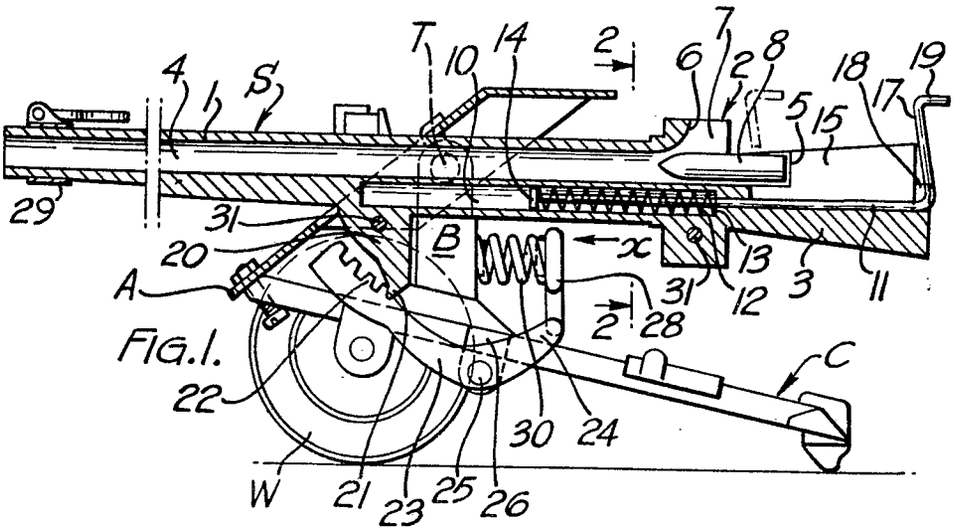

FIG. 1.

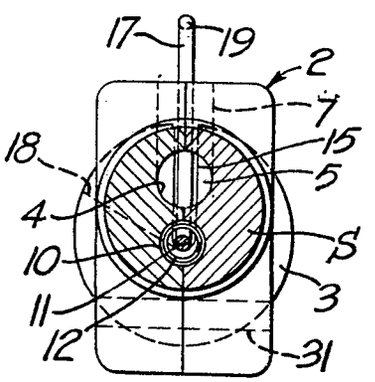

FIG. 2.