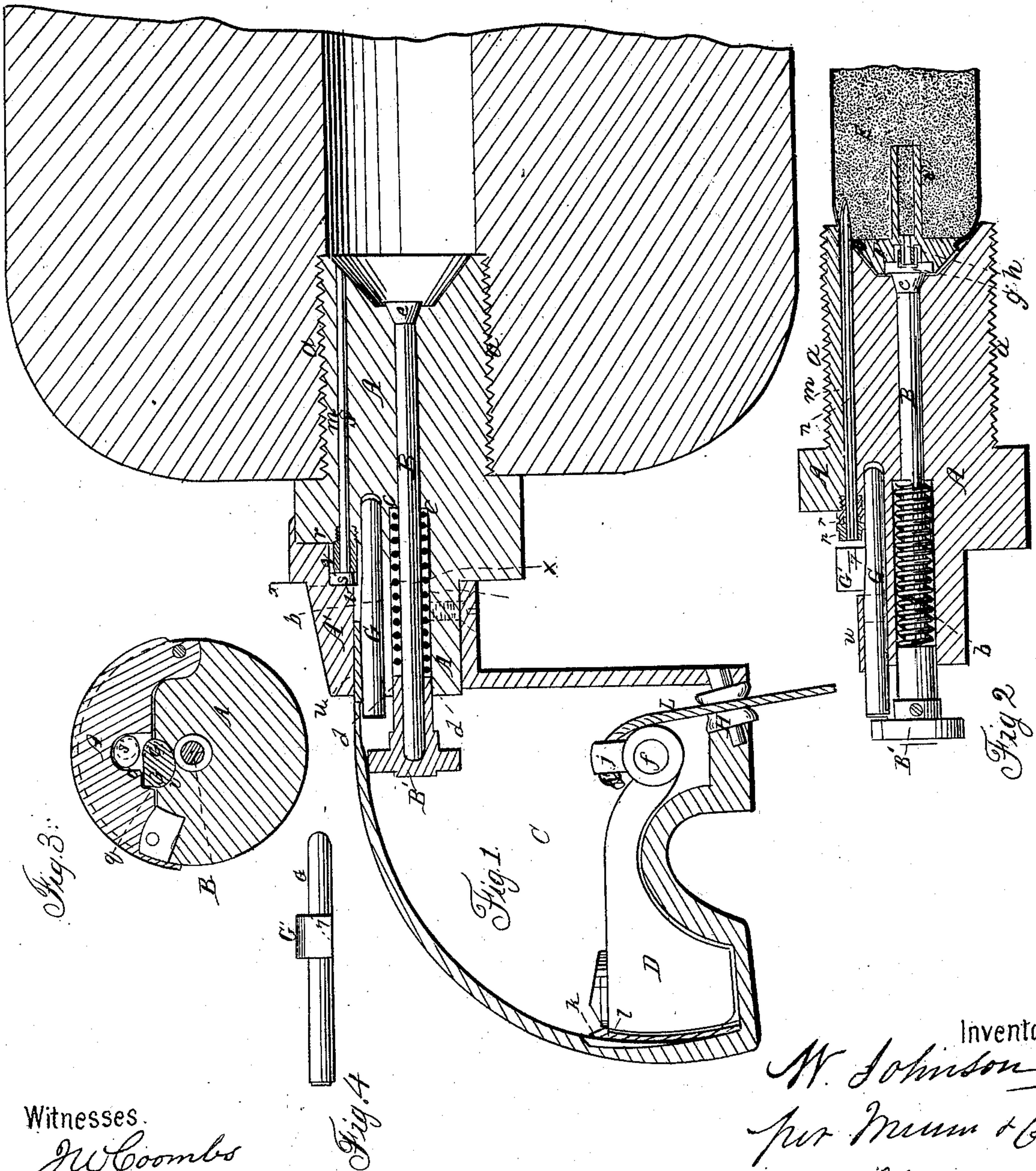


W. JOHNSON.
Lock for Ordnance.

No. 38,683.

Patented May 26, 1863.



Witnesses.
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN DISCHARGING ORDNANCE.

Specification forming part of Letters Patent No. **38,683**, dated May 26, 1863; antedated February 9, 1863.

