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(No Model.) 3 Sheets—Sheet 1.

U. BACHMANN.

CARTRIDGE LOADING MACHINE.

No. 414,964. Patented Nov. 12, 1889.

Fig. 1.

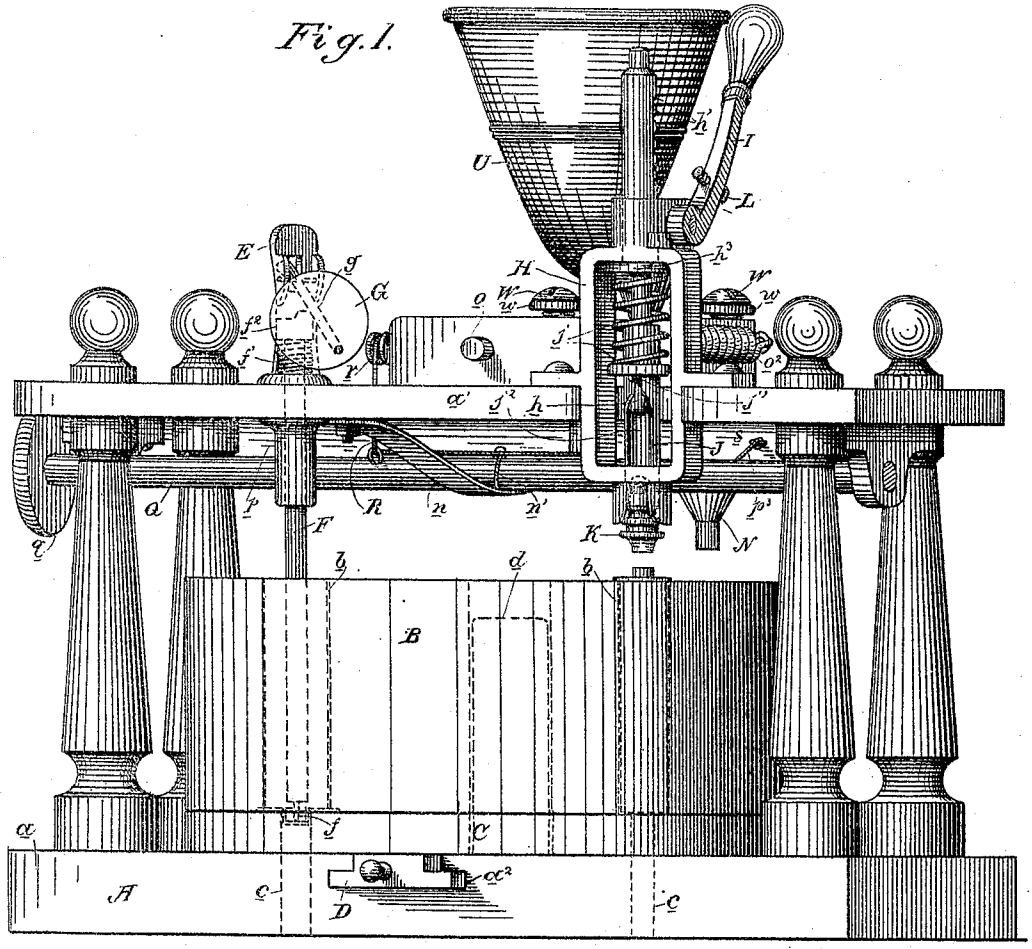
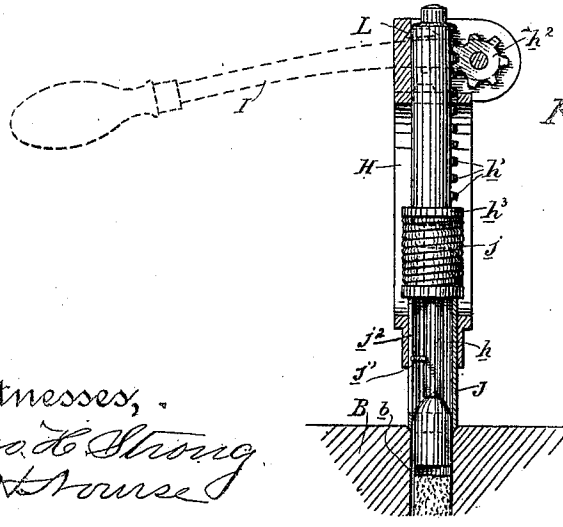


Fig. 2.



