3 Sheets—Sheet 1

R. H. DALZELL.

Cartridge-Loading Mechanism.

No. 207,853. **Patented Sept. 10, 1878.**

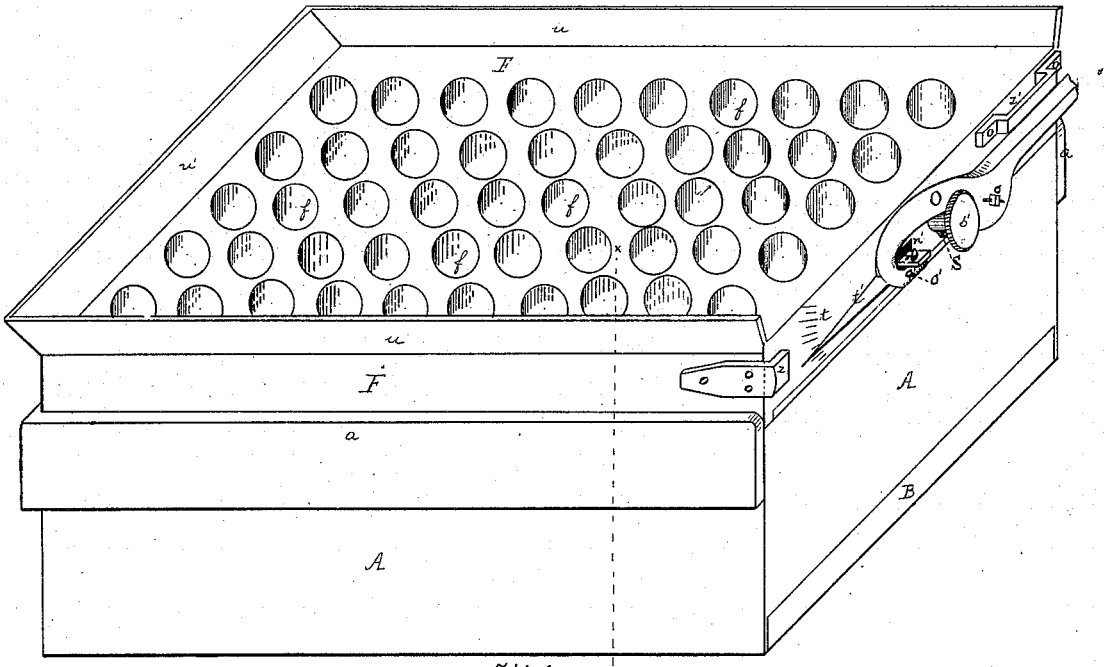

Fig. 1.

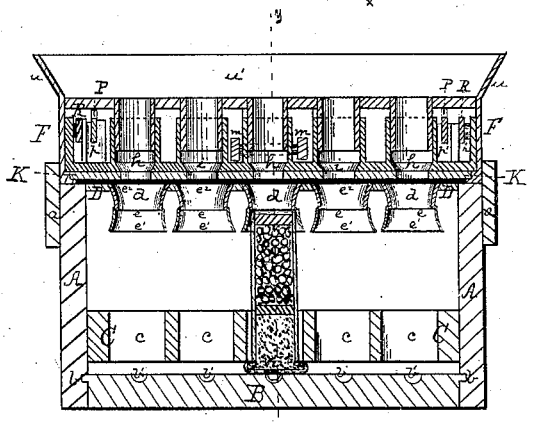

Fig. 2.

WITNESSES.

W. P. Wood

R. H. Dandall

INVENTOR.

