V. C. BRANNON.

RIFLE.

APPLICATION FILED FEB. 14, 1917.

1,291,674.

Patented Jan. 14, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

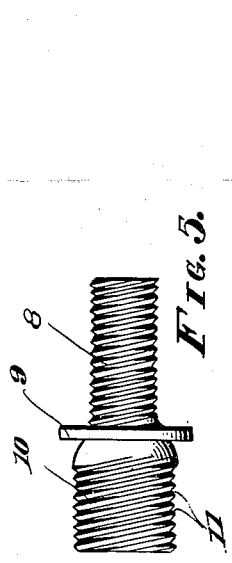


Fig. 5.

Fig. 4.

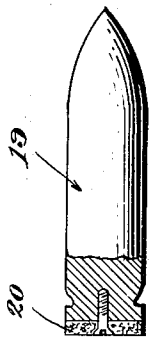
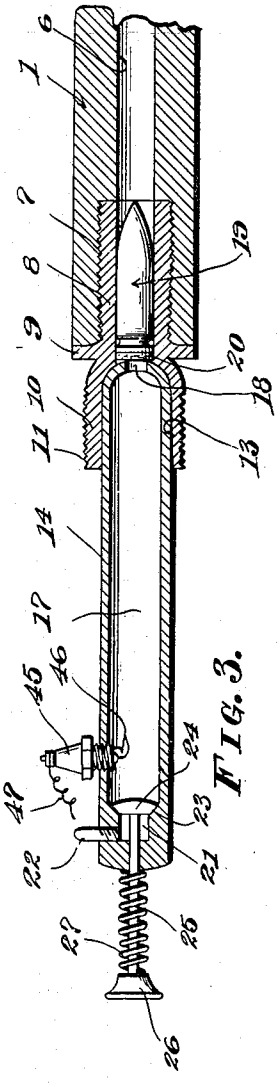