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AMMUNITION & EXPLOSIVE CHARGE MAN

Ammunition Loading,
Filling and Ramming.

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CARTRIDGE LOADING MACHINE.

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Fig. 3.

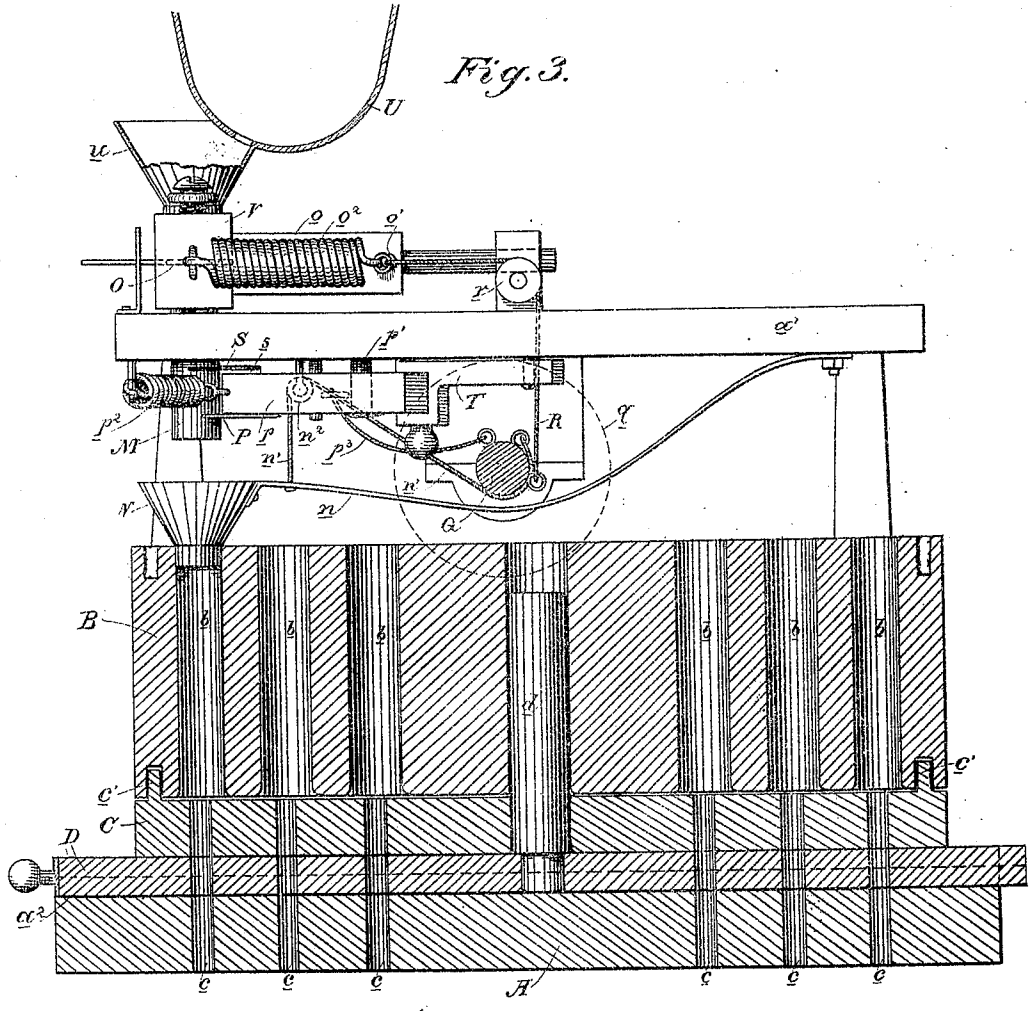
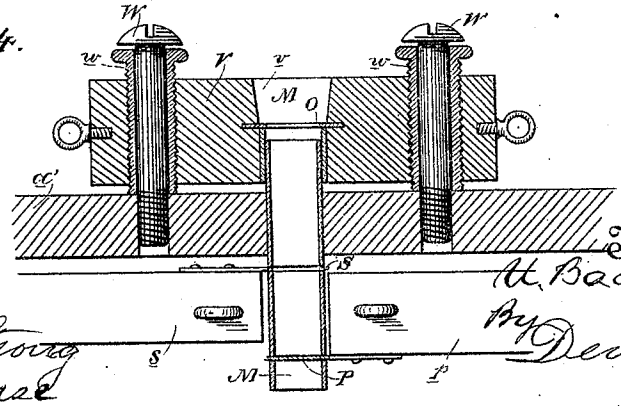


