

[54] **PROJECTILE PROJECTING TOY GUN
HAVING SLIDABLE PIVOTABLE BARREL
MEMBER**

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[57] **ABSTRACT**

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A toy projectile firing gun, such as a toy tank gun is pivotally mounted in a turret housing for elevational adjustment, and a separate trigger is arranged on the housing to coact with the gun for firing it in any elevational attitude. The trigger releases a spring biased barrel member whose momentum carries a projectile forwardly. The trigger and gun assembly have abutting engagement through a pair of surfaces of which at least one is arcuately curved about the elevational axis. Also disclosed is a mounting for the turret on the base plate, relying on a resiliently bowed member under the base plate which spring loads the turret against the upper surface of the plate, to permit rotation of the turret with light frictional restraint.

[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.**..... **124/16; 124/37; 124/41 R;**
124/29

[51] **Int. Cl.**..... **F41b 7/00**

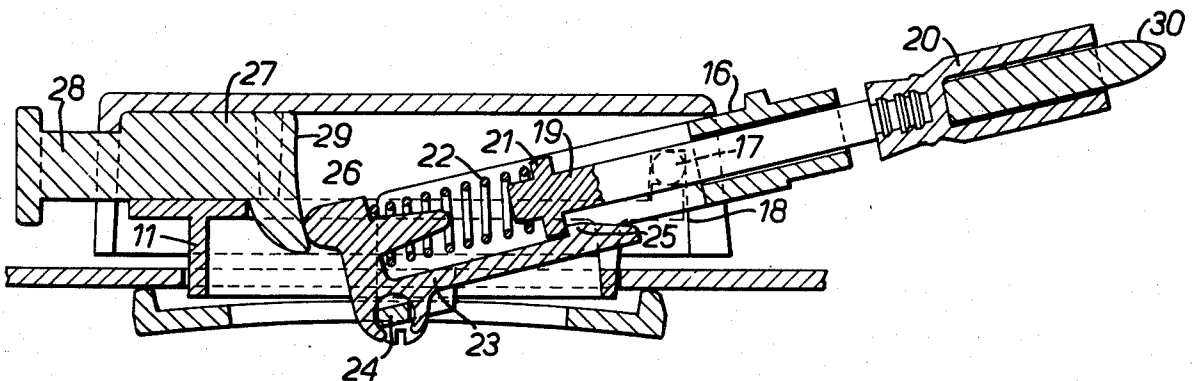
[58] **Field of Search** 124/17, 41, 31, 27, 28,
124/29, 16, 37; 46/219, 202, 74 B, 74 C;
43/6, 19

[56] **References Cited**

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2 Claims, 7 Drawing Figures



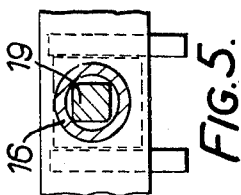


FIG. 5.

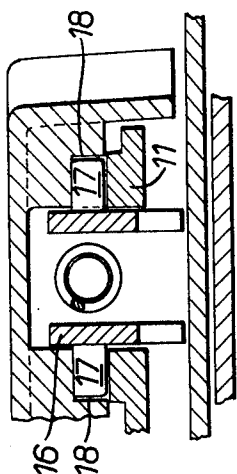


FIG. 4.

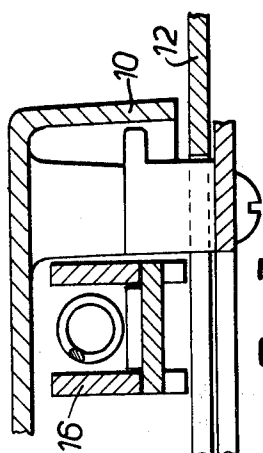


FIG. 3.