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

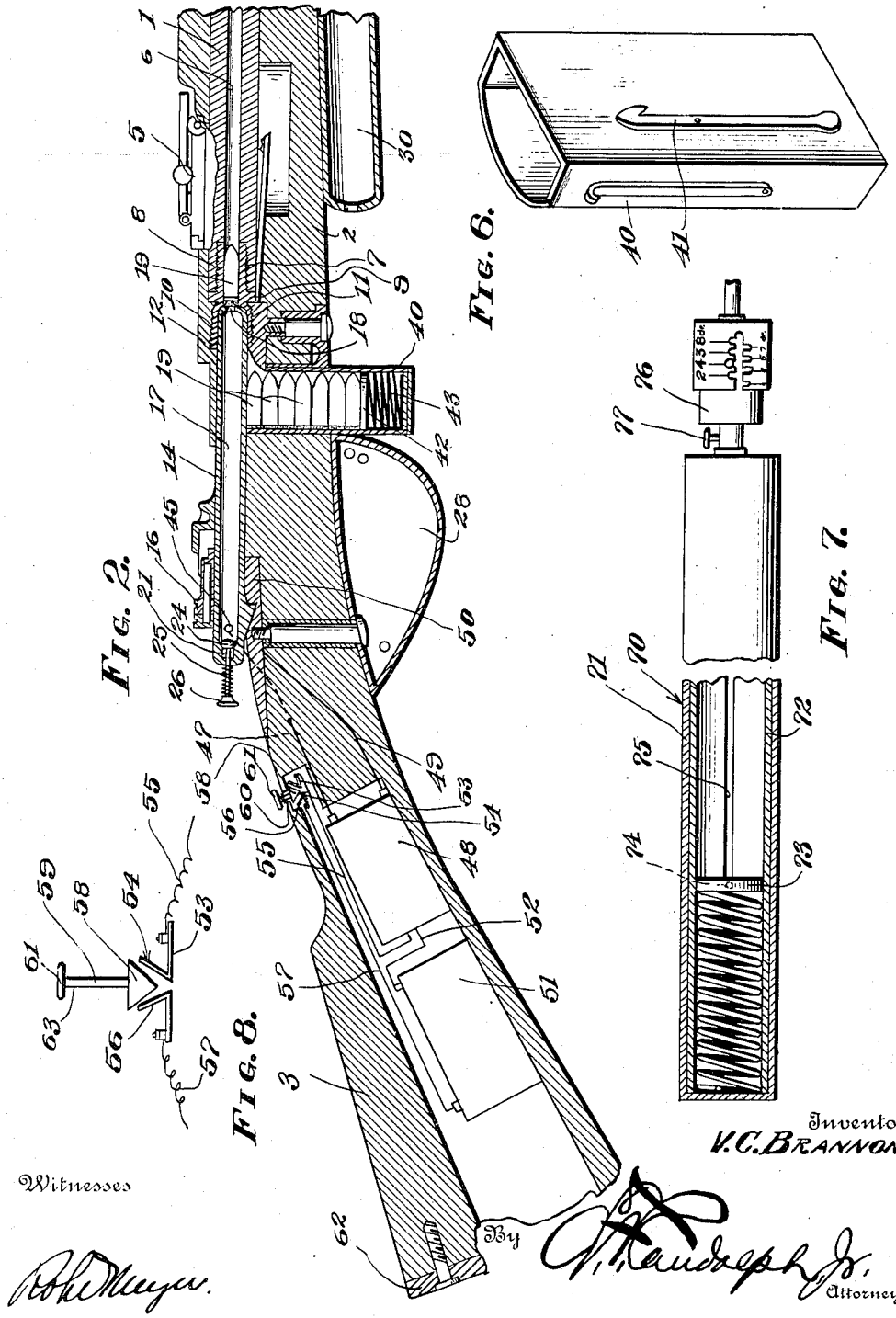


FIG. 2.

FIG. 6.

FIG. 7.

FIG. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

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RIFLE.

1,291,674. Specification of Letters Patent. Patented Jan. 14, 1919.

Application filed February 14, 1917. Serial No. 148,508.

To all whom it may concern:

Be it known that I, VIRGIL C. BRANNON, a citizen of the United States, residing at Fort Stockton, in the county of Pecos and State of Texas, have invented certain new and useful Improvements in Rifles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a rifle, and the primary object of the invention is to provide a rifle which is constructed for using either black or smokeless powder, or any type of explosive gases without the use of a containing shell or primer, and to provide means whereby the explosive charge of the gun is electrically ignited through the medium of a spark plug and battery, which battery is carried within the stock or butt of the gun.

Another object of this invention is to provide a rifle as specified which has a gasolene or magazine chamber for powder attached to the gun stock, which tank has communication with a mixing chamber and a pump, which air pump is operated by the sliding movement of the gun bolt for forcing air into the magazine or tank for forcing a quantity of gasolene or other explosive elements out of the tank into the mixing chamber and from the mixing chamber into the firing chamber which is formed in the bolt of the gun.

Another object of this invention is to provide a rifle as specified which includes a bolt operated by the usual type of handle employed in high powered rifles used for military purposes, which bolt is hollow and provides the firing chamber, the outlet of which chamber has communication with the bore of the rifle barrel and fits tightly against the butt end of the bullet so that upon the explosion of the charge of gas within the firing chamber the bullet will be forced out of the nozzle of the rifle barrel.

A still further object of this invention is to provide a rifle which is substantially "fool proof" in that it requires three separate manipulations or operations to load and discharge the gun which practically eliminates the liability of accidental or unintentional discharge of the gun.

A still further object of this invention is to provide a novel form of bullet for use in the rifle which is fed into the breech of the rifle barrel by the usual type of clip structure, and which bullet has a soft felt or hair washer attached to the butt end of the same for forming a fluid and air tight connection between the outlet end of the bolt and the bullet so as to prevent the escape of any of the explosive gas about the bullet and insure the speedy propulsion of the bullet out of the rifle barrel upon the discharge of the explosive gas within the firing chamber.

A still further object of this invention is to provide a bullet firing or retaining chamber which is removably mounted in the breech end of the rifle barrel, and extends over the discharge end of the bolt so that when the shell bed becomes worn or enlarged and burnt out by the excessive firing of the gun, a new bullet bed or member may be easily and quickly passed to the rifle barrel instead of the worn and inaccurate one.

