(No Model.) 3 Sheets—Sheet 1.

J. T. JEFFERSON.

LOADING APPARATUS FOR ORDNANCE CARTRIDGES.

No. 384,039. Patented June 5, 1888.

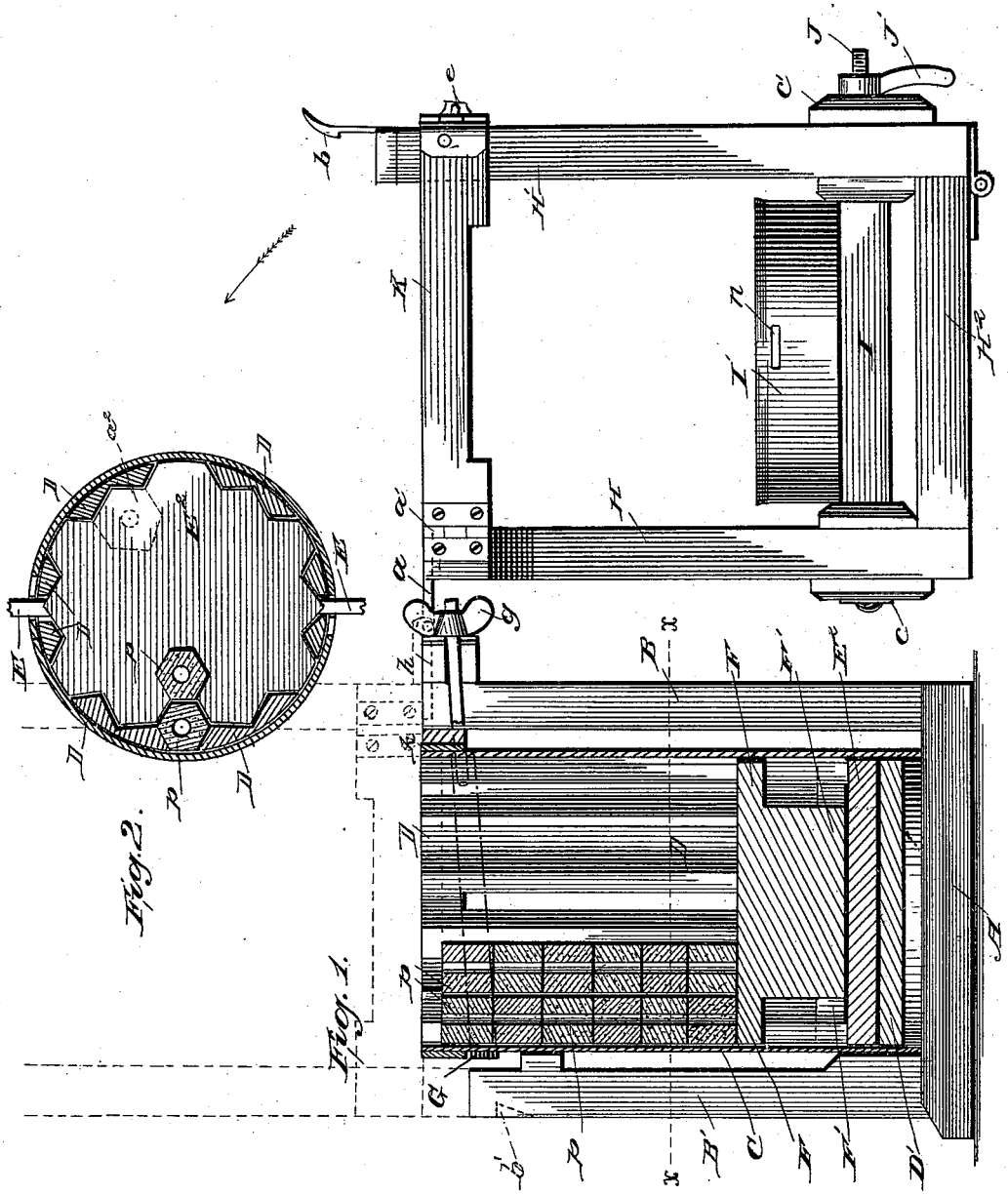

Fig. 2.

Fig. 1.

WITNESSES:

Fred. G. Dieterich

Edw. C. W. Byrn.

