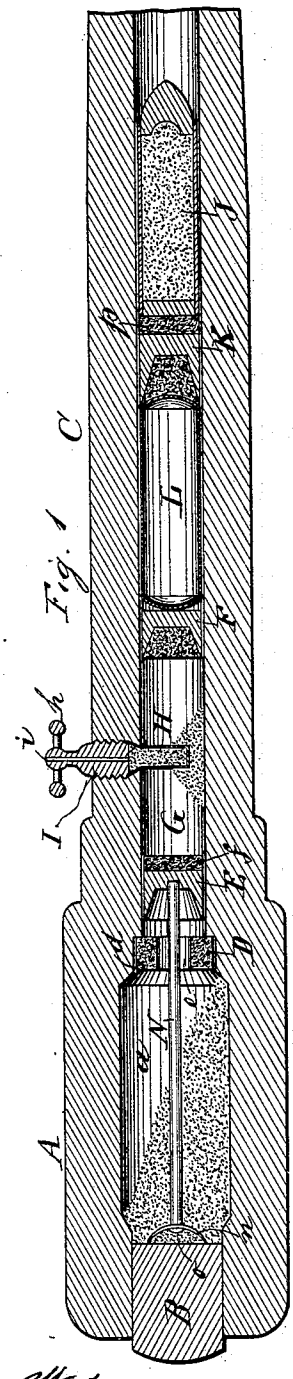
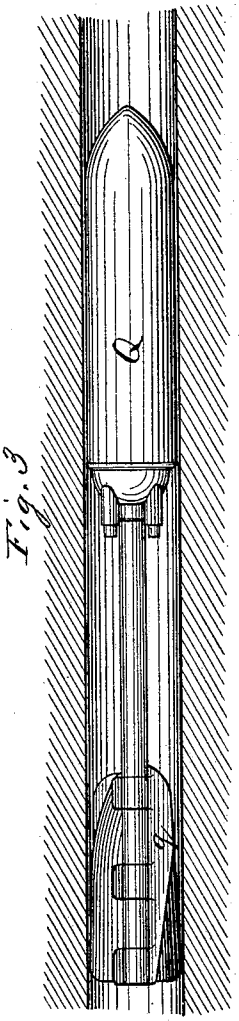
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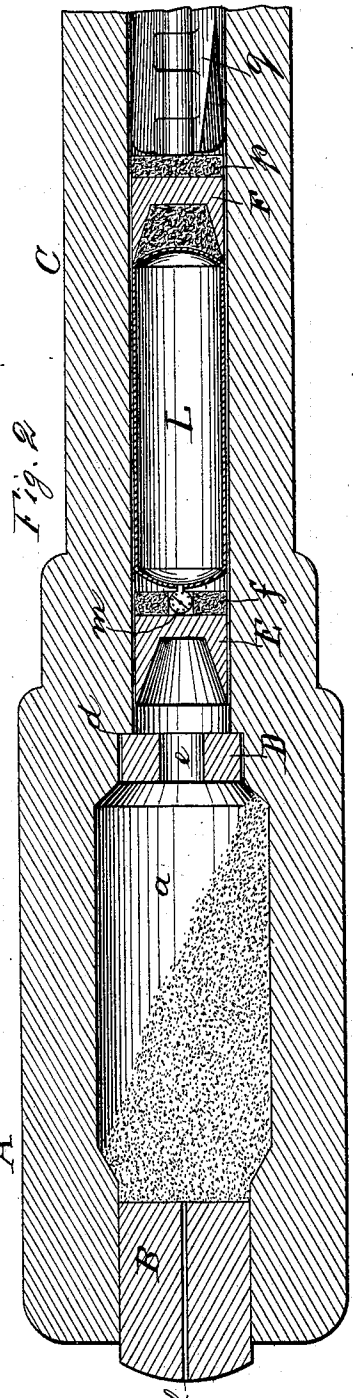
L. GATHMANN.

CONSTRUCTING AND LOADING CANNON.

No. 424,969. Patented Apr. 8, 1890.







Witnesses
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UNITED STATES PATENT OFFICE.

LOUIS GATHMANN, OF CHICAGO, ILLINOIS.

CONSTRUCTING AND LOADING CANNON.

SPECIFICATION forming part of Letters Patent No. 424,969, dated April 8, 1890.

Application filed March 26, 1889. Serial No. 304,894. (No model.)

To all whom it may concern:

Be it known that I, LOUIS GATHMANN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Constructing and Loading Cannon, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to methods of constructing and loading cannon, with the object in view to break or reduce the first shock or violent concussion with exploding the charge of powder, and to obtain an easy starting and gradually accelerating propulsion of the projectile, whereby, with firing, the cannon is not to be exposed to the momentous destructive strains, and whereby, therefore, quick explosives—such as nitro-glycerine and gun-cotton—may be employed with safety for charging the projectile; and it consists in providing a large powder-chamber, and in a washer-shaped diaphragm interposed between such powder-chamber and the bore of the cannon, the opening in which diaphragm being considerably less diameter than the bore of the cannon, and in combination therewith in front of said washer-shaped diaphragm of an auxiliary powder-chamber in the bore of the cannon to which, for firing, the match is applied through a touch-hole, and the explosion of the powder in which is to ignite the powder in the main chamber, or in combination with such main powder-chamber and washer-shaped diaphragm of an air or gas shell interposed between the diaphragm and projectile, or the combination of all these devices, all as will be more fully described and specifically claimed.

