

(No Model.)

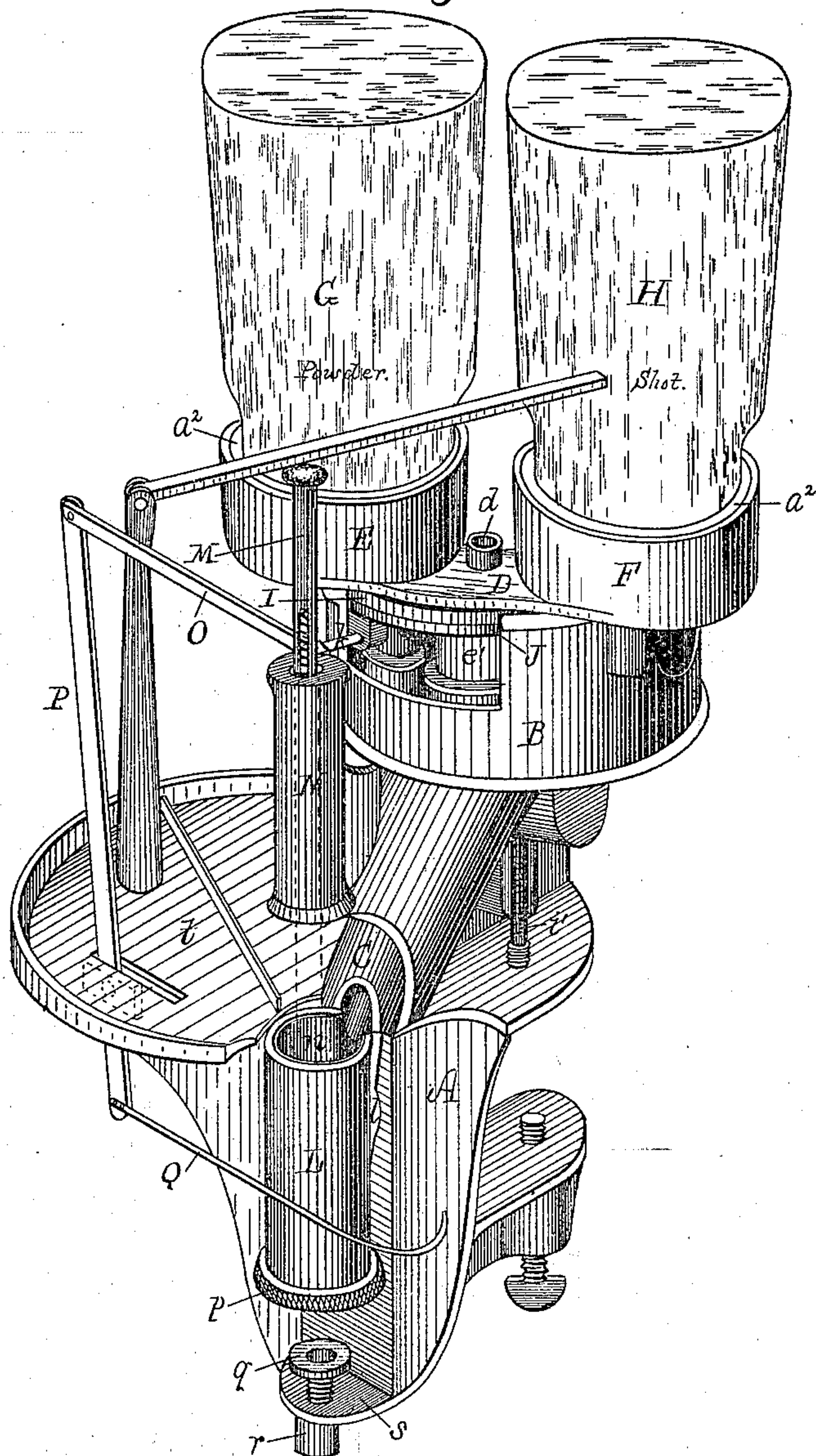
2 Sheets—Sheet 1.

O. F. BELCHER.
CARTRIDGE LOADING MACHINE.

No. 305,136.

Patented Sept. 16, 1884.

Fig. 1.