INVENTOR:

J. T. Jefferson

BY Munn & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

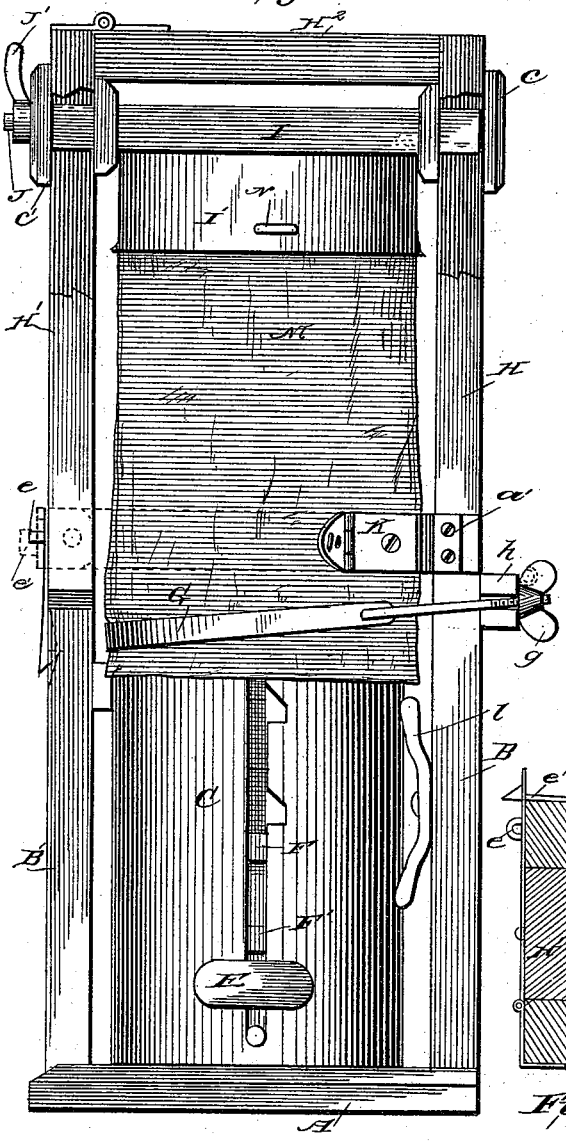


Fig. 4.

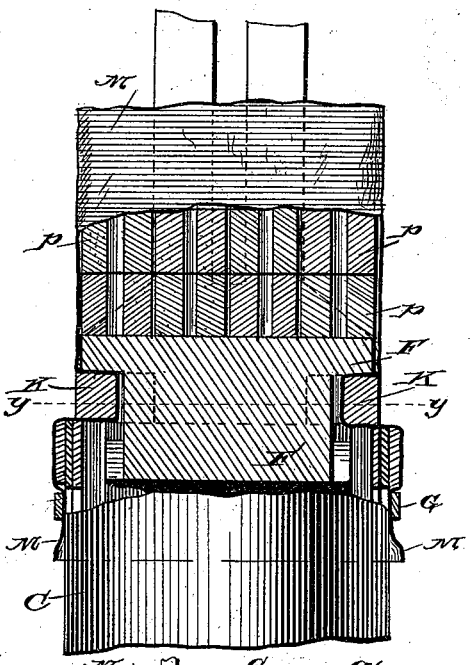
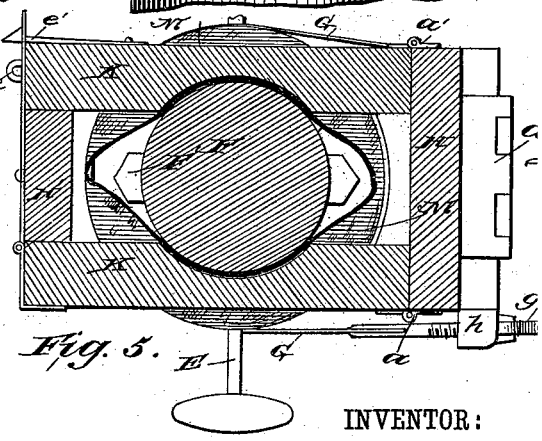


Fig. 5.



WITNESSES:

Fred. G. Dieterich.

Edw. W. Byrn.

INVENTOR:

J. T. Jefferson,

BY Munn & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 3.

J. T. JEFFERSON.

LOADING APPARATUS FOR ORDNANCE CARTRIDGES.

No. 384,039. Patented June 5, 1888.

