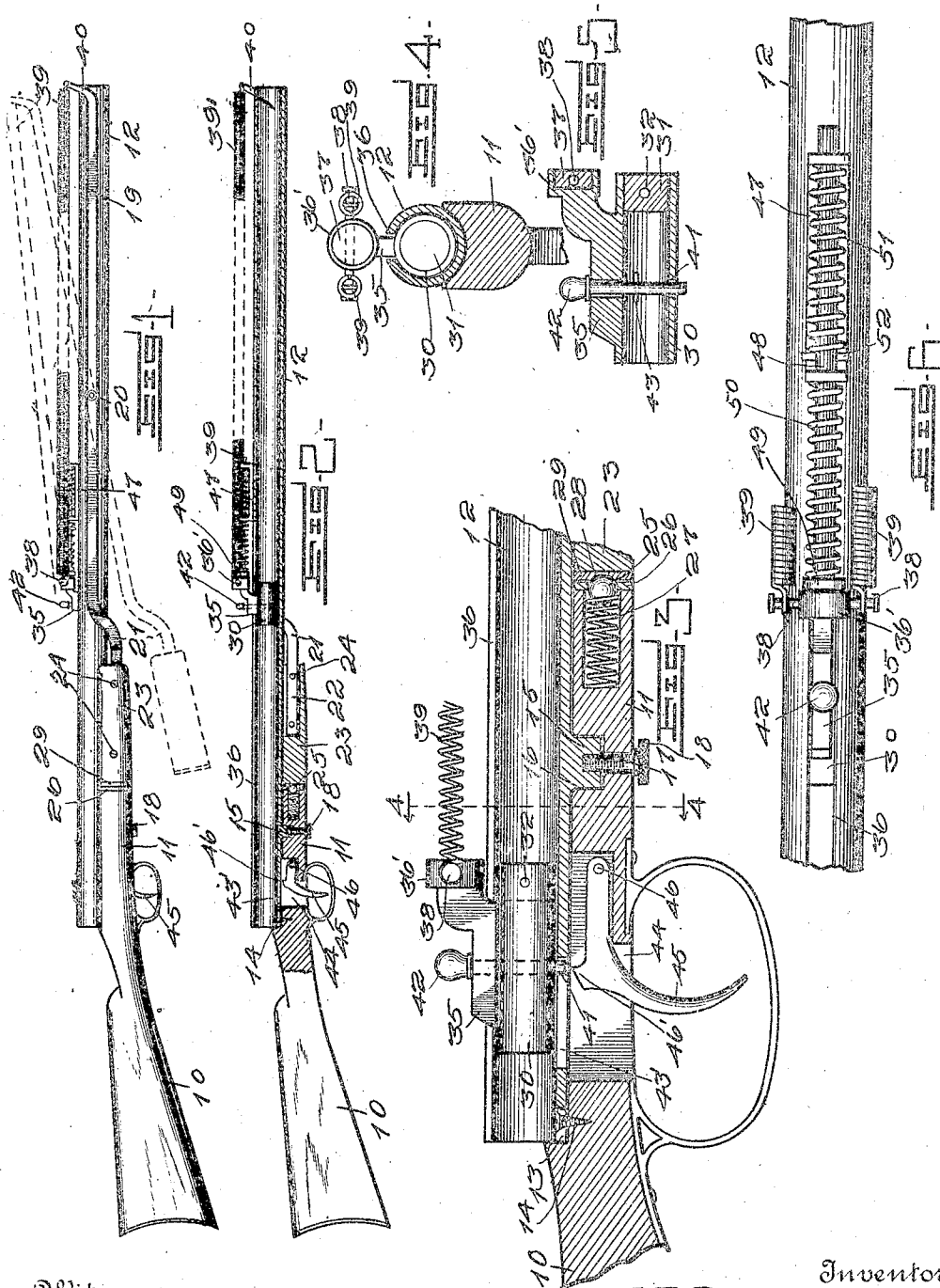


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 SPRING ACTUATED GUN.
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1,107,586.

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SPRING-ACTUATED GUN.

1,107,586.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES F. BURNAM, a citizen of the United States, residing at Huntsville, in the county of Madison and State of Alabama, have invented certain new and useful Improvements in Spring-Actuated Guns, of which the following is a specification.

My invention relates to improvements in spring operated guns, and has particular reference to a gun of this character, which is particularly well adapted for use in throwing or shooting dart-signs, such as are disclosed in my co-pending application Serial No. 799,340, filed November 5, 1913, while not necessarily restricted to such use.

An important object of the invention is to provide a gun of the above mentioned character, which is powerful in operation, and convenient in use.

A further object of the invention is to provide a gun of the above mentioned character, which is simple in construction, inexpensive to manufacture, strong, and durable.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a side elevation of the gun embodying my invention, Fig. 2 is a central longitudinal sectional view through the same, Fig. 3 is an enlarged detail longitudinal sectional view through the fore-arm of the gun and the rear portion of the barrel, certain elements being shown in elevation, Fig. 4 is a transverse sectional view taken on line 4-4 of Fig. 3, Fig. 5 is a central longitudinal sectional view through the plunger of the gun, and, Fig. 6 is an enlarged plan view of shock absorbing means included in the invention.

