March 22, 1938. E. B. JONES ET AL 2,111,631

TOY GUN

Filed May 1, 1937

Fig.5.

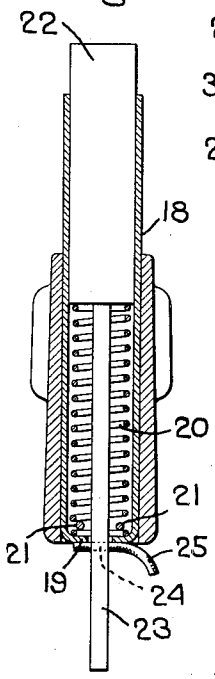


Fig.6.

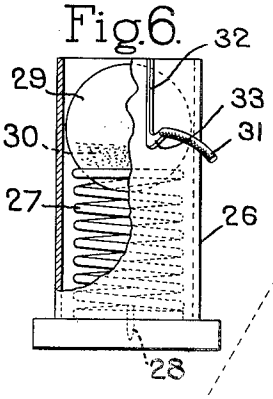


Fig.2.

Fig.1.

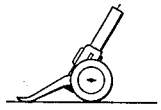


Fig.4.

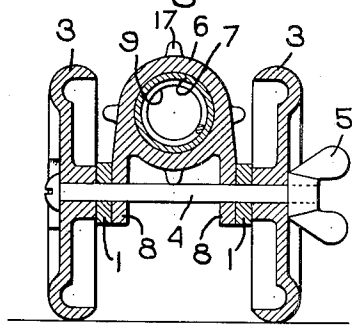


Fig.3.

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TOY GUN

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Application May 1, 1937, Serial No. 140,206

8 Claims. (Cl. 124—29)

This invention relates to a toy gun provided with a compressible spring for projecting a projectile into the air and in which the projectile is held against projection from the gun by means of a fuse extending from the projectile and which, when burned away, releases the projectile and allows it to be projected by the expansive force of the spring. The device may take various forms and is adapted to cooperate with a wide variety of projectiles. Such projectiles may be, for example, both of an explosive and non-explosive character, may be adapted for use in daylight or for use as fireworks, may be destroyed in use or repossessed and re-used.

The object of the invention is further to provide simple and efficient construction for this purpose.

The object of the invention is further to provide a construction for the purpose set forth in the form of a mortar.

The object of the invention is further to provide a construction for the purpose set forth in the form of a cannon, the elevation of which may be adjusted.

The object of the invention is further to provide a construction in the form of a gun or cannon in which the projectile is a firecracker and in which the explosion of the firecracker will take place in the air after its projection from the gun.

These and other objects and features of the invention will appear more fully from the accompanying description and drawing and will be particularly pointed out in the claims.

In the drawing:

Fig. 1 is a side elevation of one form of the invention as embodied in a toy cannon with the projectile in the form of a firecracker and with the firecracker shown traveling upward from the muzzle and exploding at an elevated position in the air.

Fig. 2 is a side elevation of a cannon embodying one form of the invention with the firecracker in the cannon held by its fuse in position for projection therefrom.

Fig. 3 is a view chiefly in vertical cross section of the construction shown in Fig. 2 with the projecting spring shown expanded and with a vertical position of the barrel indicated in dotted lines.

Fig. 4 is a view in horizontal cross section of the construction shown taken through the wheel axle with the barrel in horizontal position.

Fig. 5 is a vertical cross section of another form of the invention in which the projectile which may be of any desired type is provided with a stem and in which the fuse is passed through an aperture in the stem and engages the barrel of the gun to hold the projectile in firing position.

Fig. 6 is a view in side elevation partially broken away of a third form of the invention in which the gun is in the form of a mortar with a projectile of any desired type but in which the projectile is adapted to be exploded by the continued burning of its fuse after it has been projected into the air.

Referring first to that form of the invention illustrated in Figs. 1 to 4, inclusive, there is here illustrated a gun or a cannon for discharging into the air an ordinary firecracker having a projecting fuse which continues to burn after the firecracker is discharged from the gun and thus causes the explosion of the firecracker to take place high in the air.