Robert H. Dalzell

by James L. Kay

his Attorney

3 Sheets—Sheet 2

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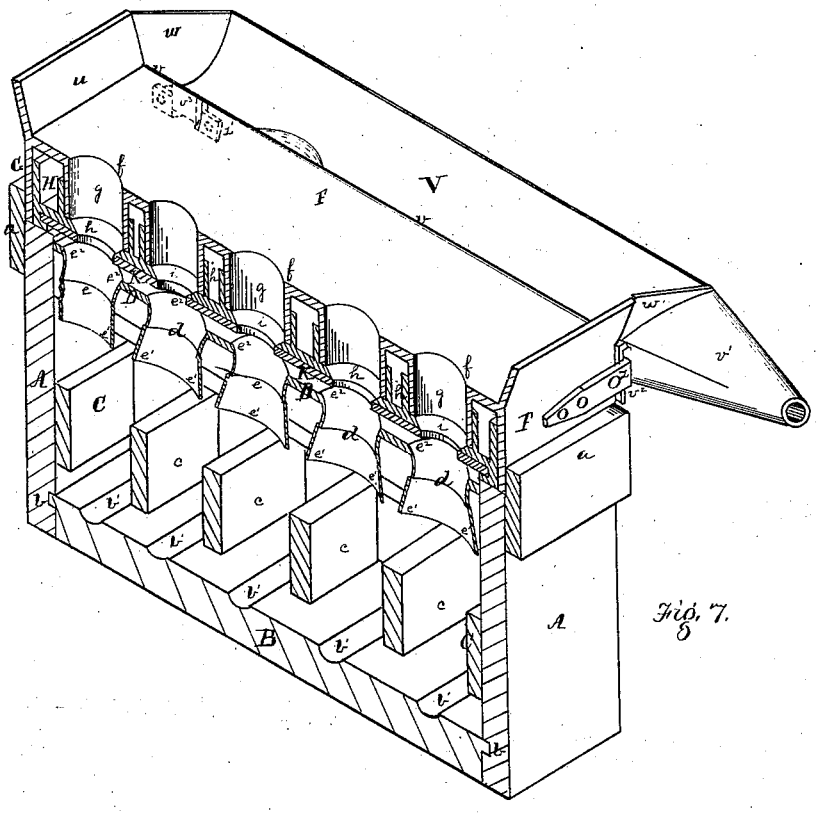

Fig. 7.

Witnesses.

H. P. Hood

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3 Sheets—Sheet 3

R. H. DALZELL.

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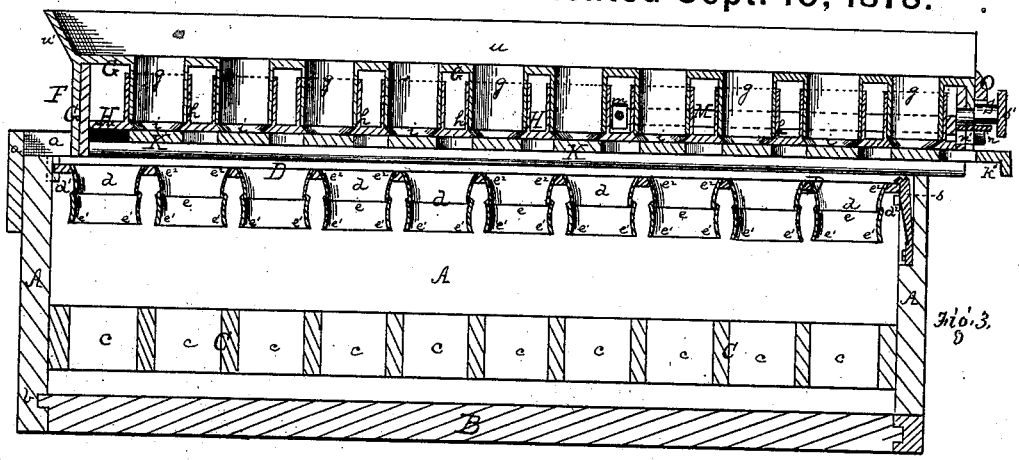

Fig. 3.

