

W. D. SMITH.
ORDNANCE.

APPLICATION FILED SEPT. 8, 1910. RENEWED SEPT. 12, 1912.

1,055,821.

Patented Mar. 11, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

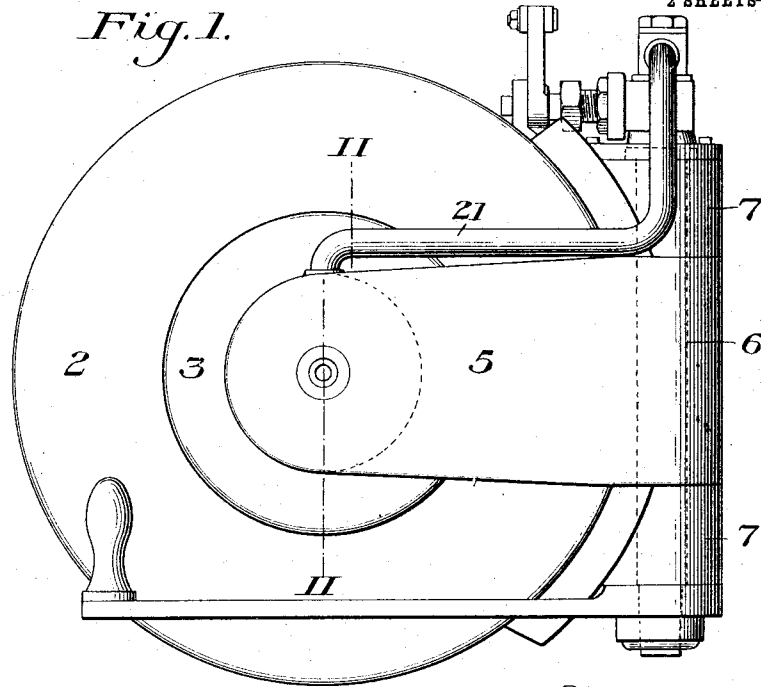
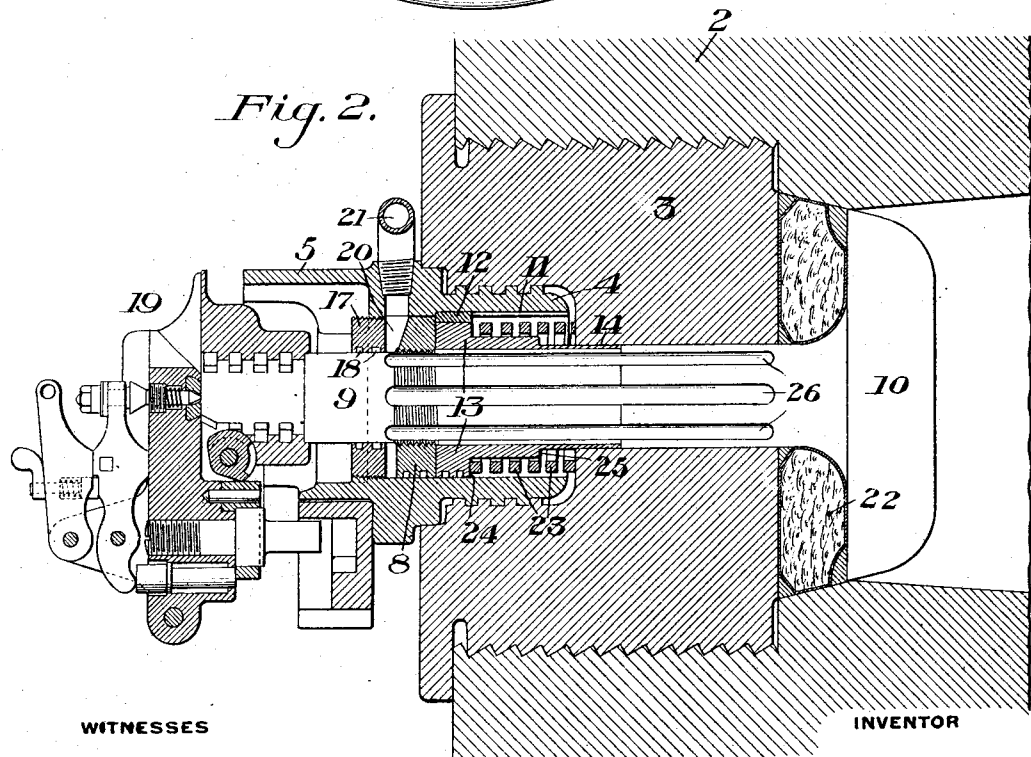


Fig. 2.