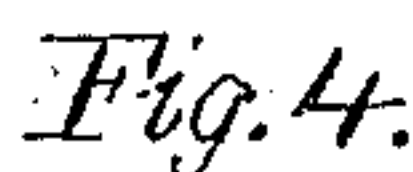
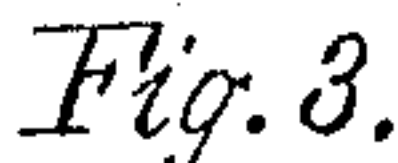
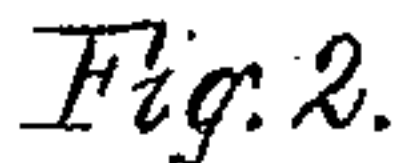
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2 Sheets—Sheet 2.

No. 305,136.

Patented Sept. 16, 1884.



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UNITED STATES PATENT OFFICE.

ORLANDO FULLER BELCHER, OF WINTHROP, MASSACHUSETTS.

CARTRIDGE-LOADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 305,136, dated September 16, 1884.

Application filed April 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, ORLANDO FULLER BELCHER, a citizen of the United States, residing at Winthrop, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Cartridge-Loading Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to certain features in machines for loading cartridges for shot-guns, which may be considered as improvements on the invention described and included in Letters Patent No. 231,753, and issued to me on the 31st day of August, 1880. The same elementary features are incorporated in my present invention, and include, first, two receivers or hoppers for receiving and holding powder and shot; second, a gate or gates containing the charging-chambers, and operating with the receivers to regulate the escape of their contents; third, a support for the cartridge-shell adapted to hold the latter mouth upward beneath the pipe leading from the charging-chambers and permit the shell to be readily and expeditiously introduced to the machine to receive its charges, and as easily and readily removed therefrom when loaded.

My present improvements relate, first, to the hoppers, which I have formed separately and of some transparent medium, as glass, screw-threaded at the contracted portion or mouth thereof, and attached to a plate above the measuring or charging valves or chambers; second, to the mode of contracting said valves to vary the amount of powder or shot delivered, and their manner of operating; and, third in the construction and arrangement of the cartridge-holders, or support for holding the cartridge-shell, while being loaded, all of which features will be more fully and duly explained.

The drawings accompanying this specification represent in Figure 1 an isometric elevation of a machine embodying my invention, while Fig. 2 is a central vertical section through the hoppers and charging-chambers.

Fig. 3 is an enlarged vertical longitudinal section of the cartridge-shell support, and Fig. 4 is a plan of the under side of the charging-chambers.

In these drawings, A represents the frame of the machine as composed of cast metal, and adapted to be clamped to a bench or other support, the upper rear portion having a hollow cylindrical chamber, B, formed upon and integral with it. Within this chamber are located the reciprocating measuring or charging valves. The chamber B is provided at its base, which is funnel-shaped, with an escape or outlet passage, C, which leads downward and discharges into the shell. Upon the upper outer periphery of the chamber B, I have cast two ears which are bored to receive corresponding pins, *a a'*, projecting from the under side of a cap or plate, D, which is constructed with circular hollow bosses E F. These are internally screw-threaded, and adapted to receive and retain the glass hoppers G H, externally screw-threaded, which contain the powder and shot. In practice I found the use of transparent hoppers to be of great advantage, as hitherto with metal hoppers it very often happened that there was not sufficient powder or shot to completely load a shell. This it was necessary to remove and throw one side. With the glass hopper it cannot occur, as the contents are always under the eye of the operator. I have found a ready expedient in providing these hoppers—that is, to take an ordinary glass fruit-jar, remove the cap *a'*, cut out the top and secure it bottom up with plaster-paris, red lead, &c., in the bosses E F, when the jars filled with powder and shot are screwed into place easily and expeditiously.

Beneath the cap D, I have secured a plate, I, and provided it with ducts *b b'*, leading into the measuring-chambers, the latter being closed by a slide, *c*, whose function is to prevent the outcome of shot consequent upon the reversal of the cap D after the hoppers have been filled, as in order to refill the latter the cap D is lifted up, disengaging the pins *a a'* from the ears on the chamber B, and then reverse the hoppers, unscrewed, refilled; and in some cases, when different powder or shot is intended to be used, new hoppers are substituted and screwed into place. The cap D is

again returned to its position when the slide is withdrawn, the duct *b* being closed by its contact with the solid portion of plate I above it.

5 Centrally pivoted with the chamber B by the pin *d* is the circular plate or disk J, forming a portion of the measuring-valves *e e'*, which are short hollow cylinders cast integral upon the under side of the reciprocating disk
10 J. The upper portions of these cylinders are arranged in the path of a circle of which the pin *d* is the center, and are concentric and coincide with the outlets *b b'* from the bosses E F, connecting with the hoppers G H.

