A. LEMMER.

Muzzle-Loading Ordnance.

No. 8,528. Patented Nov. 18, 1851.

Fig. 1.

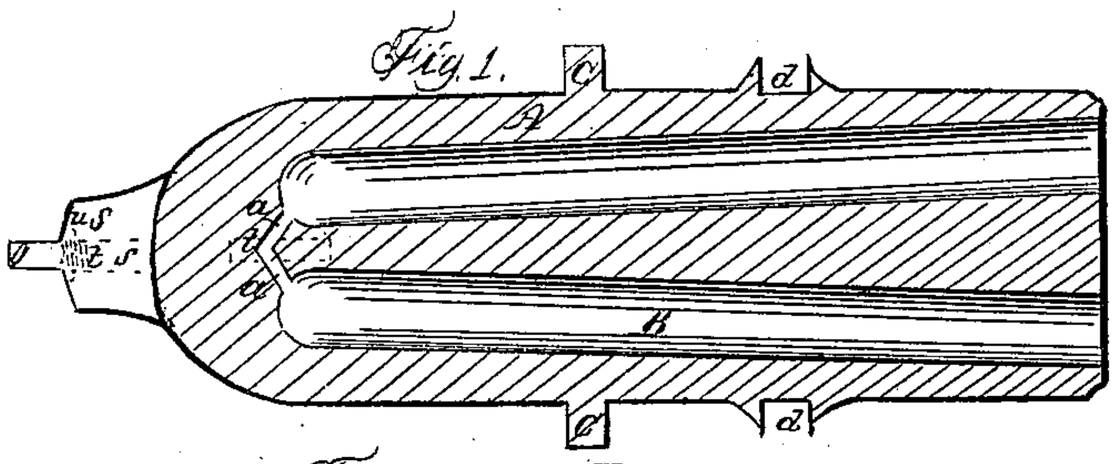


Fig. 2.

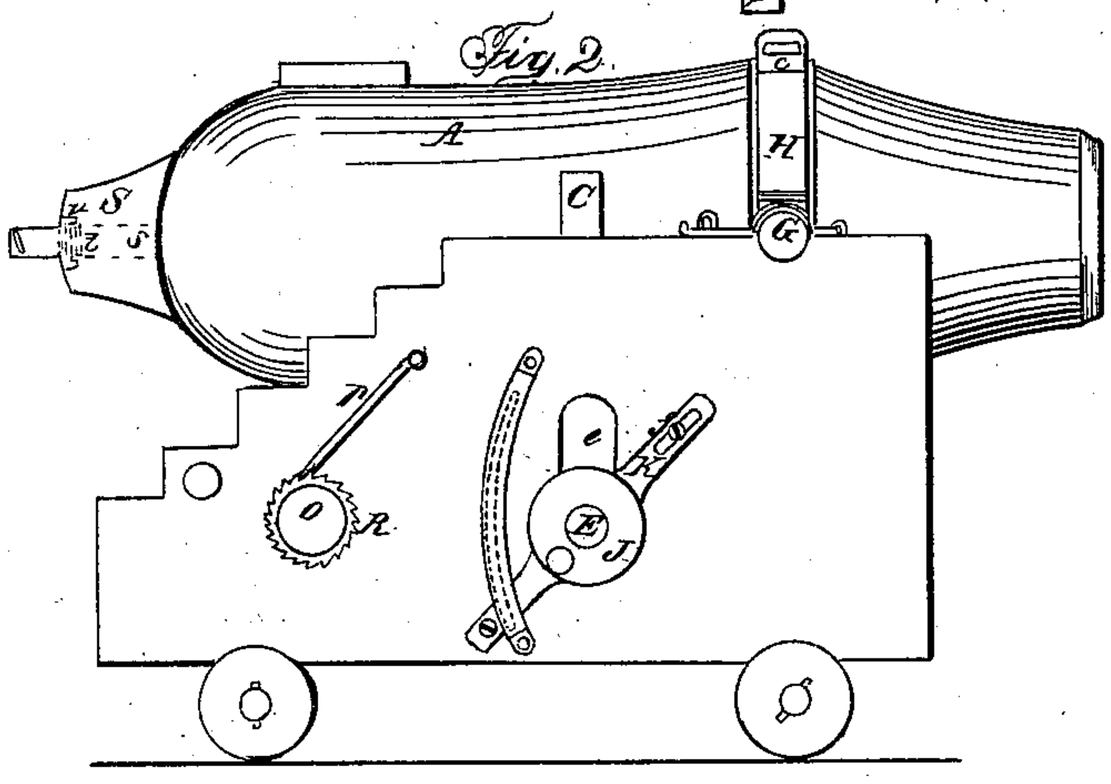


Fig. 3.