WITNESSES

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Fig. 3.

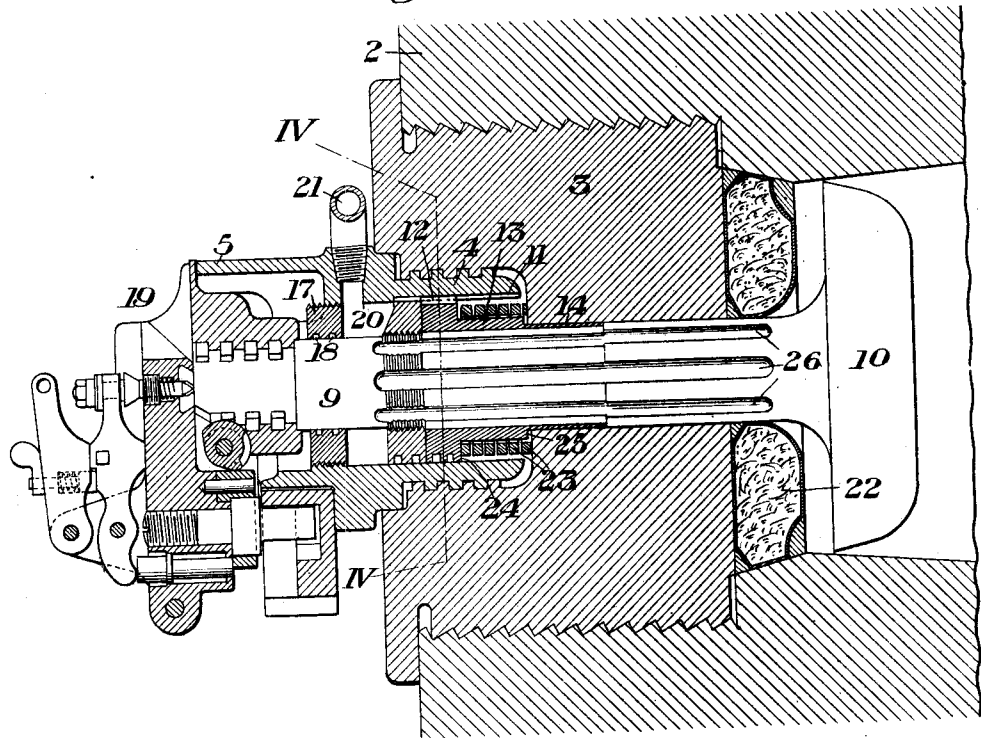
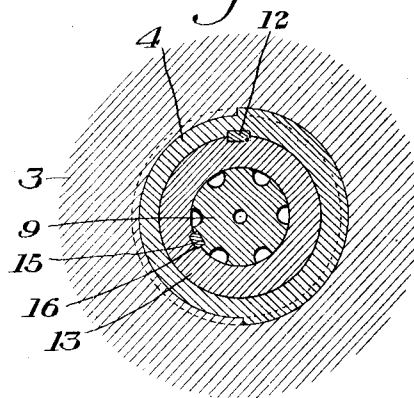


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM D. SMITH, OF WASHINGTON, DISTRICT OF COLUMBIA.

ORDNANCE.

1,055,821.

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To all whom it may concern:

Be it known that I, WILLIAM D. SMITH, a citizen of the United States of America, and a resident of Washington, in the District of Columbia, have invented a new and useful Improvement in Ordnance, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to ordnance of the breech loading type, provided with a breech block and a gas check to prevent the escape of the gas rearwardly.

The object of my invention is to provide means for admitting air or other fluid between the gas check and the mushroom head, without materially changing the construction of the guns now in use.

Another object of my invention is to provide a pressure chamber within the breech of the gun, containing a piston which is connected to the mushroom head and adapted to be advanced by the pressure in the chamber to advance the mushroom head into the bore of the gun to admit the fluid pressure to flush and cool the gun.