15 To permit of variation of the charges, and consequently of the amount contained in the measuring-chambers, I have provided short metal sleeves *f f'*, fitting and sliding freely upon the lower portion of the valves *e e'*. To
20 limit their play thereupon, I have cast annular lips *g g'*, to engage with projections *h h'*, formed upon a thin plate, K, attached to the disk J. The amount of the charge to be delivered at each time is adjusted by means of long pins
25 *i i*, extending through the shell of chamber B, and operating by adjusting-screws upon which their lower extremities rest, while their upper ends are provided with thin metal shelves *j j'*, concentric with the outlets of the charging-
30 chambers, and of such shape that they abut against the inner surface of the chamber B, and are thereby prevented from being turned by the sliding of the sleeves *f f'* upon them when the disk J is operated by the arm *k*, at-
35 tached thereto.

In Fig. 4 I have shown the outlets *b b'* from the hoppers, so arranged with respect to the measuring-chambers *e e'* that one of them is always closed by the solid portion of the plate
40 I, and I have so disposed said chambers *e e'* and their sleeves *g g'* that they shall be opened and closed from the bottom by wiping across the shelves *j j'*. These shelves are oval in shape and entirely independent from the in-
45 terior of the chamber B; hence, if pellets of shot escape for any cause from the shot-chamber, they do not jam, but run off and, striking the interior of the chamber B, are delivered with the rest of the charge; hence it
50 is impossible for any pellets of shot to lodge in these shelves *j j'* and jam. This is a very essential and important feature of my invention, as by this means it is impossible to have shot jam, as often occurs in a valve opening and
55 closing at the top of the chamber when filled, since the sleeves *g g'* are empty when returning and are filled while resting on the shelves *j j'*. The lower portions of the pins *i i'*, at-
60 tached to the shelves *j j'*—the portions extending outside the shell of the chamber B—are graduated, the one operating powder in drams and the other shot in ounces and fractions thereof. By these means ready change in the capacity of the measuring-chambers is easily
65 accomplished.

The operation of the measuring-chambers

will be readily understood upon referring to Figs. 2 and 4. Suppose the right-hand chamber has just delivered a charge at that moment the disk J is on its extreme to the left, and in
70 such position that the chamber *e'* is closed by the plate E from above, while the mouth of *f'* has moved away from the shelf *j'*, retaining the charge, and it is discharged. At the same movement chamber *e*, which has just returned
75 empty, has been closed by *f* passing over shelf *j*, while it is opened at the top by the outlet *b* coinciding with chamber *e*, which, with the sleeve *f*, is at once filled from its hopper G. When the disk J reciprocates in the opposite
80 direction, measuring-chamber *e* is opened at bottom and closed at the top by the plate I, and the charge is delivered in the same manner as chamber *e'*, just previously described.

The shell-holder is shown at L as disposed
85 upon the front face of the machine-frame and beneath the orifice C, which discharges into it, and is pivoted at its upper part by a horizontal pin, *l*. It is necessary that this shell-
90 holder shall be in vertical central alignment with the bracket or post N, retaining the rammer M, and in which the latter reciprocates. To effect a proper setting of this holder L, I
95 form the hole which receives the pin *l* considerably larger than the latter; then, placing the holder in an approximate position with that
100 it is finally to assume, insert the pin *l* in the hole; then thrust a rod, which tightly fits the holder L, through the latter, and finally pass it into the bore in N, through which the ram-
105 mer M passes. This insures perfect vertical adjustment. To obtain the final adjustment in a horizontal plane of the holder L, and in order to leave its mouth accurately located
110 with reference to the table and duct C, I push it forcibly up or down on the stick previously inserted until the exact location is obtained, then babbitting the hole round the pin *l*, the
115 whole object is accurately accomplished—that is, proper vertical and horizontal adjustment of the shell-holder is obtained. The vertical
120 alignment is very essential, that the wads shall be driven square or at right angles to the axis of the cartridge, the importance of which is well understood among sportsmen. This
125 holder must accommodate shells of various sizes, both metal and paper, and readily change its internal diameter, and to adapt it for different sizes of shells I have constructed it as follows: I first cast a straight hollow metal
130 cylinder with the pin *l* and bore out the upper portion slightly larger than the lower, forming a shoulder, *m*, and into the top of the cylinder insert a bushing, *n*, flared at its
135 mouth, and resting, when in position, upon the shoulder *m*. Through the opening at the bottom I insert different bushings, *o o*, &c., of the same external diameter, but varying in their bores, and adapted to exactly admit and
140 contain shells of various sizes, while a screw- threaded cap, *p*, provided with a central open-
145 ing for the admission of the shell, is screwed

to the lower end of the shell-holder L. Therefore, to change the holder from a No. 10 to a No. 12 gage, the cap *p* is unscrewed, the No. 10 bushing removed, and a smaller, No. 12, substituted therefor, the cap readjusted in its place, and the machine is ready again for operation.