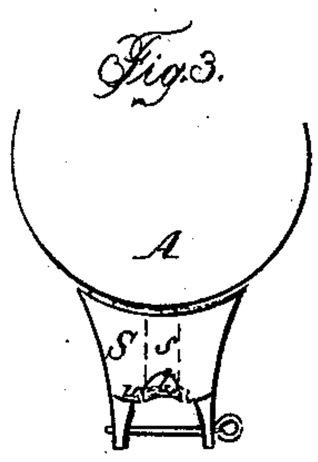


Fig. 4.

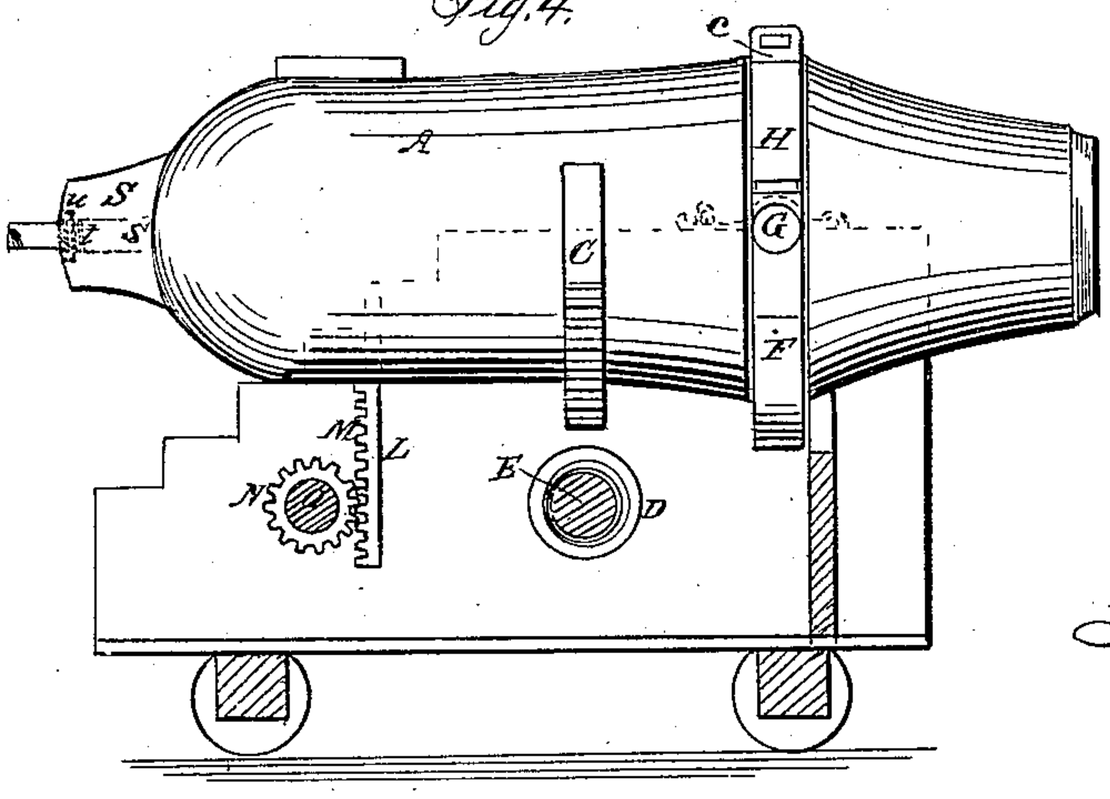
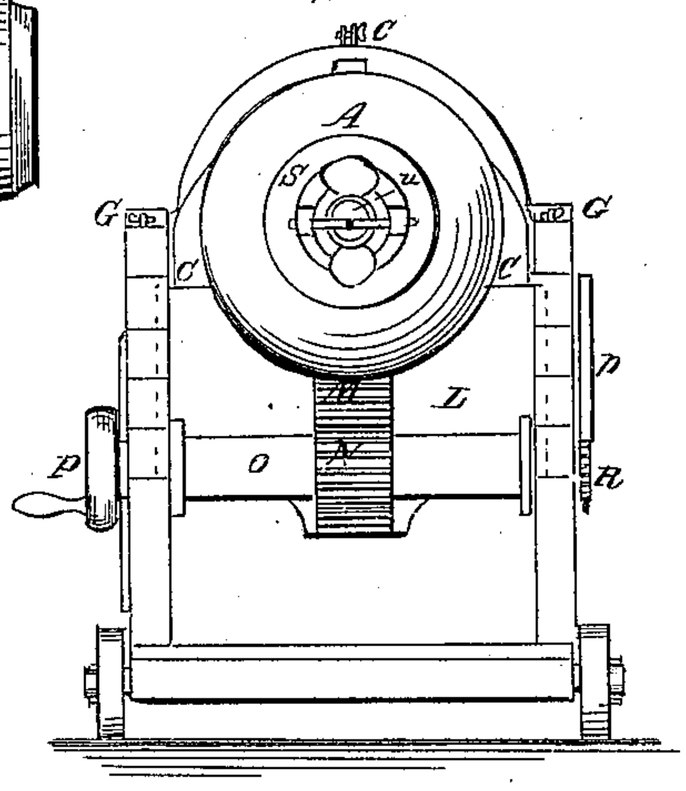