With the foregoing and other objects in view, this invention consists in such novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and claimed.

In describing the invention in detail reference will be had to the accompanying drawings wherein like characters designate like and corresponding parts throughout the several views, and in which:

Figure 1 is a side elevation of the improved gun.

Fig. 2 is a longitudinal section through the butt of the gun and the breech end of the barrel.

Fig. 3 is a fragmentary horizontal section through the firing chamber and breech of the gun barrel.

Fig. 4 is a detail view of the bullet used in the gun showing parts thereof in section.

Fig. 5 is a detail side elevation of the bullet bed.

Fig. 6 is a detail perspective view of bullet carrying and feeding clip.

Fig. 7 is a detail view illustrating the powder carrying and feeding chamber, and Fig. 8 is a detail view of the electrical switch employed for causing the firing circuit.

Referring more particularly to the drawings, 1 designates the barrel of the rifle which is constructed in the usual manner in which the barrel of a high powered military rifle is constructed, and it has the usual type of stock 2 attached thereto upon the rear end of which is formed the butt 3 for fitting against the shoulder of the user of the rifle. The usual type of fore and rear sights 4 and 5 respectively are employed in connection with this rifle, and as they form no part of the invention a specific description thereof will not be given.

The bore 6 of the barrel 1 is enlarged and internally screw threaded at the breech end of the barrel 1 as clearly shown at 7 to receive the externally screw threaded bullet bed 8 which is removably mounted in the bore 6 so that when the bullet bed becomes burnt and enlarged by the action of the high explosive gases, it can be replaced by a new and perfect one. The bullet bed 8 has an annular flange 9 formed thereon which abuts the end of the barrel 1 and it has a sleeve 10 formed thereon and extending in the opposite direction from the flange 9 to the bullet bed 8 as clearly shown in Figs. 3 and 5 of the drawings. The sleeve 10 is externally screw threaded as illustrated at 11 for detachable connection with the casting 12 of the gun structure which is a part of the usual type of structures employed for properly building up a rifle of this nature.

The bore 13 of the sleeve 10 is shaped to snugly fit the forward end of the bolt 14 of the rifle structure. The bolt 14 of the rifle structure is operated by a handle 15, which handle is of the usual construction employed in Springfield, or similar rifles, and the bolt 14 is operated in identically the same manner as the bolt of a Springfield or similar military rifle is operated. The usual type of locking mechanism 16 is employed for locking the bolt in its forward closed position.

The bolt 14 is hollow, being provided with a bore 17 which forms the firing chamber of the gun.

The outlet 18 of the firing chamber communicates with the interior of the bullet bed 8 and the forward end of the bolt 17 engages the butt end of the bullet 19 when the latter is positioned in the bullet bed 8.

The bullet 19 is of a particular construction adapted for use in a gas gun of this type and it has no shell primer or the like, merely the projectile or bullet which is constructed of any suitable material, and if it is desired it may be coated with a steel coating or shell or made in any other of the approved forms of bullet construction. The butt end of the bullet 19 has a cushioning washer or disk 20 secured thereto in any suitable manner which cushion or washer may be constructed of felt, or the like, and is adapted for engagement with the forward end of the bolt 14 so as to provide a practically air and fluid tight connection between the bullet 19 and the bolt 14 so as to eliminate the liability of the escapage of any of the explosive gas out of the chamber 17 through the barrel 1 of the rifle. The inlet pipe 22 is preferably constructed of a flexible tube so as to permit of the action of the bolt 14.

The bolt 14 is provided with a chamber 21 formed at its inlet end with which chamber the inlet pipe 22 communicates. A valve seat 23 is formed in the chamber 17 and a valve cone 24 normally rests in the valve seat 23 for cutting off communication between the chamber 21 and the firing chamber 17, as clearly shown in Figs. 2 and 3 of the drawings. A stem 25 is connected to the valve cone 24 and it extends outwardly through the rear end of the bolt 14. A button 26 is mounted upon the outer end of the stem or pin 25 and a coil spring 27 is coiled about the pin. One end of the spring 27 engages the button 26 while the other end engages the rear end of the bolt 14. The spring 27 is provided for holding the valve cone 24 seated in the valve seat 23 so as to prevent the passage of explosive gas from the chamber 21 into the firing chamber 17 except when the button 26 is pushed inwardly against the tension of the spring 27 for unseating the valve cone 24 and allowing the explosive gas to pass into the chamber 17.