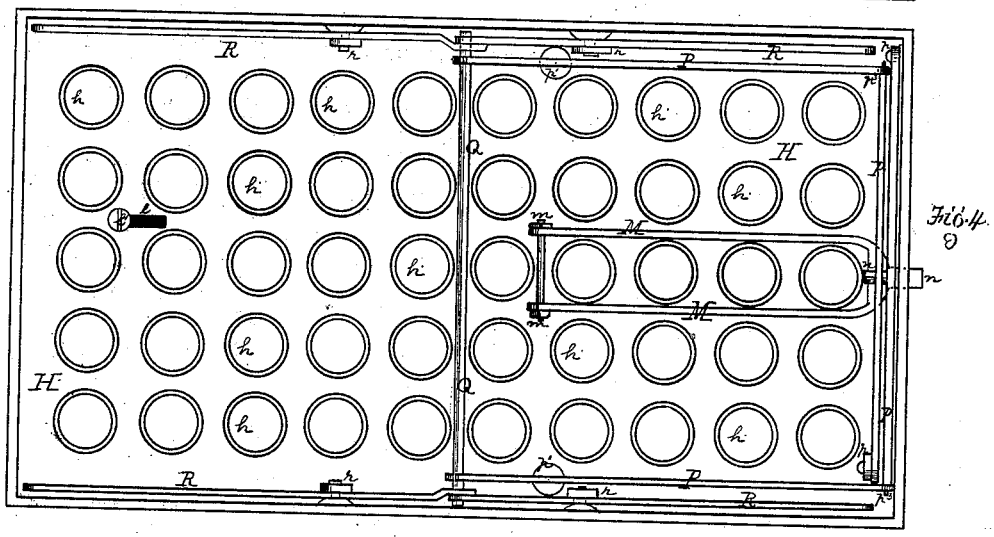

Fig. 4.

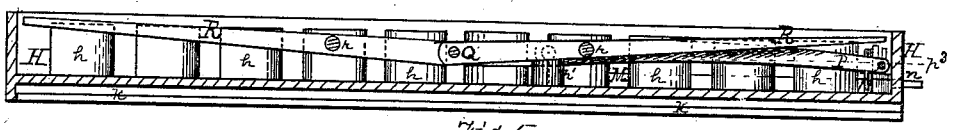

Fig. 5.

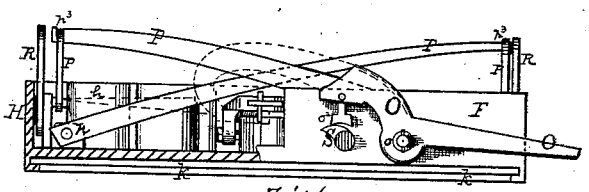

Fig. 6.

Witnesses.

W. P. Wood

R. Q. Wrenshall

Inventor.

Robert H. Dalzell

by James L. Hay

his Attorney.

UNITED STATES PATENT OFFICE.

ROBERT H. DALZELL, OF KILBUCK TOWNSHIP, ALLEGHENY COUNTY, PA.

IMPROVEMENT IN CARTRIDGE-LOADING MECHANISMS.

Specification forming part of Letters Patent No. **207,853**, dated September 10, 1878; application filed October 8, 1877.

To all whom it may concern:

Be it known that I, ROBERT H. DALZELL, of Kilbuck township, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Loading Cartridges; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of my improved cartridge-loader. Fig. 2 is a cross-section on the line *x x*, Fig. 1. Fig. 3 is a longitudinal vertical section on the line *y y*, Fig. 2. Fig. 4 is a plan view of the case carrying the lower half of the set of charging-tubes, the upper half being removed to show the lever mechanism employed for lifting said upper half and its set of tubes. Fig. 5 is a detached side view of the measuring-tube case, the outer edge being removed to show the operation of the lever mechanism. Fig. 6 is a detached front view, with the end of the case partly removed, showing the mode of operating said lever mechanism; and Fig. 7 is a detached perspective view, showing the returning-trough attached to the tube-case.

Like letters of reference indicate like parts in each.

My invention relates to machines or apparatus for loading cartridges for rifles, shot-guns, and small-arms generally, whether said cartridges be of paper, metal, or other suitable material.

The special object of my invention is to provide a simple and compact cartridge-loading apparatus or machine, which is not too large or heavy for transportation, and by means of which the usually tedious operation of loading cartridges may be accomplished very rapidly, and the amount of ammunition accurately regulated automatically, thus enabling the person loading to accomplish in a few minutes what has heretofore been the work of hours.

My invention is especially adapted for use in hunting, to be carried with a party, and used with breech-loading cartridges.