Fig. 5.



UNITED STATES PATENT OFFICE.

ADAM LEMMER, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN CANNON FOR THROWING CHAIN-SHOT.

Specification forming part of Letters Patent No. **8,528**, dated November 18, 1851.

To all whom it may concern:

Be it known that I, ADAM LEMMER, of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Gun for Throwing Chain-Shot, and have also applied certain mechanical devices to the same, by which the gun may be made to revolve on its carriage, and in certain positions throw the chain-shot either in a horizontal line or in a vertical line; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a horizontal section of the gun, showing the divergency of the bores. Fig. 2 is a side elevation of the gun and carriage. Fig. 3 is a section, showing the movable or revolving head at the breech. Fig. 4 is a longitudinal vertical section of the carriage, taken through the center, the gun not being in section. Fig. 5 is a back view in elevation.

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

The nature of my invention consists in constructing a gun with two or more bores, said bores diverging from the breech or vent toward the muzzle. The shot are connected by a chain of suitable weight and size, and a shot is placed in each bore. When the gun is discharged, the shot, owing to the divergency of the bores, expand or separate from each other, spreading out the chain, and thereby doing great execution.

My invention further consists in causing the gun to rotate on its carriage by means of a worm-wheel meshing into a rack which is attached to the gun, the gun being secured in any desired position by a metal strap. The object of this is for the purpose of projecting the chain-shot from the gun, so that the chain and shot may form either a horizontal or vertical line. This will be fully described hereinafter.

My invention also consists in applying a revolving head to the breech, to which is attached the "breeching." This is for the purpose of preventing the breeching from winding round the gun when it is made to revolve; and, lastly, in elevating or depressing the muzzle of the gun by means of a vertical slide, to which is attached a rack operated upon by a pinion.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, Fig. 1, is a horizontal section of a gun, showing two bores, B B. The divergency of the bores in this view will be seen and the whole principle readily understood. *a a* are passages which afford a communication from each bore to the vent *b*, the charge in each bore being fired simultaneously. It will be seen by referring to Fig. 1 that if the shot were projected from the gun, they would have a tendency to expand or separate from one another, as the lines of direction of each bore diverge. In consequence of this, as the shot expand or separate, the chain which connects them is spread or stretched out, thus making a formidable and destructive missile. In the side elevation, Fig. 2, the gun is seen mounted upon the carriage.

I will now explain the manner in which the gun is turned upon the carriage and the object for turning it.