The inlet 22 has communication with a mixing chamber 28 which is carried by the stock of the gun beneath the barrel as clearly shown in Figs. 1 and 2 of the drawings. The mixing chamber 28 has communication, through medium of a pipe 29 with a gasolene or explosive gas retaining tank 30 which tank is also supported by the stock 2 of the gun outwardly of the mixing tank 28. An air pump 31 is carried by the side of the gun stock and it has communication with an air quantity regulating and guiding valve structure 32 through the medium of a pipe 33. The valve structure 32 may be of any ordinary two way type for regulating the quantity of air and also for directing the passage of the air into either the pipe 34 or the pipe 35. A pipe 34 extends through the valve structure 32 into the tank 30 and a second pipe extends out of the valve 32 to the mixing chamber 28.

The piston rod 36 of the pump structure 31, is connected through the medium of a plate 37 to the bolt 14, so that when the bolt is withdrawn for loading the rifle the piston

of the pump structure 31 will be drawn outwardly and upon the inward movement of the bolt 14 the piston will be forced into the pump for forcing a blast of air through the valve 32 into either chambers 30 or 28 depending upon the regulation of the valve 32.

The bullets 19 are carried by a slip 40 which is attached to the gun through the medium of a pair of bars 41 which are pivotally connected to the sides of the clip casing 40 so that the clip casing may be quickly attached to or detached from the rifle as desired. The clip casing 40 has a follower 42 positioned therein against the under surface of which a spring 43 presses. The spring 43 presses the follower 42 upwardly which in turn forces the bullets 19 upwardly so that it will move the carrier of the sleeve 10 and be forced into the bullet bed 8 under the movement of the bolt 14 forwardly by the action of the handle 15. A spark plug 45 of the usual construction is carried by the bolt 14 and has its sparking point 46 positioned inwardly of the bolt 14 so that upon the passage of a current through the plug the spark passing from one of the points to the other will ignite the explosive gas in the chamber 17 for projecting the bullet or projectile 19. The spark plug 45 has an electrical conducting wire 47 connected thereto which wire is connected to one pole of a transformer 48. A wire 49 is connected to the opposite pole of the transformer 48 and to a metal plate 50 which forms a part of the rifle construction and which is engaged by the bolt 14 as clearly shown in Fig. 2 of the drawings, so that upon the passage of an electrical current through the transformer 48, the current will pass from one pole into and through the spark plug and from the other pole into the plate 50 and through this plate into the bolt 14, and consequently into the spark plug 45 closing the circuit and causing an electrical spark to jump from one of the sparking points 46 to the other for igniting the gas into the chamber 17. The transformer 48 is connected to one pole of a battery 51 by a wire 52 and it is connected to one contact 53 of a spring switch structure 54 by a conducting wire 55. The other resilient contact 56 of the spring or resilient switch structure 54 is connected through the medium of a conducting wire 57 with the opposite pole of the battery 51 to that pole which is connected to the transformer 48, as clearly shown in Fig. 2. A circuit is closed between the contracts 53 and 56 by the plug 58, which plug is carried by a pin 59. The pin 59 projects through an opening 60 formed in the butt of the rifle stock 2 and it has a button 61 mounted upon its outer end for facilitating the pushing of the wedge 58 into engagement with the contacts 53 and 56 for closing a circuit therethrough.

The battery 51, and the transformer 48 are carried by the butt 23 of the gun stock 2 and the battery may be recharged or interchanged for new batteries by the removal of the butt plate 22. A spring 63 is coiled about the pin 59 for holding the wedge 58 out of engagement with the contacts 53 and 56.