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

My improved apparatus is arranged in the present case to load fifty cartridges, and will be described in its details as suitable for that number. It is evident, however, that it can be suited for a larger or smaller number, as desired.

In the drawings referred to, A represents the case, box, or stand for holding the cartridges. The bottom plate, B, of this stand is journaled in the slides *b b*, by which means it is made removable. Formed on the surface of said bottom plate, B, is a series of grooves or recesses, *b′ b′*, which, in the present case, extend the entire length of the plate. These grooves come directly under the caps or primers of the cartridges, and, as the heads of the cartridges rest on the bottom plate of the case, any pressure on the caps or primers is thus obviated.

Rigidly secured in said case A, above the bottom plate, B, is the guide-rack C, provided with a series of openings or guides, *c c*, through which the cartridges are passed. This guide-rack is formed of wood or other suitable material, and is arranged to hold the cartridges during the operation of loading. In said case A, above the guide-rack C, is arranged the wad-starting plate D, carrying the series of wad-starters or directing-tubes *d* in the same vertical plane with, and corresponding to, the openings *c* in the guide-rack. The lower mouth or opening, e^1, of each of said wad-starters *d* is preferably slightly flared, so as to direct the cartridge more easily into the wad-starters; and above said mouth e^1 is formed the annular seat *e*, for the reception of the mouth of the cartridge, said seat or shoulder being so formed as to make the inside diameters of the wad-starter and cartridge correspond. The upper mouth of each of said wad-starters is formed with an annular bevel, e^2, for the purpose of compressing the wad when forced into the cartridge. The wad-plate is removably attached to the case A by means of the rigid catches d^1 at one end, and the rests d^2 and spring-catch *s* at the other.

The cartridges are passed through the guide-rack C into the flared lower mouths of the wad-starters *d* until they come against the seats *e*. The bottom plate is then slid into the case, and the cartridges are ready for loading.

Above the box or case A, held in proper rel-

ative position by suitable guides *a*, is the measuring-tube case F, so arranged on said case as to be removable therefrom, either automatically or by hand. This tube-case F is provided with a series of measuring-tubes, *f*, corresponding in number and vertical plane with the series of wad-starters *d*. Sliding in guides *k* at the base of the removable case F is the false-bottom plate or cut-off K, in which are formed a series of openings corresponding to the measuring-tubes, and of the same diameter as the bases thereof, for the purpose of closing said tubes while they are being filled. When it is desired to close said tubes the cut-off K is slid in the guides *k* by means of the lug *k'*, drawing the openings out of line with the tubes. The movement of said cut-off is limited by the slot *l* and pin *l'*, or in other suitable manner. By moving the cut-off until the openings thereof come under the tubes the charge of ammunition can be delivered to the cartridges below.

The upper half, G, of the tube-case F incloses or partially incloses the lower half, H, thereof, and is so constructed as to be vertically adjustable thereon. Each half of said case is provided with a series of tubes, the male tubes *g* of the upper half, G, fitting into the female tubes *h* of the lower half, H, and being capable of vertical movement therein. By raising the upper half, G, of the case, with its tubes *g* attached thereto, the measuring-tubes *f* of the case are made extensible, and may be regulated to measure different quantities of ammunition. To compact the tube-case and enable it to fill more cartridges, the tubes are placed so closely together that if the openings at the base of the tubes were the same size the plate K could not close them. To obviate this the bases *i* of the female tubes *h* are drawn in, so as to make the discharge-openings of less diameter, and the bases *i* are tapered, as shown, to enable them to deliver the charge more easily into the cartridges.

Pivoted in the bearings *m*, in said lower half, H, is the yoke M, provided with the arm *n*, extending through openings *n'* in the front of the case, and loosely connected to and raised and lowered by the hand-lever O. The upper surface of the arm *n* is rounded, so as to overcome any friction from the levers working over it. The power-levers P extend over the arm *n* and are pivoted in the bearings *p p p*^{1} *p*^{1}. The levers P are formed of two arms adjustably attached at the elbows *p*^{3}, and are attached at their rear ends to the cross-bar Q, so as to raise or lower said cross-bar, and, on account of their connection at each end thereof, maintain it in a horizontal position at all times. Pivoted to said cross-bar Q, and in the bearings *r r r r*, are the four lifting-levers R, extending one to each end of the case H, and carrying the upper half, G, of the case F. In front of the tube-case F, pivoted on the lug *o*, is the hand-lever O, above referred to. This lever is provided with the lug *o*^{1}, which extends from said lever under the arm *n*, and is adjustably connected therewith.