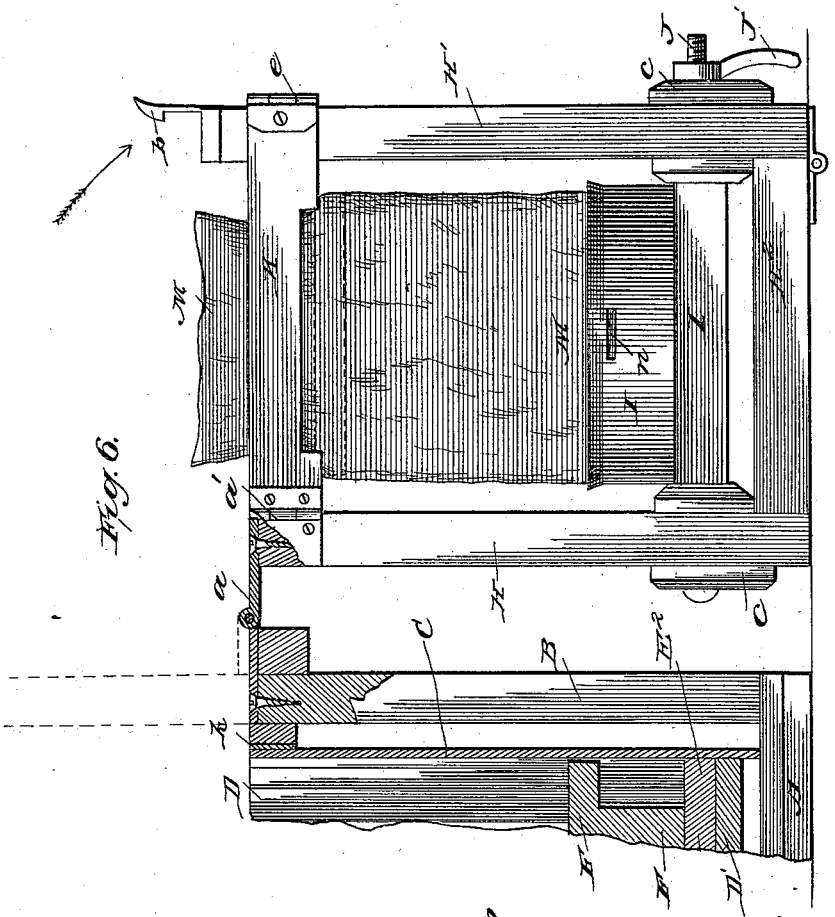


Fig. 6.

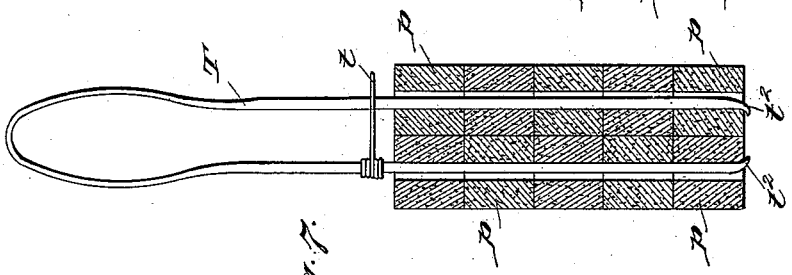


Fig. 7.

WITNESSES:

Fred. G. Dieterich.

Edw. W. Byrn.

INVENTOR:

J. T. Jefferson.

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN T. JEFFERSON, OF ANNAPOLIS, MARYLAND, ASSIGNOR OF ONE-HALF TO GEORGE WELLS, OF SAME PLACE.

LOADING APPARATUS FOR ORDNANCE-CARTRIDGES.

SPECIFICATION forming part of Letters Patent No. 384,039, dated June 5, 1888.

Application filed October 18, 1887. Serial No. 252,750. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. JEFFERSON, of Annapolis, in the county of Anne Arundel and State of Maryland, have invented a new and useful Improvement in Cartridge-Loaders for Ordnance, of which the following is a specification.

My invention relates to the loading of cartridges for cannon, and particularly that form of modern cartridge which is built up from molded blocks or cubes of powder. These blocks resemble in shape a hexagonal nut—*i. e.*, they have a central perforation and six sides—and in building up a cartridge of them they are disposed one by one in a cylindrical pile, and a woolen bag is then drawn over the pile and tied. This is a very slow and tedious operation, and the pile of hexagonal powder cubes are liable to be knocked down or disarranged so easily that cartridges could not be built up on board ship on account of the rocking motion of the same, thus necessitating the making up of such cartridges on shore before storing them on shipboard.