In the drawings wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a gun stock, provided with a forwardly extending fore-arm 11, as shown. Arranged upon the fore-arm 11 and extending longitudinally thereof and forwardly beyond the same is a barrel 12, the rear end of which is provided with a slot 13, to receive a screw 14, or the like, attached to the fore-arm, as more clearly illus-

trated in Fig. 3. The barrel 12 is provided with a depending boss 15 adapted to fit within a recess 16 formed in the fore-arm. This depending boss is provided with a screw-threaded opening for receiving a clamping bolt 17, provided with a milled head 18, as shown. It is thus seen that simple and reliable means are provided to detachably rigidly connect the barrel with the fore-arm.

Arranged upon opposite sides of the barrel 12 are swinging levers 19, pivoted thereon between their ends, as shown at 20, such pivots not extending into the barrel. The inner ends of the levers 21 are bent downwardly and inwardly, forming converging portions 21, which are produced in the form of extensions 22, lying flat upon each other, and passing into a longitudinally extending opening formed in a movable fore-arm extension 23 and rigidly secured therein by means of screws 24 or the like. Means are provided to detachably lock the fore-arm extension 23 with the fore-arm 11, the same comprising a ball 25, mounted within an opening formed in the fore-arm 11 and adapted to extend outwardly beyond an apertured plate 26 secured thereto. This ball is urged outwardly by a compressible coil spring 27. The ball 25 is adapted to pass into a socket or recess 28 formed in a plate 29, which is secured to the free end of the fore-arm extension 23, as shown.

Mounted to reciprocate within the barrel 12 is a tubular plunger 30, shown more clearly in Figs. 3 and 4. This tubular plunger has its forward end closed by means of a head or plug 31, preferably formed of wood and held therein by means of a transverse pin 32 or the like. This plunger may be cast with a solid head and the wooden head omitted, if desired. Rigidly connected with the tubular plunger 30 is a longitudinally extending rib 33, adapted to operate within a longitudinal slot 36 formed through the barrel 12. Formed upon the forward end of the longitudinal rib 33 is a preferably cup-shaped head 36', receiving packing 37, as more clearly shown in Fig. 5. This packing is held within the cup-shaped head 36' by means of a transverse element or bolt 38, extending outwardly beyond the same. Connected with the opposite ends of the transverse element or bolt 38 are retractile coil springs 39, arranged upon opposite sides of the barrel 12 and extending forwardly for

connection with angular portions 40 of the levers 19, as shown. The tubular plunger 30 and the rib 35 are provided with vertical aligned transverse openings, for receiving a gravity operating or dropping holding pin 41, provided at its upper end with an enlarged head 42. The upward movement of this holding pin is positively limited by a transverse stop element 43 secured to the holding pin and arranged within the tubular plunger 30. The lower end of the holding pin 41 is adapted to enter a relatively short slot 43', formed through the lower side of the barrel 12, said lower end of the holding pin engaging the forward end wall of the slot 43' and thereby temporarily preventing the forward movement of the tubular plunger 30, as clearly shown in Fig. 3.

Arranged below the relatively short slot 43' is a recess 44, within which is mounted a vertically swinging trigger 45, pivoted as shown at 46. This trigger is provided with an upwardly extending lug or tooth 46', adapted to engage with the lower end of the holding pin 41 and elevate the same whereby the holding pin is moved entirely out of the slot 43'.

I provide shock absorbing means to properly arrest the forward movement of the tubular plunger. This shock absorbing means comprises an approximately U-shaped bracket 47, which is soldered or otherwise rigidly secured to the upper side of the barrel 12 suitably near the pivots 20, as shown. The upstanding arms of this bracket are apertured to receive a reciprocatory rod 48, provided at its inner end with a head 49, adapted to engage with the packing 37 within the cup-shaped head 36'. A suitably stiff compressible and expansible coil spring 50 surrounds the inner portion of the rod 48 and is disposed between the head 49 and the inner apertured arm of the bracket 47. A second compressible and expansible coil spring 51 surrounds the forward portion of the rod 48, with its forward end engaging the forward apertured arm of the bracket 47 and its rear end engaging a transverse cotter-pin 52 or the like, passing through an aperture in the rod 48. This shock absorbing means also serves to retain the springs 39 slightly taut, when the gun is uncocked.