Below the hand-lever O, attached to the lower case, H, is the cam S, which can be turned by the hand-wheel *s'* so as to lock the hand-lever O in any desired position. The cam works against the concave lug *o*^{2}, which is pivoted on the lever O, and is capable of sufficient movement to accommodate itself to the face of the cam S and prevent the weight of the upper case, G, from causing the cam S to move, thus permitting the lowering of the upper case.

When it is desired to raise the upper half, G, of the case to extend the tubes for measuring a larger amount of ammunition, the hand-lever O is pressed down, which, by means of the lug *o*^{1} at the other end, raises the arm *n* and yoke M, the weight being overcome by the distance of the fulcrum-bearings *m* from the arm *n*. By raising the arm *n* the power-levers P are raised upon said arm, causing the consequent depression of the rear ends thereof, and with them the cross-bar Q; and by the depression of the cross-bar Q the ends of the four lifting-levers R at the four corners of the case are raised, carrying with them the upper half, G, of the case and lengthening the tubes.

By the mechanism just described I have obtained a regular and certain motion, by which the whole upper case can be raised at once. When the desired position is obtained the cam S is turned by the handle *s'* until it comes in contact with the concave lug *o*^{2} and forms a lock. Extending from the hand-lever O is the index-finger *t'*, which marks the amount of the charge held by each of the tubes on the index *t* on the face of the case.

The upper surface of the tube-case F is inclosed on three sides, to prevent the escape or spilling of the ammunition during the charging of the tubes. This may be accomplished by extending the two side plates of the upper case, G, as at *u*, and the back plate, as at *w'*, above the surface of the tube-case. These plates *u w'* may be perpendicular or at a slight inclination, as desired. At the front end of said tube-case is attached the charge-returning trough V, for receiving the surplus charge and returning it to the proper receptacle. This trough V extends the entire width of the case F, is concave in form, and is preferably so attached that its receiving-edge *v* is flush with the surface of the tube-case. It is closed at one end, and at the other is formed the funnel *v*^{1}, through which the surplus charge may be poured back into the pouch or carrier.

The trough is provided with the lips *w w*, which form a continuation of the side plates *u* and guide the ammunition into the trough.

The trough is attached to the case by means of the long lug or projection *v*^{2} on the trough fitting into the open slot *z* at one end of the case, and the short lug or projection *v*^{3} (shown in dotted lines) fitting into the closed slot *z'* at the other end of the case.

The advantage of this construction of catches is that the lug *v*^{2} can be guided to its place in the slot *z* by a side motion, and, when

seated, the lug v^3 will be in proper position to be dropped into the slot z', thus enabling the operator to attach the trough without bestowing particular care to it.

The operation of my improved cartridge-loading machine is as follows: The sliding bottom B is removed from the case A and the empty cartridges are passed through the guide-rack C into the wad-starters on the plate D until they come against the seats *e* in said wad-starters, being directed into said seat by means of the flared mouth e^1. When the rack C is filled with cartridges the bottom plate, B, is slid into the case and the cartridges rest on it during the operation of loading, the caps or primers of the cartridges being directly above the grooves b' b' on said sliding bottom plate. The cartridges are now ready for loading.