As illustrated, the construction comprises a simple form of carriage having a trail, an axle passing through the trail and a pair of wheels mounted on the axle. The trail is shown as comprising a pair of legs 1 connected by cross struts 2. The wheels 3 are of any suitable similar form and are journaled upon the axle 4 which passes centrally through the wheels and through the forward ends of the arms 1. This axle is conveniently made as a bolt having at one outer end a thumb nut 5 threaded thereon.

The barrel is shown as comprising an outer barrel 6 which may be made of a metal casting and a barrel tube 7 which may be of a sheet metal tube. The outer barrel 6 is shown as having formed or cast thereon a pair of depending trunnions 8 through which the axle 4 passes. The barrel tube 7 has a tight telescoping fit within the outer barrel 6 and preferably projects well forward therefrom and is of a proper size to correspond with the size of the firecracker to be inserted therein.

The projection of the firecracker from the barrel is in the construction illustrated effected by a longitudinally expansion spring 9 of the helical type. This spring is conveniently secured against expulsion from the barrel with its lower end seated against inturned positioning lips 10 struck up from the lower end of the tube and with a pin 11 passing diametrically through the tube and the spring and acting further to secure the tube in the outer barrel. The tube 7 at the muzzle end is provided with an opening 12 through its wall and this opening is preferably formed as a notch in a lip 13 projecting from the side wall of the tube.

The elements thus described are so correlated that when a firecracker such as 14 having a fuse

15 is forced into the muzzle compressing the spring 9 until the fuse end of the firecracker comes opposite the opening 12 and the fuse 15 is inserted through this opening, the firecracker will remain in position holding the spring compressed until, after being ignited, the portion of the fuse projecting laterally from the barrel is burned, whereupon the spring will be released and the firecracker will be projected by the spring into the air still unexploded so that it will explode in the air after projection from the cannon. In Fig. 1 the firecracker 14 is illustrated traveling through the air still unexploded and again exploding at the point 16 high up in the air.

The angle of elevation of the barrel may be determined by swinging the barrel about the axle 4 and the barrel is locked in any desired angle of elevation by tightening up the set screw 5, whereupon the wheels, the carriage and the barrel are all locked in adjusted position.

The outer barrel is shown as provided with radial lugs 17 which engage the upper face of the carriage legs 1 and may act to determine a predetermined angle of elevation of the barrel, such, for example, as the vertical position illustrated in dotted lines in Fig. 3.

Another form of invention is illustrated more or less diagrammatically in Fig. 5 in which the gun is shown without any support, it being understood that any suitable support may be provided for holding it in the required position and in which the projectile serves to illustrate any type of device either of an explosive or a non-explosive character and which may have attached thereto or contain therewithin any desired objects or material suitable for either daylight or nighttime use. In this form of the invention there is illustrated a tubular barrel 18 with its lower end inturned at 19 to leave a center aperture at the end. The longitudinal compressible spring 20 is again illustrated as of the helical type and held in any suitable manner against expulsion from the barrel. For this purpose two pins 21 are illustrated engaging the lower coil of the spring and embedded in the barrel. The projectile comprises the display head 22 and a projecting stem 23 of any suitable material. This stem is provided near its end with a transverse aperture 24 adapted to receive a piece of fuse 25. The projectile is shown in firing position with the spring compressed and with the fuse passed through the aperture 23 so that it extends laterally from and in engagement with the barrel. As in the previous case, the projectile will now remain in position until the portion of the fuse projecting laterally is burned away, when the projectile will be released and the spring will project it into the air. If the projectile is not destroyed, it may be repossessed and the operation repeated.

Still another typical form of the invention is illustrated in Fig. 6. In this case the gun is in the form of a mortar 26 adapted to rest upon the ground or other support and such as is employed in discharging daylight or nighttime fireworks or other suitable projectiles. The longitudinally compressible spring is again illustrated at 27 as of the helical type and is shown as held against expulsion from the gun by being pinned at 28 at its inner or lower end to the base of the gun or mortar. The projectile 29, which may be of any shape and style and contain any desired material, is shown as of globular form and is assumed to contain an explosive 30. A fuse 31 projects laterally from the projectile and, when this fuse burns into the projectile, is adapted to explode and scatter the contents thereof. The barrel of the mortar is illustrated as provided with a vertical slot 32 extending from its upper end and terminating in an offset portion 33. The device is shown in firing position with the spring longitudinally compressed by the projectile and with the fuse engaging the offset portion 33 of the slot of the barrel and acting thereby to hold the projectile in firing position against the expansive force of the spring. When the fuse is burned sufficiently to release its hold upon the barrel, the spring acts to project the projectile from the barrel into the air.