Fig. 4.



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AMMUNITION & EXPLOSIVE CHARGE

Ammunition Loading,
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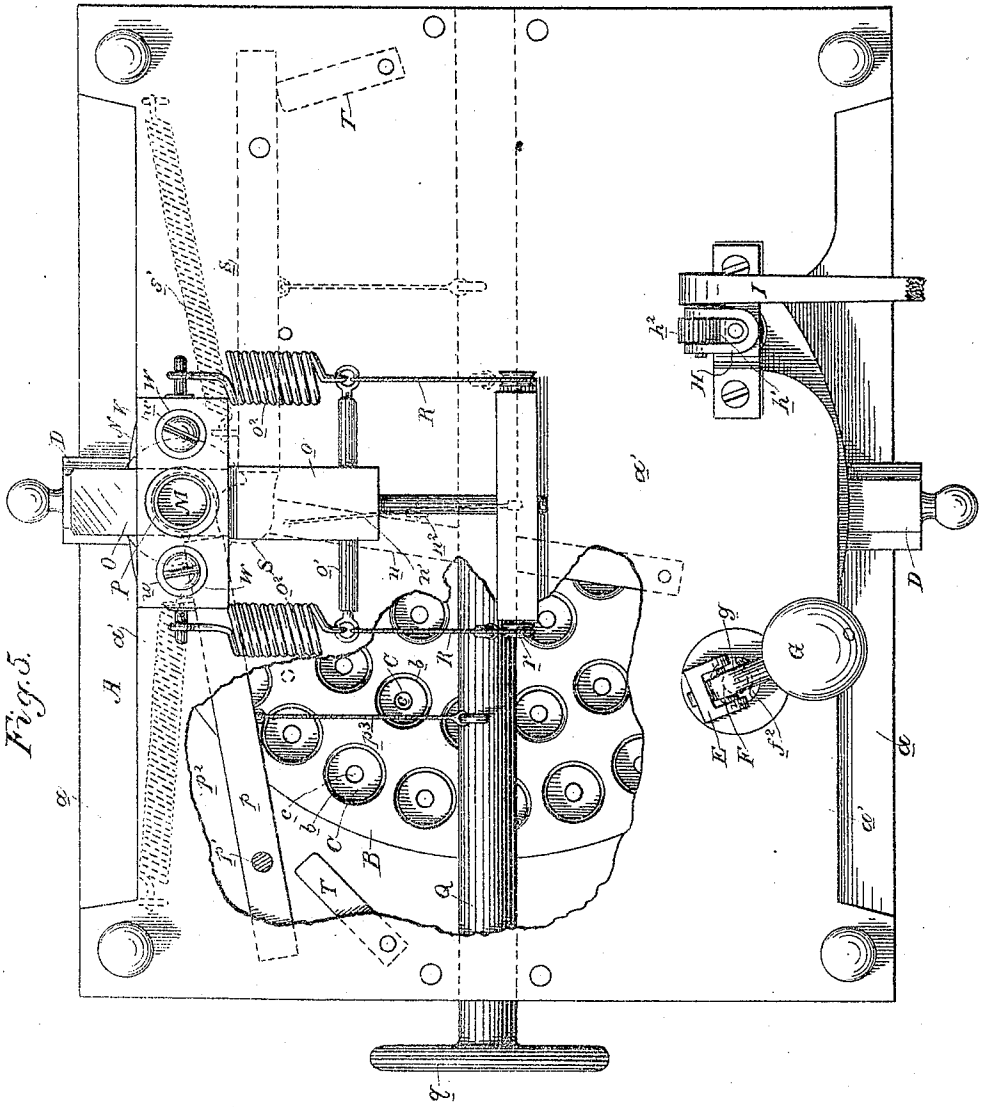