To all whom it may concern:

Be it known that I, WILLIAM JOHNSON, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Cannon and Other Ordnance; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention consists in a novel apparatus for firing cannon and other ordnance, whereby the following desirable results are obtained: First, all waste of the gases evolved by the explosion of the charge and consequent loss of impelling force on the projectile by leakage at the vent or point of ignition are obviated; second, the point of ignition is protected from rain or moisture in any other form; third, if any failure to ignite the charge by the percussion device intended to effect that object should occur provision is afforded for igniting it by what I call a "secondary ignition" device applied for the purpose; and, fourth, provision is made for very effectually spiking or disabling the gun.

Figure 1 in the accompanying drawings, is a central longitudinal vertical section of my apparatus complete, showing it applied to the breech of a cannon. Fig. 2 is a similar section of the same with the hammer-box omitted and the secondary ignition device applied and in condition for operation, showing also a portion of a cartridge. Fig. 3 is a transverse vertical section in the line *xx* of Fig. 1. (Seen looking in a forward direction.) Fig. 4 is a top view of what I call the "secondary percussion-pin," showing it in the position represented in Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

A is a stout plug of brass or iron, having an external screw-thread, *a*, and intended to be screwed into the breech of a piece of ordnance after the manner of a breech-pin. In a muzzle-loading piece the bore is continued right through the breech, which is then counterbored a little larger, and has the screw-thread cut in for the reception of the screw-thread *a*. In adapting my invention to a muzzle-loading piece already constructed the

breech may be cut off to provide for the insertion of the plug A. In a breech-loading piece the plug may be adapted to the movable breech in any suitable manner; but in any case the inner end of the plug should constitute the seat for the reception of the rear end of the cartridge. The plug A is bored centrally for the reception of the sliding pin B, and counterbored from the rear somewhat longer, for the reception of a spiral spring, *b*, which is coiled round the said pin, and which bears against the shoulder C at the front of the counterbore and against a shoulder, *d*, formed in front of the head B' of the pin B, and so exerts a constant tendency to pull back the said pin as far as permitted by a conical valve, *e*, which is formed around its front end, and which is made to fit gas-tight into a seat of corresponding form in the inner end of the plug A. The head of the pin B protrudes from the outer end of the plug A and enters a sector-shaped box, C, which may be termed the "hammer-box," and which is bolted to the outer end of the plug A. In the lower part of this box C there is arranged transversely a fixed pin, *f*, upon which a heavy hammer, D, is capable of swinging, for the purpose of striking the head B' of the pin B and driving the said pin forward through the plug A and against the percussion-cap *g*, Fig. 2, or other fulminating priming attached to the cartridge E, and thereby firing the charge.

I propose to use a cartridge with a metallic head, F, having a nipple, *h*, or seat provided on or in it for the reception of the cap or other priming, and having attached to it a tube, *i*, to convey the fire to any desired point in the cartridge or to several points therein. The hammer has attached to its hub a short arm, *j*, which has attached to it a cord, L, which passes out through an opening in the bottom of the hammer-box and in contact with a pulley, H, arranged in the said opening. This cord is to be pulled by one of the men working the gun when it is desired to fire, the pull causing the hammer to move upward and forward toward and against the head of the pin B. In order to hold back the hammer and prevent its being accidentally thrown into contact with the pin B in the transportation of the gun or any other circumstances,

there is secured in the lower and back part of the box C a spring-hook, *k*, which catches on the upper or front edge, *l*, of the hammer-head when the latter is down at the bottom of the box. This spring is also made to serve another purpose—viz., that of insuring a very forcible blow of the hammer by requiring sufficient force to be applied to the hammer through the cord G to make the hammer itself throw back the said spring before it can escape. The force thus accumulated in the hammer before it begins to move makes it fly upward and forward very suddenly and violently. In order to provide for the escape of the hammer from the hook *k*, as above described, the edge *l* of the hammer-head and the point of the hook *k* are somewhat rounded. The hammer after striking the blow falls back quickly, a start being given to it by the reaction of the spring *b* on the pin B. When the charge has been ignited, the pressure of the gases evolved, acting on the inner end of the pin B, drives back the said pin instantaneously, and so causes the valve *e* to close and prevent the escape of any gas around the pin. The object of the spring *b* is not to close but only to start the valve.