Still another object of my invention is to provide a piston fit between the end of the spindle on the mushroom head and the pressure chamber to prevent all leakage of pressure rearwardly along said stem.

The precise nature of my invention will be best understood by reference to the accompanying drawings, which will now be described, it being premised, however, that various changes may be made in the details of construction and general arrangement of the parts without departing from the spirit and scope of my invention, as defined in the appended claims.

Figure 1 is a rear view of the breech portion of a gun equipped with one form of my improved apparatus for flushing the gun after its discharge. Fig. 2 is a partial sectional view on the line II—II of Fig. 1, showing the parts in their position before the gun is fired. Fig. 3 is a similar view showing the parts in the position they assume after the gun has been fired and during the time the gun is being flushed. Fig. 4 is a sectional view on the line IV—IV of Fig. 3.

In the drawings, the numeral 2 designates the breech portion of the gun having a

screw threaded orifice in which is seated a breech block 3.

4 is a carrier sleeve on which the breech block 3 is mounted and formed integral therewith is a carrier 5, which is pivoted to a pin 6, in the projection 7 extending from the breech of the gun. The carrier sleeve is bored out for the reception of a piston 8, which is connected to the stem 9 of a mushroom head 10, and which is arranged to move longitudinally therewith in the manner hereinafter described. The bore in the carrier sleeve is provided with a longitudinal key seat 11 in which is seated a key portion 12 on a sleeve 13 on the stem 9, and which engages the one face of the piston 8. The forward end of this sleeve is somewhat smaller in diameter and enters the bore through the breech block 3 as indicated at 14. The rear end of the stem 9 of the mushroom head is turned down and is provided with a shoulder against which the sleeve 13 is held by means of the screw threaded engagement between the piston 8 and the stem 9.

15 is a key seat in the stem 9, and 16 is a key on the sleeve 13 which is seated therein and arranged to prevent the mushroom head from turning with relation to the carrier sleeve 4 through the medium of the sleeve 13 and its key connection with said sleeve.

17 is a cylinder head on the rear end of the stem 9 having a bore which forms a piston fit with the end of said stem, and which is provided with a plurality of packing rings 18. The periphery of this cylinder head is provided with screw threads which engage an internally threaded portion of the rear end of the carrier sleeve 4. Connected to the rear end of the stem 9, I have shown the firing mechanism 19 which may be of any approved type.

20 is an air chamber in the rear portion of the bore of the carrier sleeve 4, and leading into this pressure chamber is a pressure supply pipe 21 which may be connected to any suitable source of fluid pressure supply, and which may be controlled by any suitable valve mechanism.

22 is the gas check surrounding the stem of the mushroom head and interposed between the mushroom head and the breech block.

23 is a coil spring surrounding the sleeve

13 and engaging the breech block and the shoulder 24 on said sleeve, and is arranged to retain the mushroom head in its rearward position against the gas check 22.

25 is a shoulder on the sleeve 13, which is arranged to limit the forward movement of the mushroom head.

26 are ports along the periphery of the stem of the mushroom head and extending from a point slightly to the rear of the piston 8 to a point slightly in back of the rear edge of the gas check 22 when the mushroom head is in its retracted position.

The operation of the device is as follows: Immediately after the gun is fired, pressure is admitted into the chamber 20, which will advance the piston 8 and with it the mushroom head 10. Fluid pressure will then pass from the chamber 20 through the ports 26 into the bore of the gun between the gas check and the mushroom head to flush and cool the gun. As soon as the pressure supply has been cut off, the spring 23 will return the parts to the position shown in Fig. 2. When it is desired to remove the breech block, it is rotated in the breech of the gun and on the carrier sleeve 4 to unlock it from the breech, after which the breech block is translated and the carrier is swung on the pivot pin 6. After the gun has been reloaded the breech block is again inserted into the gun and locked by means of the screw threaded connection with the breech of the gun.

The advantages of my invention result from the provision of a mushroom head having a stem which has a piston fit with a cylinder head in the rear of the pressure chamber.