My invention is designed to provide a convenient and effective cartridge-loader for this class of powder which will permit a cartridge to be built by one man in one-fourth the time that is required by two men in the old way, and by which, also, a smaller bag may be employed, and the making of cartridges may also be accomplished on shipboard as well as on land.

The invention consists in the peculiar construction and combination of parts, which I will now proceed to fully describe, and afterward point out in the claims.

Figure 1 is a vertical section of the lower portion of the cartridge-loader, the upper portion being turned down to the same level. Fig. 2 is a cross-section of the cartridge-can, taken through line *x x* of Fig. 1. Fig. 3 is a side elevation of the entire device with the cartridge-bag M in position for the transfer of the powder thereto. Fig. 4 is a sectional view taken through the follower F F′ at right angles to clamps K K after the powder has been raised into the bag. Fig. 5 is a horizontal section through line *y y* of Fig. 4. Fig. 6 is a side view of the bag-frame after the bag is filled with powder and turned down to be tied, part of the can and its frame being shown in section; and Fig. 7 is a side view of the implement for transferring the powder cubes, the latter being shown in section.

In the drawings, A represents a suitable base having two uprights, B B′, erected thereon. Between these uprights and also secured to the base is arranged a metal can, C, which forms a mold or protective case within which the cartridge is built. Within this can and disposed vertically around its inner periphery is a series of guide-strips, D, (see Fig. 2,) which are designed to fit the outer edges of the hexagonal powder cubes and keep them in place. These guides are connected below to a head, D′, and are susceptible of a slight rotary motion about a vertical axis, for the purpose hereinafter described. The opposite sides of the can are slotted vertically throughout the greater part of their length, and through these slots extend the handle-arms E, which connect with a lifting-platen, E², whose edges correspond to the angles of the guide-strips. Within the can and resting upon the lifting-platen is a double-headed follower, F F′, whose heads are of different sizes for different diameters of cartridge, and are angular or notched to correspond to the angles of the guide-strips.

At the upper edge of the can and embracing the same there is a metal strap, G, Figs. 3 and 5, one end of which is permanently connected to one side of standard B, and the other end of which is furnished with a screw-thread to receive a butterfly-nut, *g*, Fig. 1, by which the strap may be tightened around the can, a forked projection, *h*, serving to receive the threaded end of the strap, while the nut binds against the side of said projection.

To the upper end of standard B is hinged by hinges *a* the frame H H′ H². This frame is capable of being turned directly over the can, as in Fig. 3, or may be turned down to one side of the same, as in Figs. 1 and 6. When turned over to rest above the can, it is locked in this position by a spring-catch, *b*, that engages a recess, *b′*, on the standard B′. The two bars H H′ of this hinged frame are slotted longitudinally, (see Fig. 3,) and in these slots there is guided and held a cross-head, I, having at-

tached to its lower side an inverted-cup-shaped bag-seat, I'. This cross-head may be adjusted vertically in its slots and fixed in any of its adjustments by means of a tie-rod, J, and handle-nut J', which tie-rod runs through the cross-head and connects a clamp-plate, *c*, on one side of the frame with a clamp-plate, *c'*, on the other side.

To the end of bar H of the hinged frame there are attached by means of hinges *a'* two clamp-arms, K K, working in a plane at right angles to said bar. These arms have curved bearing-surfaces on their inner adjacent faces, and their free ends are fastened around bar H' by means of a hasp and staple, *e*, with spring-catch *e'*.