In each case the fuse acts in conjunction with the opening through which it extends either in the barrel or in the projectile as the sole means for holding the projectile in position with the spring compressed and the burning of the fuse is relied upon to release the projectile to projection by the expansive force of the spring. The fuse thus acts as a strut interlocking with either the barrel or projectile and abutting against the other to maintain the projectile in the required position.

It will thus be seen that the invention is of wide application and that it may be embodied in various forms within the scope of the claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A firecracker gun comprising a barrel having an outer barrel and a barrel tube secured therein, the said tube having a hook-like projection from its wall at the muzzle end forming an open-sided opening through the wall of the barrel, and a helical spring in the barrel secured at its inner end to the inner end of the barrel and extending when expanded well toward the muzzle, the said elements being so correlated that, when a firecracker is forced into the muzzle compressing the spring until the fuse end is opposite said opening and the fuse is inserted through said opening, the firecracker will remain in position until the portion of the fuse projecting laterally from the barrel is burned and the firecracker will then be projected from the barrel before exploding.

2. A firecracker gun comprising a barrel having an opening for the insertion of the firecracker fuse through its wall and a longitudinally compressible spring in the barrel secured against expulsion therefrom and of such length and power that, when a firecracker is forced into the muzzle compressing the spring until the fuse end is opposite said opening and the fuse is inserted through said opening, the firecracker will remain in position until the portion of the fuse projecting laterally from the barrel is burned and the firecracker will then be projected from the barrel before exploding, the said fuse in conjunction with said opening acting as the sole means for holding the firecracker in position with the spring compressed.

3. A firecracker cannon comprising a carriage having a trail, a barrel with trunnions, a pair of wheels, an axle passing through the wheels, trunnions and carriage, and a nut threaded to one end of the axle acting when tightened up to lock the barrel in any desired angle of elevation.

4. A firecracker cannon comprising the construction defined in claim 3, together with cooperating stops on the barrel and carriage for positioning the barrel at a predetermined angle of elevation.

5. A firecracker gun comprising a barrel having

an opening through its wall at the muzzle end for the insertion of the firecracker fuse, and a spring held compressed by the firecracker when positioned in the barrel with its fuse end opposite said opening, the fuse acting, when extended through said opening, as the sole means in conjunction with said opening for holding the firecracker in said position, and the spring acting, when the firecracker is released by the burning of the portion of the fuse projecting from said opening, to project the firecracker from the barrel before exploding.

6. A mortar having an opening for the insertion of a fuse through its side wall and a longitudinally compressible spring in the mortar secured against expulsion therefrom, and a projectile having a fuse projecting laterally therefrom, the said spring being of such length and power that when it is compressed by the projectile and the fuse extending from the projectile is extended through said opening, the projectile will remain in position until the portion of the fuse projecting from the mortar is burned to release the projectile and allow it to be projected by the spring from the mortar, the said fuse in conjunction with said opening acting as the sole means for holding the projectile in position with the spring compressed.

7. The combination of a toy gun barrel, a longitudinally compressible spring located in the barrel and secured against expulsion therefrom, a projectile, a fuse, and means acting, when the projectile is in the barrel in engagement with the compressed spring and the fuse is extended transversely of the projectile and barrel in abutting engagement with one of said elements, to interlock the fuse and the other of said elements, whereby the projectile is held in position against the expansive force of the spring solely by the fuse and is released for projection by the spring only upon the burning of the fuse.

8. The combination of a toy gun barrel, a longitudinally compressible spring located in the barrel and secured against expulsion therefrom, a projectile provided with a stem having an aperture therethrough, and a fuse acting, when extended through said aperture transversely of the projectile and barrel and in abutting engagement with the barrel and with the projectile in the barrel in engagement with the compressed spring, to hold the projectile in position against the expansive force of the spring and to release the projectile for projection by the spring only upon the burning of the fuse.

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