The measuring-tube case F is then placed on said stand A, and guided to its proper relative position by the guides *a*. The cut-off K is drawn forward, so as to close the tubes *f*. The tubes *f* are of such size when closed as to measure a certain amount of powder; but if a larger amount is desired, by pressing on the hand-lever O power is communicated through the yoke M and power-levers P to the cross-bar Q and lifting-levers R, which raise the upper half, G, of the case, and with it the male tubes *g*, thus extending the measuring-tubes and enabling them to hold a larger charge. When the finger *t* indicates the desired charge the cam S is turned until it engages the concave lug o^2 on the hand-lever O and locks the said lever. The trough V is then attached to the case F and the charge of powder poured upon the surface of the case, filling the different measuring-tubes *f*, and the surplus powder is then scraped off the surface of the case by any suitable instrument into the trough, by which it is returned to the pouch or proper receptacle through the funnel v^1. The cut-off K is then slid in its bearings, opening the tubes *f* and allowing the powder to pass through the wad-plate D into the cartridges. As the bases *i* of the measuring-tubes are tapered there is no possibility of the ammunition catching at the base of the tubes and not being delivered to the cartridges. The removable case F is then removed from the stand A, and the wads are placed in the wad-starters *d* on said plate D and rammed home upon the powder, the annular bevel e^2 of the wad-starters *d* compressing the wads, so that they will enter the cartridges more easily. The case F is then replaced, the cut-off drawn out to close the measuring-tubes, and the tubes regulated, as above described, for the charge of shot, which is poured upon the surface of the case, filling said tubes. The surplus shot is returned to its receptacle, and the cut-off K slid in its bearings to open the tubes *f* and permit the shot to fall into the cartridges. After this is accomplished the case F is removed and the second wads rammed into the cartridges through the plate D, as above described, when the loading is completed. The cartridges may then be removed from the holding-case A.

If it is desired to load another gage or size of cartridge, the only change necessary in the machine is to remove the wad-plate D and substitute therefor one carrying wad-starters of the proper gage. An extra wad-plate may easily be carried in the space between the guide-rack C and the wad-plate D.

By making the measuring-case separate and removable from the cartridge-holding case, I am enabled to use it for any kind of ammunition, and to use it for loading both powder and shot to the same set of cartridges.

It will thus be seen that the heretofore tedious and laborious work of loading cartridges can by this machine be accomplished accurately, easily, and very rapidly, it occupying less than ten minutes to load one charge or set of cartridges.

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

1. In combination with the case A, the rack C, having continuous guide-passages *c c*, of the length of a series of filling-tubes, as and for the purposes set forth.

2. In a cartridge-loading machine, the combination of the case A, wad-plate D, guide-rack C, and removable bottom plate, B, substantially as and for the purposes set forth.

3. The series of tubes *f* arranged in the tube-case F, and having their bases tapered as at *i*, substantially as and for the purposes set forth.

4. In cartridge-loading machines, the combination of the power-levers P, cross-bar Q, lifting-levers R, and means for operating the same, substantially as and for the purposes set forth.

5. In cartridge-loading machines, the combination of the yoke M, provided with the arm *n*, power-levers P, cross-bar Q, and lifting-levers R, substantially as and for the purposes set forth.

6. In a cartridge-loading machine, the combination of the hand-lever O and yoke M with lever mechanism, substantially such as described, for raising or lowering the upper half, G, of the tube-case, as and for the purposes set forth.

7. The hand-lever O, pivoted to the case F, and provided with the lug o^1, and adjustably connected with the arm *n* thereby, substantially as and for the purpose set forth.

8. The combination of lever O, dog o^2, and cam S, substantially as and for the purposes set forth.

9. The combination of the tube-case F raised walls *u* *u'*, and returning-trough, V, substantially as and for the purposes set forth.

10. The combination of the tube-case F with a detachable returning-trough V, substantially as and for the purposes set forth.

11. The combination of the open slot *z* and closed slot *z'* upon the case F with the lugs

v^2 v^3 upon the trough, substantially as and for the purposes set forth.

12. In combination with the case F, the trough V, provided at one end with the funnel v^1 and with the lips w w, substantially as and for the purposes set forth.

13. In combination with the rack C, having continuous guide-passages c c, the continuous grooves b' b' in the part which supports the heads of the cartridges, substantially as set forth.

In testimony whereof I, the said ROBERT H. DALZELL, have hereunto set my hand.

ROBERT H. DALZELL.

Witnesses:
JAMES B. CLOW,
JAMES I. KAY.