The operation of my invention is as follows: The hinged frame H H' H² is turned down to one side, so as to leave the upper end of the can accessible, as in Fig. 1. The cubes of powder (shown at *p*) are then taken and packed in the can in regular columns on top of the follower F F' in approximately cylindrical form, the guide-strips in the can serving to hold the outer rows of the powder cubes in true vertical position. (See Figs. 1 and 2.) These cubes of powder have central perforations, which permit the powder to burn through the middle of the cube as well as on its sides, and these cubes come packed with these perforations coinciding, and are repacked in the cartridge in the same relation. I take advantage of this to pick up and place a large number of the cubes in the can at a time, and for this purpose I construct a special form of spring-tongs, T, Fig. 7, whose legs are guided by a loop, *t*, and whose ends have inwardly-projecting toes t^2. I pass the two legs of these tongs down through two adjacent channel-ways formed by the coinciding perforations of the powder cubes, and then by compressing the legs the toes t^2 of the tongs are made to catch beneath the bottom of the column of powder cubes, thus permitting two columns of cubes to be lifted out of their receptacle and placed in the can, as in Figs. 1 and 2. This, it will be seen, makes very much more rapid work than the old method of holding up the cubes by hand one at a time, and also avoids the disarrangement of the cubes. As soon as a complete charge has been built up in the can on the follower, a woolen bag, M, with a slightly-enlarged mouth, is distended over the top of the can, with the mouth of the bag down, and the mouth of the bag is clamped against the can in this position by the flexible metal strap G, which is fitted around the bag. The hinged frame is now turned over into vertical position above the can, and the top or closed end of the bag is raised to and fitted within the bag-seat I', to which it is temporarily attached by a long needle or pin, N, which is thrust through a perforation, *n*, in the sides of the cover, as in Fig. 3. The column of powder cubes is now to be raised and forced telescopically into the bag, and for this purpose the handles E of the platen are raised with the follower F F' and the cubes above it until the powder has been inserted into the bag, and as soon as the lifting-platen reaches its full height a slight axial movement of the handles lodges them in the supporting-notches formed in the sides of the slots of the can, the guide-strips D within also turning slightly with their base D' below to permit this locking of the platen in its elevated position. The pin which holds up the bag is now withdrawn and the slack of the bag is drawn down by hand, and the bag-seat I' is adjusted down to rest upon the top of the charge to hold the cubes in place. When the lift-platen raises the powder charge, it raises it high enough to allow the upper head of the follower F F' to pass above the clamp-arms K K of the hinged upper frame. These clamp-arms are now shut against the follower between the two heads and clamp the mouth of the bag between said arms and the follower, as in Figs. 4 and 5, so that the charge is sustained in the bag while the hinged frame H H' H² is being turned down to one side, as in Fig. 6. This movement of the hinged frame, it will be seen, reverses the position of the bag, so that the powder remains therein after the follower is taken out, which being done the mouth of the bag is tied with a cord and the cartridge may be removed from the bag-seat and the device be gotten ready for another cartridge.

The object in making the slots in the hinged frame H H' H² and the several notches in the sides of the slots of the can is to permit cartridges of different lengths to be made by my apparatus; and the follower F F' is made with two heads of different diameters to permit two different diameters of cartridge to be made. When the larger diameter is employed, the larger head of the follower is uppermost, and the outer rows of hexagonal powder cubes are placed between the guide-strips D, as in Fig. 2. When the smaller diameter is employed, the smaller head of the follower is uppermost and the outer rows of hexagonal powder-cubes fit in the angles of the guide-strips D, as shown in dotted lines at a^2 in Fig. 2. Between one of the standards B and the top of the can there is arranged a curved bearing, *k*, Fig. 6, which is attached to the standard and clamps the bag at the point where the strap fails to catch it, and when the bag is to be stretched over the neck of the can the top of the latter requires to be strained a little away from this bearing. This is accomplished by a lever, *l*, Fig. 3, on standard B.

Having thus described my invention, what I claim as new is—

1. In a cartridge-loader, the combination of the can or powder-charge holder having slotted sides, a lifting-platen arranged in the can and having handles protruding through the slots, and a removable bag-holder, substantially as and for the purpose described.

2. In a cartridge-loader, the combination of

a can or powder-charge holder having slotted sides, a lifting-platen arranged in the can and having handles protruding through the slots, a detachable follower arranged within the can, and a removable bag-holding frame having clamping devices for the follower, substantially as and for the purpose described.

3. The combination of the slotted can, the lift-platen arranged within the same and having protruding handles, a frame-work for the can, and a hinged bag-holding frame arranged to be turned vertically over the can or to be inverted and turned down beside it, substantially as shown and described.

4. The combination of the slotted can or powder-charge holder, the vertical guide-strips D, arranged within the same for holding the vertical rows of powder cubes, the lift-platen arranged within the same and provided with protruding handles, and means for clamping and holding the bag, substantially as and for the purpose described.

5. The combination, with the powder-can and its lift-platen, of a clamping-strap, G, surrounding the top of the can and provided with adjusting devices, the follower F F, and the bag-holding frame removably fitted to the top of the powder-can, substantially as and for the purpose described.

6. The combination, with the can and its lift-platen and follower, of a hinged bag-frame, H H′ H², having side clamping-arms, K K, and adjustable cross-head I, with bag-seat I′, substantially as and for the purpose described.

JOHN T. JEFFERSON.

Witnesses:

FRANCIS O. WHITE,

GRAFTON MUNROE.