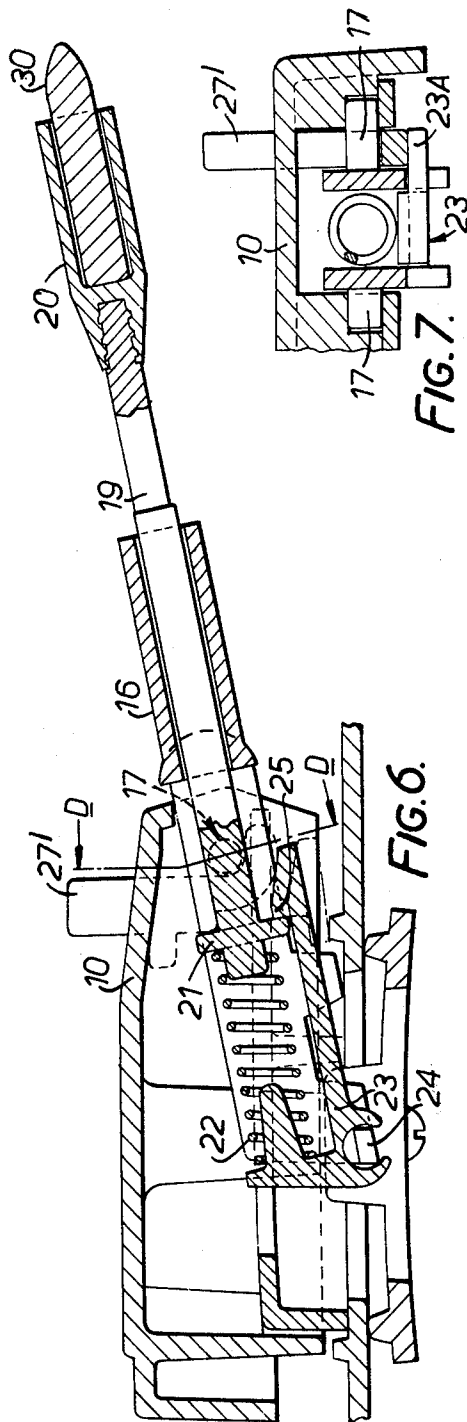


FIG. 6.

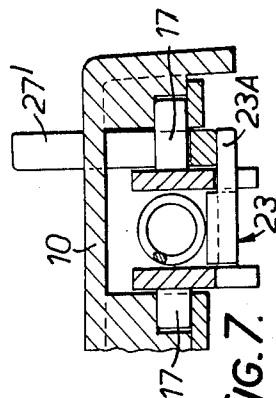


FIG. 7.

PROJECTILE PROJECTING TOY GUN HAVING SLIDABLE PIVOTABLE BARREL MEMBER

This invention relates to toy guns, that is to say, simulated guns capable of firing projectiles such as pellets or the like.

Toy projectile firing guns are, of course, well known in themselves and usually comprise a breech block section having a barrel section reciprocally mounted therein, with a spring for urging the barrel section outwardly. The barrel section is usually latched in cocked position by a radial projection on the barrel section working in a bayonet-fitting slot in the breech block section. This design disfigures the appearance of the gun and does not operate in a particularly pleasing manner.

In accordance with the present invention, there is provided a toy projectile firing gun comprising a turret housing rotatable about a first, vertical axis, a gun assembly rotatably mounted in the housing for limited pivotal movement about a second, horizontal elevational axis, the gun assembly comprising a breech block section, a barrel section movable axially relative to the breech block section, spring means urging the barrel outwardly of the breech block section and latch means for latching the barrel section in a cocked position inwardly of the breech block section, and a trigger for releasing the latch means, the said trigger being movably mounted on and extending outwardly through a wall of the housing for manual operation, and wherein the spring means and latch means are concealed within the housing and the trigger and latch means co-operate with each other throughout the range of elevational movement of the gun assembly.

The invention is particularly, but not exclusively, applicable to guns on model armoured vehicles, such as tanks, and in each of the two constructional forms described and illustrated herein, provides toy tank guns which can be styled to produce a realistic simulation of the turret guns of the tanks on which the models are based, the firing mechanism of the guns being completely concealed and in part disguised, with the further advantage that the guns can operate in any desired position in the range of elevational adjustments, such adjustment being possible even after the gun has been loaded and cocked.

Either the trigger and/or latching means has an abutment surface which is arcuately curved about the pivotal axis of the breech block and which engages the other part at different points along the surface, according to the elevational adjustment.

These constructional forms of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGS. 1 and 2 are sectional elevations of one form of turret gun shown in different firing elevations and in different operational stages;

FIGS. 3, 4 and 5 are sections on the lines AA, BB and CC respectively in FIG. 1;

FIG. 6 is a view corresponding to FIG. 2 of a second form of turret gun; and

FIG. 7 is a section on the line DD in FIG. 6.

The toy gun shown in FIGS. 1 to 5 comprises a die-cast housing 10 simulating, in this case, the turret of a tank and which in use is mounted on a tank body for rotation about a vertical axis, with the assistance of a mounting plate 11, conveniently formed as a plastics

injection moulding, and an injection moulded clamping ring 12. As seen in FIGS. 1 and 2, the parts 10, 11, 12 form a unitary assembly secured in a hole through the top wall 13 of the tank body, with the ring 12 arranged inside the top wall 13. The ring has diametrically opposed projections 14 which engage the inside of the wall 13, and is stressed on assembly by the tightening of two fixing screws 15 so that the ring 12 is bowed to provide a desired degree of frictional engagement between the assembly 10, 11, 12 and the top wall 13.

A breech block section 16 of the gun is formed with trunnions 17 received in recesses 18 of the housing 10 and held in the recesses by the mounting plate 11, which has frictional engagement with the trunnions to inhibit free movement of the breech block section 16 about the transverse horizontal pivot axis of the trunnions.