C is the projection or flange, (seen more particularly in Fig. 4 on the gun, principally on the under side,) and teeth or cogs are cut on its under surface, forming a rack. This rack meshes into a worm-wheel, D, hung on the shaft E, said shaft running transversely through the body of the carriage.

F is a semicircular frame, to which are attached the trunnions G G, said trunnions working in suitable bearings on the carriage. A strap, H, semicircular in form, is attached by joints to the upper part of the semicircular frame F. This semicircular strap is divided at the top, and has a thumb-screw, *c*, passing through flanges, by which it may be tightened or relaxed. The frame F and strap H form a circle, which encompasses the gun and sets in a recess, *d*, (see Fig. 1,) which is formed in it.

It will be seen by referring to Fig. 4 that the frame F and strap H clasp the gun nearer the muzzle than the breech, and the breech of the gun would naturally descend. The breech, however, is supported by the slide L, which runs in suitable grooves in the carriage near the breech, and will be presently described.

The manner in which the gun is supported on the carriage being shown, it will be seen that the shaft E upon being turned by means of the pulley J, and the worm-wheel D meshing into the rack C, the gun is made to re-

volve. The shaft E is raised or lowered, so that the worm-wheel D may be in or out of gear, as desired. When the gun is turned round to the desired point, the worm-wheel is detached by lowering the shaft. The shaft is raised or lowered by means of the levers K K, the bearings of the shaft being in these levers, and the shaft raised or depressed vertically, said shaft working in the slots *e e*, cut through the sides of the carriage. The fulcra of the levers are the pins *f f*, which work in slots, and thus allow the levers a sufficient play. It must be borne in mind that when it is designed to turn the gun, the strap H must be relaxed by adjusting the thumb-screw *c*, and when turned round to the desired position the strap is tightened and the gun firmly secured. The worm-wheel D is disconnected from the rack as soon as the gun is properly adjusted, and again put in gear by raising the shaft when the gun is to be turned.

The object in turning the gun is this: In some cases the chain-shot would do more execution by being projected in a horizontal line. In other cases it would be preferable to have the chain-shot projected in a vertical line in the rigging of ships. For instance, where the ropes, braces, and stays run in all directions, it will be seen that in some cases more execution would be done by the balls and chain flying horizontally, and in other cases vertically—that is, one ball being directly over the other.

In Fig. 1 the gun is placed for throwing the chain-shot horizontally, the boxes B B being on a horizontal line. Now, if it is desired to throw the shot vertically, the gun must be turned so that one bore is directly over the other in a vertical line. This is mentioned so that the terms "horizontal" and "vertical" may not be confounded with the line of projection.

L is the slide, (see Figs. 4 and 5,) by which the muzzle of the gun is elevated or depressed. Said slide works in suitable grooves in the side of the carriage, and has a vertical rack, M, attached at about the center.

N is a pinion hung on the shaft O, which meshes into the rack M, and by which the slide is raised or depressed by turning the pulley P. (See Fig. 5.) A ratchet-wheel, R, is attached to one end of the shaft, in which the pawl *p* catches, and thus prevents the slide from descending. The upper part of the slide in which the gun rests is cut semicircularly, so as to conform to the shape of the gun, and may have, as well as the frame F, friction-rollers upon it, to diminish the friction caused by the turning of the gun.

S is the revolving head attached to the breech of the gun, and to which the breeching is attached. This head is attached to the gun in the following manner: A bolt or rod, *s*, projects from the breech horizontally, as seen in the different figures, and passes through the center of the head. A screw, *t*, is cut upon the end of the bolt or rod *s*, and a nut, *u*, screwed upon it, said nut fitting in a recess in the head. By this arrangement the breeching (which is the technical term for the ropes which are attached to the gun and side of the ship to prevent the gun from recoiling too great a distance) is prevented from winding round the gun when it is turned.

It must be understood that I do not confine myself to any particular species of guns, but claim the improvement in all cases where it may be advantageously used.

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

In combination with the revolving head S and the bores B B, diverging as described, the rack C, attached to the gun, and the worm-wheel D, hung on the shaft E, by which the gun is made to revolve or turn to the desired position, so that the chain-shot may be thrown either in a horizontal or vertical line.

ADAM LEMMER.

Witnesses:
O. D. MUNN,
A. K. HAIGHT.