In the accompanying drawings, Figures 1 and 2 represent longitudinal sections through the center of the gun; and Fig. 3, a continuation of Fig. 2, showing a turbine-tailed projectile or torpedo as loaded in the gun for propulsion.

Corresponding letters of reference in the several figures of the drawings designate like parts.

A denotes the breech of the cannon, bored to provide an expanded powder-chamber *a*, closed at its rear by the breech-block B, which either may be solid, as in Fig. 1, or it may be provided with a touch-hole *b*, as shown in Fig. 2.

C is the body of the gun, bored cylindrical, and intermediate of this cylindrical bore and the powder-chamber *a* is provided an offset *d*, forming a shoulder for a washer-shaped diaphragm D, either made of metal, wood, or paper-pulp, to be inserted through the breech-block opening. The central hole *e* in this diaphragm is considerably smaller than the bore of the body of the cannon, for throttling the energy of the gases from the powder explosion not to bear too suddenly or all at once with their full force upon the projectile. Forwardly adjacent to this diaphragm D is inserted a sabot E, made of copper or other soft metal, and being cup-shaped to be expanded from the explosion behind it, thereby forming a close joint with the bore of the gun, and upon this sabot is placed a disk *f*, of some elastic material, as felt or paper-pulp, that will assist in forming a hermetic joint in the bore of the cannon.

Between sabot E and another sabot F of equal shape the conical chamber, in which, being filled with paper-pulp, is provided an auxiliary powder-chamber G, as shown by Fig. 1, which powder-chamber, being charged through an opening in top or side of the gun, is then closed by a paper cartridge H, suspended in the inner contracted end of said opening, and by a screw-plug I, provided with a handle *h* and with a touch-hole *i*. Upon this sabot F may be loaded direct the projectile J, being a shell or torpedo of any usual or special construction, or between said sabot F and a third sabot K, again of the same construction as sabot F, may be inserted a cylindrical shell L, preferably made of sheet-copper, with its ends hermetically closed and filled with compressed air or gases, which shell in its bottom end may be provided with a pressure-indicator *m*, of any usual construction, that, as in Fig. 2, may enter a central hole or cavity in disk *f*. When two powder-chambers H and *a* are used, I provide a rod N, with a semi-elliptic spring *n* secured to its bottom end and carrying a percussion cap or primer *o* to butt against the breech-block B, while the end of rod N enters a socket in sabot

E, whereby the explosion of the powder in chamber H will force the sabot E toward the breech of the cannon, thereby striking the cap or primer *o* against the breech-block and exploding it, wherefrom the powder in chamber *a* will be ignited. With this device a small amount of powder only being filled in chamber H, this with exploding will exert its force in both directions for exploding cap *o*, and at the same time starting the motion of the projectile J, after first compressing the air or gas shell L, which provides a cushion, and then the large body of powder in chamber *a* being exploded the pressure of the gases issuing therefrom through the opening *e* in diaphragm D will exert their force upon sabot E, thereby still further compressing the air or gases in shell L until reaching the utmost degree of compression or a density equal to that of the gases from the powder explosion, whereby the projectile J or Q will be brought to its full speed gradually and without a concussion to the projectile that might cause an untimely ignition of the quick explosives therein.

In place of the auxiliary powder-chamber H, the air or gas shell L may be placed between sabots E and F and then the projectile may be loaded thereon, with an elastic disk *p* interposed, all as shown by Fig. 2.

Q represents a shell having turbine wings *q* to its tail end for rotating such shell by the friction through the air or water. Such shells heretofore were dangerous when loaded with quick explosives to shoot from a cannon, which with my devices, however, can be done with safety.

What I claim is—

1. The combination, with a cannon having an expanded powder-chamber, of a diaphragm shouldering against an offset at the front end of said powder-chamber and provided with a central hole smaller than the bore of the cannon, substantially as and for the purpose set forth.

2. In a cannon, an auxiliary powder-chamber forward of the main powder-chamber, both divided by a sabot, of a percussion-primer in the main powder-chamber operated by the recoil of the sabot, and a touch-hole to the auxiliary powder-chamber, all substantially as set forth, for the purpose specified.

3. In a cannon having a main powder-chamber larger than the bore of the cannon, a diaphragm shouldering against an offset at the front end of said main powder-chamber and provided with a central hole smaller than the bore of the cannon, of an auxiliary powder-chamber forward of the main powder-chamber and divided from the diaphragm by a sabot, a percussion-primer in the main powder-chamber operated by the recoil of the sabot, and a touch hole to the auxiliary powder-chamber, all substantially as set forth, for the purpose specified.

4. In a cannon having a powder-chamber larger than the bore of the cannon, a diaphragm shouldering against an offset at the front end of said powder-chamber and provided with a central hole smaller than the bore of the cannon, and a shell filled with compressed air or gases placed between two sabots intermediate of the diaphragm and projectile, all substantially as set forth, for the purpose specified.

5. In a cannon having a main powder-chamber larger than the bore of the cannon, a diaphragm shouldering against an offset at the front end of said main powder-chamber and provided with a central hole smaller than the bore of the cannon, an auxiliary powder-chamber forward of the main powder-chamber and divided from the diaphragm by a sabot, a percussion-primer in the main powder-chamber operated by the recoil of the sabot, a touch-hole to the auxiliary powder-chamber, and a shell filled with compressed air or gases placed between two sabots intermediate of the auxiliary powder-chamber and the projectile, all substantially as set forth, for the purpose specified.

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

LOUIS GATHMANN.

Witnesses:

WILLIAM H. LOTZ,

OTTO LUBKERT.