Slidably mounted in the breech block section 16 is a barrel section 19, the outer end of which carries an outer barrel section or missile receiving portion 20, again preferably formed as an injection moulding. The inner end of the barrel 19 is formed with a collar 21 which limits outward movement of the barrel relative to the breech block section, as seen in FIG. 1. A coil compression spring 22 bears at one end on the barrel collar 21, and at its other, inner, end on a latch 23 which is pivotally mounted on a transverse bar 24 fast with the breech block section 16. The latch 23 is formed as a bell crank, a forwardly projecting arm of which is provided with barb 25 for co-operation with the barrel collar 21, as best seen in FIG. 2. The second arm of the bell crank has a rounded protuberance 26 for co-operation with a trigger 27, in this case mounted for sliding movement in the housing 10, and having a rearwardly extending projection 28 which may be shaped to simulate an external feature such as an air vent. The trigger has a concave curved surface 29 for engagement with the latch protuberance 26, the curve being in the form of a part-circular arc having its centre on the pivotal axis of the trunnions 17.

In use of the toy gun, a missile 30 is placed in the barrel portion 20, and the gun is cocked by pushing the barrel inwardly, against the action of the spring 22, and is automatically latched in the cocked position by the barb 25 engaging the collar 21. The cocked gun can be adjusted for elevation by pivoting the barrel about the trunnions 17, to any position between the two extremes illustrated in FIGS. 1 and 2, and fired in any of these positions by pressing on the trigger 27, which causes the latch 23 to pivot, in a clockwise direction as seen in FIG. 2. As soon as the latch barb 25 clears the collar 21, the stored energy of the spring drives the barrel outwardly, until the collar 21 abruptly encounters the co-operating portion of the breech block, so that motion of the barrel is instantly checked, and the missile 30 is ejected. In order to minimise friction between the barrel section 19 and the breech block through which it slides, the barrel is given a squared cross-section, as shown in FIG. 5.

The alternative embodiment shown in FIGS. 6 and 7 is generally similar in all respects to that of the first described embodiment, except for the form and arrangement of the trigger and latch. In this embodiment, the trigger 27' extends and is slidable generally vertically, its upper exposed end preferably being shaped to simulate an external feature such as a periscope or radio aerial. The trigger is offset from the axis of the gun (see FIG. 7) and at its lower end extends downwardly and

3

forwardly around the adjacent trunnion 17. The outer, lower surface in this region is arcuately curved about the axis of the trunnion and engages a laterally extended portion 23A of the latch 23. The gun is cocked as in the first embodiment and is fired by pressing the trigger downwardly to move the latch barb 25 down and clear of the barrel collar 21. Once again, the gun elevation can be adjusted even after the gun is cocked, by virtue of the arcuately curved portion of the trigger maintaining contact with the latch portion 23A.

Thus, in each of the described embodiments, the firing mechanism of the gun is concealed and/or disguised, and the gun can be fired in any desired position of elevational adjustment.

I claim:

1. A toy projectile firing gun comprising:

a turret housing rotatable about a first vertical axis; a gun assembly rotatably mounted in said housing for limited pivotal movement about a second, horizontal elevational axis, said gun assembly comprising a breech block section, a barrel section mounted for axial movement in said breech block section, said barrel section having a projectile receiving portion, spring means urging said barrel section outwardly of said breech block section and latch means for latching said barrel section in cocked position, against the action of said spring means, inwardly of said breech block section;

and a trigger mounted on said housing independently of said gun assembly and projecting through said housing for manual operation from the exterior of said housing, said trigger being adapted to co-operate with said latch means for releasing the same throughout the range of elevational movement of said gun assembly about said elevational axis, said breech block section having a tubular forward portion in which a stem portion of said barrel section is slidably guided, said barrel section co-operating at its rear end with said latch means, and said breech block section having pivotal mounting means for mounting said latch means and trunnion means, forwardly of said pivotal latch mounting means, by which said breech block section is

4

mounted in said housing for movement about said elevational axis, and said housing comprising means mounting said trigger rearwardly of said latch means for rectilinear reciprocal movement in said housing for co-operating engagement with said latch means.

2. A toy projectile firing gun comprising:

a turret housing rotatable about a first vertical axis; a gun assembly rotatably mounted in said housing for limited pivotal movement about a second, horizontal elevational axis, said gun assembly comprising a breech block section, a barrel section mounted for axial movement in said breech block section, said barrel section having a projectile receiving portion, spring means urging said barrel section outwardly of said breech block section and latch means for latching said barrel section in cocked position, against the action of said spring means, inwardly of said breech block section;

a trigger mounted on said housing independently of said gun assembly and projecting through said housing for manual operation from the exterior of said housing, said trigger being adapted to co-operate with said latch means for releasing the same throughout the range of elevational movement of said gun assembly about said elevational axis,

a base plate having a hole therethrough, said base plate having an upper surface and an undersurface, said turret housing being mounted on said upper surface over said hole, resilient clamping means bridging said hole and having abutments located against said undersurface on diametrically opposite sides of said hole, and securing means bearing against at least one point on said clamping means between said abutments and aligned with said hole and urging said at least one point toward said turret housing until said clamping manner is resiliently bowed between said abutments to apply a resilient loading of said turret housing against said upper surface, whereby to provide a frictional restraint against free rotation of said turret housing about said vertical axis.

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