The operation of the improved gun:

The bolt 14 is withdrawn or moved rearwardly in the usual manner by the operation of the handle 15 at which time a bullet 19 is forced upwardly by the action of a spring 43 so that upon the forward or inward movement of the bolt 14, the bullet will be seated in the bullet bed 8 as shown in Figs. 2 and 3, of the drawings. During the movement of the bolt 14, the pump 31 is actuated for forcing air through the valve 32, which will force a certain quantity of the explosive gas or volatile liquid such as gasolene, or the like out of the tank 30 into the mixing chamber 28 through the pipe 29 where it is mixed with air which enters the mixing chamber 28 through the pipe 35. The air entering the mixing chamber 28 through the pipe 35 mixes the explosive gas outwardly through the pipe 22. The pin 25 is then forced inwardly against the tension of the spring 27 which unseats the valve 24, and allows the explosive gas to enter the firing chamber 17 where it is confined until fired. Immediately after the single charge of the explosive gas has entered the chamber 17 the pressure is released from the button 26 which allows the spring 27 to expand and seat the valve cone 24. After the valve cone 24 has been properly seated the button 61 is pressed for forcing the pin 59 and the edge 58 inwardly for closing a circuit between the contacts 53 and 56 which causes an electrical circuit to pass through the spark plug 45 in the manner heretofore described and causing a spark to jump from one of the sparking points 46 to the other which spark ignites the charge of explosive gas in the chamber 17, and forces the bullet 19 outwardly through the bore 6 of the rifle barrel 1. The foregoing operation is repeated upon each firing of the rifle.

In Fig. 7 of the drawings, a powder chamber and feeding mechanism is illustrated which may be employed in lieu of the tank 30 if desired. The powder feeding structure which is generically indicated by the numeral 70 comprises an outer casing 71 in which is positioned an internal shell 72 which holds the powder and has a spring controlled follower 73 mounted therein. The follower 73 has diametrically opposed pins 74 carried by its edges which ride in slots 75 formed in the shell or sleeve 72.

An adjustable powder charger 76 is mounted upon the delivery end of the sleeve 72 and it is adjustable in the manner of the usual powder measures for regulating the charge of powder at each firing of the gun. A button controlled cutoff is carried by the charger 76 and it is controlled by a button 77. The charge of powder is forced from the charger 76 into the mixing chamber 28 and from the mixing chamber through the pipe 22 into the chamber 21 and from thence into the chamber 17 in the same manner in which a charge of explosive gas is forced into the firing chamber and the charge of explosive powder is exploded by the passing of an electrical spark between the sparking points 46 and the spark plug 45 as previously described.

From the foregoing description taken in connection with the accompanying drawings the advantages of construction and of the method of operation of the improved rifles will be readily apparent to those skilled in the art to which this invention appertains and while in the foregoing description this invention has been described together with various features of construction, it is to be understood that certain minor features of construction, combination, and arrangement of parts may be altered to suit practical conditions provided such alterations are comprehended within the scope of what is claimed.

What is claimed is:—

1. In a rifle structure, the combination with an ordinary rifle barrel, of a sliding bolt, means for operating said sliding bolt, a removable bullet bed seated in the breech of said barrel and having one end enlarged to receive one end of said sliding bolt.

2. In a rifle structure, the combination, with an ordinary rifle barrel, of a removable bullet bed seated in the breech of said barrel, a sliding bolt, said bolt being hollow to form a firing chamber, said bullet bed having one end enlarged to receive one end of said bolt, means for moving said bolt out of said enlarged end to permit a bullet to be placed in the bed, means for feeding and controlling the passage of explosive gas into said firing chamber, and means for exploding gas after entrance into the chamber.

3. In a rifle structure, an ordinary rifle barrel having a breech, a removable bullet bed seated within said breech, means for feeding bullets into said bullet bed, a sliding bolt, means for operating said bolt, said bolt being hollow to provide a firing chamber adapted to contain an explosive material, means for exploding explosive material within said firing chamber for discharging a bullet out of said barrel, said bolt being provided with a chamber having communication by means of a valve seat with said firing chamber, a valve seated in the valve seat for controlling the passage of explosive material from said first named chamber into said firing chamber, and a spring controlled rod for controlling the operation of said valve.