Above the central bore provided in the plug A for the reception of the spring B there is drilled through the said plug, parallel with the said bore, a passage, *m*, for the purpose of igniting the charge in another way in case of the cap or priming before described missing fire. This passage is to receive a thin tube, *n*, to the outer end of which is secured a nipple, *p*, for the reception of a percussion-cap, the said tube being long enough to pass right through the front end of the plug A, and pointed to penetrate the cloth of which the cartridge is composed. This tube is kept on hand filled with gunpowder, but not inserted until after the failure of the pin B to effect the ignition of the charge; but the passage *m* is tightly closed by means of a steel rod, *s*, Fig. 1, said rod having a head, *s'*, which fits close up to a nipple, *r*, which is screwed tightly into the mouth of the passage *m*, and the head of the said rod being held in place by the back of a cavity, *q*, that is formed in a hinged lid, A', provided on the top of the rear portion of the plug A. In case of the pin B missing fire, the lid A is opened, the rod *s* drawn out, and the tube *n* inserted.

To explode the cap on the nipple *p* there is provided what may be called the "secondary percussion-pin" G, Figs. 2, 3, and 4, which is fitted to slide and also to turn in a bearing or guide, the lower half of which is formed in the top of the back part of the plug A, and the upper half in a covering-plate, U, upon which the lid A' shuts down. The rear end of this pin G enters the hammer-box. On one side of the said pin there is a projection, G', which, when the rod *s* is in the passage *m* and the lid A' is closed, occupies a horizontal position, as shown in Fig. 3, in which position it is received, partly within a recess, *v*, in the plug

A and partly within a recess, *v'*, in the cap A, and so confined in place below the head *s'* of the rod *s*; but when, after the pin B has failed to explode the priming *g*, the lid A' has been opened, the rod *s* withdrawn, and the tube *n* inserted, the pin G is drawn back far enough to let the front of the projection G' clear the cap on the nipple *p*, and the said pin is then turned by hand to bring the projection G' to an upright position behind the said nipple, as shown in Fig. 2, after which the cord L is again pulled and the hammer caused to strike the head B' of the pin B and drive the said pin forward, driving the said head against the rear end of the pin G, and so driving forward the latter pin and causing its projection G' to strike and explode the cap on the nipple *p*, and thereby causing fire to be transmitted to the charge through the tube *n*. When this mode of igniting the charge has to be resorted to, the cap A is open and the escape of gas at the point of ignition is not prevented. This escape, taking place through the nipple *p*, is made the means of throwing back the pin G and of turning over its head G' to the horizontal position shown in Fig. 3, the throwing back of the said pin being effected by the direct backward pressure of the gas on the front of the said projection, and the turning aside being effected by its action in a small oblique notch, 7, (see Figs. 2 and 4,) cut in the said face opposite the vent of the said nipple. Instead of the tube *n*, the nipple *r* may be made longer and a percussion-cap applied to it after the withdrawal of the rod *s*, such cap to be exploded by the projection G' of the rod G in the same manner as the cap on the nipple *p*. When the firing has been performed by ignition through the passage *m*, the rod *s* should be replaced and the lid or cap A closed again. This lid or cap should be so fitted as to enable it to close air and water tight to exclude rain or wet or moisture in any form from all the parts within the plug A.

If it should under any circumstances become desirable to abandon the gun, it may be disabled by unscrewing the plug A from its breech and carrying away the plug and all the attached parts constituting the whole of the firing apparatus; but in case it should be impracticable to do this there is a hole, *v*, so drilled transversely into the plug, as shown in dotted outline in Fig. 3, that it will partly intersect the two passages in which the two pins B and G work. By driving a pin or spike tightly into this hole, it is made to pass in front of the pin G, and through a notch provided for the purpose in the pin B, and hence neither pin can be driven forward by the hammer. The mouth of the hole *v* is kept closed by a screw-plug, *w*, which will have to be removed for spiking the gun in the manner above mentioned.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The hammer D, arranged in a box, C, at

tached to a breech pin or plug, A, and in relation to a percussion-pin, B, passing through the said plug and operated by a cord, L, and spring catch or hook *k*, as herein specified.

2. The secondary ignition device consisting of a passage, *m*, nipple *r*, and secondary percussion-pin G, either with or without the tube *s* and nipple *p*, said pin G being constructed

and applied relatively to the principal percussion-pin B to operate substantially as herein specified, for the purpose set forth.

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Witnesses:

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