The operation of the gun is as follows: To cock and load the gun, the operator preferably holds the same in an approximately horizontal position, and swings the fore-arm extension 23 downwardly toward the discharge end of the barrel. He may then advantageously grasp the head 42 of the holding pin 41 and move the tubular plunger 30 rearwardly of the barrel 12 and completely out of the rear or inner end thereof. This having been done, the device which is to be thrown or fired, such as the sign-dart shown in my co-pending application filed Novem-

ber 5, 1913, Serial No. 799,340, is then passed into the inner or rear end of the barrel 12. The tubular plunger 30 is returned into the inner end of the barrel 12 and moved forwardly within the same until the holding pin 41 drops into the slot 43'. The fore-arm extension 23 is then swung inwardly to be returned to its normal position, whereby the springs 39 are placed under tension. The gun is now ready to be fired, which may be accomplished by pulling upon the trigger 45 which will elevate the holding pin 41 to move the same entirely out of the slot 43'. The springs 39 will now suddenly throw or move the plunger forwardly to eject the sign-dart or the like from the barrel. When the tubular plunger 30 has reached the end of its forward travel the movement thereof is arrested by the shock absorbing means, the packing 37 within the cup-shaped head 36' impinging against the head 49 of the reciprocatory rod 48, which is yieldingly held by springs against movement. Attention is also called to the fact that by unscrewing the bolt 17, the barrel 12 will be readily separated from the stock 10 thus enabling the gun as a whole to be packed within a suitable size case for convenient transportation.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having described my invention, I claim:—

1. In a gun of the character described, a stock, a barrel connected with the stock, a lever pivotally connected with the barrel, an element mounted to reciprocate within the barrel, and an elastic member connecting the lever with the reciprocatory element.

2. In a gun of the character described, a stock, a barrel rigidly secured thereto, a lever pivotally connected with the barrel, an element mounted to reciprocate within the barrel, a retractile coil spring connecting the pivoted lever and the reciprocatory element, and means to temporarily hold the lever in one position.

3. In a gun of the character described, a stock, a barrel secured thereto and provided with a longitudinally extending slot, a plunger mounted to reciprocate within the barrel and provided with an element extending through and beyond the slot, a lever arranged exteriorly of the barrel and pivotally connected therewith, a retractile coil spring connecting one end of the lever and the extension of the plunger, means to temporarily lock the lever in one position, and trigger operated means to temporarily hold the plunger in its cocked position.

4. In a gun of the character described, a

stock provided with a fore-arm, a barrel mounted upon the fore-arm and secured thereto and provided with a longitudinal slot, a plunger mounted to reciprocate within the barrel and provided with an extension operating within the slot, a pair of levers arranged upon opposite sides of the barrel and pivotally connected therewith, retractile coil springs connected with the outer ends of the levers and with the extension of the plunger, a fore-arm extension connected with the inner ends of the levers and adapted to be moved into engagement with the barrel adjacent the fore-arm, means to temporarily lock the fore-arm extension with the fore-arm, and means to temporarily hold the plunger against movement in one direction.

5. In a gun of the character described, a barrel having its inner and outer ends open, a stock carrying the barrel, a reciprocatory plunger mounted within the barrel and adapted to be removed therefrom through the inner end thereof, a longitudinally elastic retractile element connected near its inner end with the plunger, means to move the plunger toward the inner end of the barrel, trigger operated means to temporarily lock the plunger in the inner cocked position, and separate means associated with the barrel and having a part thereof connected with the elastic element and movable toward the outer end of the barrel, to place the elastic element under tension.

6. In a gun of the character described, a barrel having its inner and outer ends open, a stock carrying the barrel, a reciprocatory plunger mounted within the barrel for movement toward the inner and outer ends thereof, means to hold the plunger in the inner cocked position, longitudinally elastic means connected with the plunger, and separate means arranged near the barrel and having a part thereof movable toward the outer end of the barrel, said part being connected with the elastic means to place the same under tension.

7. In a gun of the character described, a barrel, a stock carrying the barrel, a reciprocatory plunger mounted within the barrel, means to hold the plunger in the inner cocked position, a retractile elastic element connected with the plunger and adapted

when placed under tension to move the plunger forwardly, and separate means associated with the barrel for placing the elastic element under tension subsequent to the holding of the plunger in the inner cocked position.

8. In a gun of the character described, a longitudinal member, an element slidably engaging therewith to move longitudinally thereof, means to hold the element against movement in one direction, a lever pivoted to the longitudinal member, a retractile coil spring connecting the lever and slidable element, and means to hold the lever against movement in a desired position.

9. In a gun of the character described, a stock, a barrel secured to the stock and provided upon its lower side with an opening, a plunger mounted to reciprocate within the barrel and provided with an upstanding opening, a reciprocatory holding pin mounted within the opening of the plunger with its lower end adapted to enter the opening in the lower side of the barrel and its opposite end provided with an indicator head arranged exteriorly of the barrel, a trigger pivotally connected with the stock and having a portion thereof movable into the opening in the lower side of the barrel to move the holding pin out of the same for releasing the plunger, and a spring connected with the plunger to move the same in one direction when released.

10. In a gun of the character described, a gun stock provided with a fore-arm having a barrel receiving recess formed therein and a depending opening extending from the barrel receiving recess, a barrel provided at one end with a longitudinal slot and carrying a depending boss adapted to fit within the depending opening, a binding screw engaging the fore-arm and operating within a screw-threaded opening in the depending boss, and an element secured to the gun stock and adapted for insertion within the longitudinal slot of the barrel.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES F. BURNAM.

Witnesses:

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ROBERT GAMBLE.