Another advantage of my invention results from the provision of a perfect fit between the piston on the spindle and the pressure chamber, together with a sleeve in engagement with one end of the piston which is provided with a key connection with the spindle of the mushroom head and the carrier sleeve, to prevent said parts from rotating with relation to each other. By this arrangement, I am enabled to provide a piston fit between the various members on both sides of the piston and thereby avoid all chances of leakage and at the same time provide ducts along the periphery of the stem of the mushroom head which will admit air from said chamber to the bore of the gun between the mushroom head and the gas check when the mushroom head is advanced.

I claim:

1. In a breech loading gun, a carrier sleeve, a breech block mounted on the carrier sleeve and within the breech of the gun, a pressure chamber within the carrier sleeve, a mushroom head having a spindle extending through the breech block into the car-

rier sleeve, a piston on the spindle of the mushroom head within said pressure chamber, and a sleeve within the carrier sleeve arranged to reciprocate with said spindle and also prevent any rotary movement of the mushroom head with relation to the carrier sleeve; substantially as described.

2. In a breech loading gun, a carrier sleeve, a breech block mounted on the carrier sleeve, a chamber within the carrier sleeve, a mushroom head having a spindle extending into said chamber, a piston on said spindle separating the chamber into two parts, means to admit fluid pressure into one part of the chamber to advance the mushroom head, means to prevent fluid pressure passing from one part of said chamber to the other part, and means in the other part of said chamber to return the mushroom head; substantially as described.

3. In a breech loading gun, a carrier sleeve, a breech block mounted on the carrier sleeve, a chamber within the carrier sleeve, a mushroom head having a spindle extending into said chamber, a piston on said spindle separating the chamber into two parts, means to admit fluid pressure into one part of the chamber to advance the mushroom head, means to prevent fluid pressure passing from one part of said chamber to the other part, and a spring in the other part of said chamber to return the mushroom head; substantially as described.

4. In a breech loading gun, a carrier sleeve, a breech block mounted on the carrier sleeve, a chamber within the carrier sleeve, a mushroom head having a spindle extending into said chamber, a piston on said spindle separating the chamber into two parts, means to admit fluid pressure into one part of the chamber to advance the mushroom head, fluid pressure ports leading directly from said part of the chamber to the bore of the gun when the mushroom head is advanced, and a spring in the other part of said chamber to return the mushroom head; substantially as described.

5. In a breech loading gun, a carrier sleeve, a breech block mounted on the carrier sleeve, a chamber within the carrier sleeve, a mushroom head having a spindle extending through said chamber, a cylinder head surrounding said spindle and closing one end of said chamber, a piston on said spindle separating the chamber into two parts, means to admit fluid pressure into one part of the chamber to advance the mushroom head, and means in the other part of said chamber to return the mushroom head; substantially as described.

6. In a breech loading gun, a carrier sleeve, a breech block mounted on the carrier sleeve, a chamber within the carrier

sleeve, a mushroom head having a spindle extending into said chamber, a piston on said spindle separating the chamber into two parts, means to admit fluid pressure into one part of the chamber to advance the mushroom head, a sleeve surrounding said spindle and extending into the breech block, a flange on said sleeve within the second part of said chamber, a spring in the second portion of said chamber engaging the flange on the sleeve and the breech block to return the mushroom head, and means on said sleeve to limit the advance movement of the mushroom head; substantially as described.

7. In a breech loading gun, a carrier sleeve, a breech block rotatably mounted on the carrier sleeve and in the breech of the gun and arranged to be locked therein, a mushroom head having a stem extending through the breech block and the carrier sleeve, a pressure chamber within the carrier sleeve, means for admitting pressure to said chamber, a piston on the stem of the mushroom head within the pressure chamber, and ports in said stem in communication with the

pressure chamber, the piston being arranged to advance the mushroom head by means of the fluid pressure in the pressure chamber to admit pressure to the bore of the gun to flush and cool the same; substantially as described.

8. In a breech-loading gun, a removable breech block having a carrier sleeve, a fluid pressure chamber therein, the block being rotatably mounted upon the walls of said chamber for unlocking, a mushroom head having a stem extending through the breech block into said chamber and carrying a piston therein, and means for admitting fluid pressure behind said piston, together with means for permitting the escape of fluid pressure from said chamber into the bore of the gun when said piston is moved; substantially as described.

In testimony whereof, I have hereunto set my hand.

W. D. SMITH.

Witnesses:

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JESSE B. HELLER.