Below the holder L, I dispose the shelf or seat which upholds the cartridge-shell while being loaded, such shelf consisting of a disk, *q*, constituting the upper part of a screw-threaded rod, *r*, which operates in the bracket or ledge *s* of the frame A. By turning the rod *r* up or down, the height of the shelf or seat *q* is correspondingly raised or lowered, and thereby the machine adapted to cartridge-shells of various lengths.

The rammer for driving wads into the cartridge-shell is shown at M as spring-actuated, contained within a tubular head, N, constituting the upper front portion of the machine-frame, such rammer being disposed in vertical alignment with the axis of the shell-holder L. This rammer is to be lowered by a blow of the hand or a lever, as may be preferred.

That the operator may have a supply of wads readily at hand while loading shells, I employ a horizontal shelf, *t*, provided with a shallow rim to retain the wads upon the shelf. This shelf is secured to standard A, and located adjacent to or surrounding the mouth of the shell-holder L and flush with the mouth of the latter. I have further formed a ridge or division upon the upper surface of the shelf, that two kinds of wads may be used without intermingling.

The normal position of the reciprocating disk J, carrying the measuring-chambers, is in one of its extremes while one of its ports is fully open to the adjacent hopper and its other closed by the bottom of the plate I. This disk is operated by the arm *k*, attached to the rod O, pivoted to the rocker-arm P, which is secured to one side of the frame A, while to its lower end is affixed an arm, Q, provided with a hooked-shaped extremity to engage with the shell-holder at stated intervals.

The operation of the machine is as follows: It being understood that the rocker-shaft P stands with its upper part thrown toward the left; hence the arm *k* and disk J are likewise thrown to their extremes, and the chamber *e* and sleeve *f* filled with powder from the hopper G above, while the hooked arm Q is thrown to the extreme right, with the lower end of the shell-holder L thrown the same way. An empty shell is now inserted into the lower end of said holder, and the operator, grasping the rod P, pushes it toward the right. The same motion engages the hooked arm Q with the shell-holder, drawing it toward a vertical position, while the disk J rotates, carrying the

chamber *e* and sleeve *f* from off the head *j*, and the powder is delivered the instant the shell-holder and shell are in alignment with the orifice C, leading from the chamber B. Wads are now inserted and driven home with the rammer M, when a return movement of the arm P is effected, and the chamber *e*, containing shot, is delivered of its contents as the disk J rotates back, while the hooked arm Q, disengaging from the shell-holder without affecting the latter, is now in its first position. A wad is now entered and driven home to retain the shot in place, the shell-holder again pushed to the right, and the loaded cartridge removed, an empty one again inserted, and the same operation repeated. It will be seen from this how easily and expeditiously, as well as correctly, cartridge-shells may be loaded, and with what saving of time and material. Moreover, the operative mechanism is simple and not liable to become deranged from hard use.

I claim—

1. A hopper, in combination with a disk, J, which is movable on its axis, and provided with a tubular valve or passage registering with the hopper-outlet, a sleeve adapted to slide on said valve, and a vertically-adjustable shelf which closes the bottom of said valve when the latter is being filled, and also regulates the size of the charge, substantially as set forth.

2. In combination with the hoppers for powder and shot and their outlets, an oscillating disk adapted to open one outlet as it closes another, adjustable tubes carried by said disk which receive the charges as they pass from said outlets, and independently adjustable shelves for closing the said tubes and raising or lowering them to regulate the charge, substantially as set forth.

3. A shell-holder provided with a removable cap, *p*, a removable bushing, *o*, supported by said cap, and an additional bushing, *n*, at its upper end, having a flared mouth, substantially as set forth.

4. The rocker-arm P and rods O Q, in combination with the disk J, oscillated thereby, the hoppers discharging through passages in said disk, the sliding charging-sleeves *f f'*, moving with said disk, the flanges for preventing said sleeves from descending too far, the shelves or disks which close the lower ends of said sleeves at certain points of their vibration, and the graduated screw-threaded adjusting-rods *i*, which act on said shelves and sleeves, substantially as set forth.

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

ORLANDO FULLER BELCHER.

Witnesses:

H. E. LODGE,
A. F. HAYDEN.