4. In a rifle structure, an ordinary rifle barrel having a breech, a removable bullet bed seated within said breech, means for feeding bullets into said bullet bed, a sliding bolt, means for operating said bolt, said bolt being hollow to provide a firing chamber adapted to contain an explosive material, means for exploding explosive material within said firing chamber for discharging a bullet out of said barrel, said bolt being provided with a chamber having communication by means of a valve seat with said firing chamber, a valve seated in the valve seat for controlling the passage of explosive material from said first named chamber into said firing chamber, a spring controlled rod for controlling the operation of said valve, a mixing chamber carried by the rifle, a pipe communicating with said first named chamber and said mixing tank for conveying explosive material from the mixing tank into the firing chamber.

5. In a rifle structure, an ordinary rifle barrel having a breech, a removable bullet bed seated within said breech, means for feeding bullets into said bullet bed, a sliding bolt, means for operating said bolt, said bolt being hollow to provide a firing chamber adapted to contain an explosive material, means for exploding explosive material within said firing chamber for discharging a bullet out of said barrel, said bolt being provided with a chamber having communication by means of a valve seat with said firing chamber, a valve seated in the valve seat for controlling the passage of explosive material from said first named chamber into said firing chamber, a spring controlled rod for controlling the operation of said valve, a mixing chamber carried by the rifle, a pipe communicating with said first named chamber and said mixing tank for conveying explosive material from the mixing tank into the firing chamber, a pump structure carried by said rifle and having communication with said tank for mixing air with explosive material within the mixing tank and forcing the explosive material from the mixing tank into the bolt, and means for operating said pump by the operation of said bolt.

6. In a rifle structure, an ordinary rifle barrel having a breech, means for feeding bullets into said barrel, a sliding bolt, means for operating said bolt, said bolt being hollow to provide a firing chamber adapted to contain an explosive material, means for exploding explosive material within said firing chamber for discharging a bullet out of said barrel, said bolt being provided with a

chamber having communication by means of a valve seat with said firing chamber, a valve seated in the valve seat for controlling the passage of explosive material from said first named chamber to said firing chamber, and a spring controlled rod for controlling the operation of said valve.

7. In a rifle structure, an ordinary rifle barrel having a breech, means for feeding bullets into said breech, a sliding bolt, means for operating said bolt, said bolt being hollow to provide a firing chamber adapted to contain an explosive material, means for exploding explosive material within said firing chamber for discharging a bullet from said barrel, said bolt being provided with a chamber having communication by means of a valve seat with said firing chamber, a valve seated in the valve seat for controlling the passage of explosive material from said first named chamber into said firing chamber, a spring controlled rod for controlling the operation of said valve, a mixing chamber carried by the rifle, a pipe communicating with said first named chamber and said mixing chamber for conveying explosive material from the mixing chamber into said firing chamber, a pump structure carried by said rifle and having communication with said tank for mixing air with explosive material within the mixing chamber and forcing the explosive material from the mixing chamber into the bolt, and means for operating said pump by the operation of said bolt.

8. In a rifle structure, a hollow bolt forming a firing chamber, said bolt provided with a reduced chamber communicating with one end of the firing chamber, a valve cutting off communication between said chambers, means for feeding explosive material into said reduced chamber, and means for unseating said valve to permit the explosive material to enter said firing chamber.

9. In a rifle structure, a hollow bolt forming a firing chamber, said bolt provided with a reduced chamber communicating with one end of the firing chamber, a valve cutting off communication between said chambers, means for feeding explosive material into said reduced chamber, means for unseating said valve to permit the explosive material to enter said firing chamber, a spark plug communicating with the interior of said firing chamber, and means for controlling the passage of an electrical current through said spark plug for controlling the explosion of explosive material within said firing chamber.

10. In a rifle structure, the combination with an ordinary riffle barrel, of a sliding bolt provided with a bore forming a firing chamber, said bolt further provided with a reduced chamber communicating with one end of the firing chamber, a valve cutting off communication between said chambers, means for feeding explosive material into said reduced chamber, means for unseating said valve to permit the explosive material to enter said firing chamber, means for operating said slidable bolt, a removable bullet bed seated in the breech of said barrel and having one end enlarged to receive one end of said sliding bolt, and means for discharging explosive material within the firing chamber.

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

VIRGIL C. BRANNON.

Witnesses:
J. H. DOWNS,
W. L. MONROE.