Fig. 5.

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UNITED STATES PATENT OFFICE.

ULRICH BACHMANN, OF ST. HELENA, CALIFORNIA.

CARTRIDGE-LOADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 414,964, dated November 12, 1889.

Application filed December 8, 1888. Serial No. 293,009. (No model.)

To all whom it may concern:

Be it known that I, ULRICH BACHMANN, of St. Helena, Napa county, State of California, have invented an Improvement in Cartridge-Loading Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of cartridge-loading machines; and my invention consists, essentially, in a rotary shell-table provided with circular concentric series of holes or sockets for receiving the shells, said table being mounted in a frame and adapted to slide diametrically, whereby any of its concentric rows of holes or sockets and any hole or socket of each row may be brought into position.

My invention further consists in the construction and arrangement of the feeding devices for supplying the shells and the novel punch, cap-presser, and rammer for decapping and recapping the shells and forcing the bullets home, all of which I shall hereinafter fully describe by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a view of the bullet-rammer. Fig. 3 is a vertical central section of the parts below and an end view of the parts above. Fig. 4 is a section showing the means for varying the length of the powder-charging tube. Fig. 5 is a plan of the machine, a portion of the platform a' being broken away.

The object of my invention is to provide a simple and effective machine of this class which can be operated rapidly and with precision.

A is the main frame of the machine, consisting of a bed a, above which is supported a platform a'.

B is the shell-table, consisting of a disk having bored through it circular rows or series of holes b, said rows being concentric, as shown, Fig. 5. This table rests upon a base-plate or disk C, having grooves or holes c, and is held thereto by short dowel-pins c', passing into sockets in the table, so that the said table may be removed from the base-plate and reversed, as will be more fully described, Fig. 3.

D is a slide-bar, which is provided at its center with a vertical pivot-pin d, which passes freely through central holes in the base-plate C and shell-table B, whereby both said plate and table may be rotated about said pin as a center. The slide-bar is fitted in a groove a^2 in the bed a of the main frame, said groove being located in the diametrical line of the bed-plate, Fig. 5, whereby when moved forward or backward the shell-table is moved diametrically.

On one side of the raised platform a' is the standard E, in which is mounted a vertically-movable rod or punch F, which passes down through the edge of the platform and has on its lower end a pin f. A spring f' encircles the upper portion of the punch and serves to hold it up normally. The top of said punch is provided with a head-piece f^2, Figs. 1 and 5. Pivoted in the top of the standard is the lever or handle G, the body or stem g of which is adapted to come in contact, when forced down, with the head of the punch, whereby said punch is forced downwardly. This punch is for the purpose of decapping the empty shells, as will be more fully explained hereinafter, Fig. 5.

Secured to the edge of the raised platform a' is the standard H, in which is mounted and adapted to move up and down a rammer h, the upper end of which is provided or formed with or formed into a rack h', with which a pinion h^2 engages, said pinion being on a shaft which is operated by the lever I, Figs. 1, 2, and 5. Around the lower end of the rammer is loosely fitted a sleeve J, between the head of which and a shoulder h^3 on the rammer above is a spring j, tending to hold said sleeve down against a fixed pin j' in the rammer, on which the sleeve is slotted and hung up on the rammer, said pin limiting the downward movement of the sleeve, Fig. 2. The side of the sleeve at j^2 is open and the lower end or foot of the sleeve is annular, and into this is fitted a cap-presser K, consisting of a short metal bar or piece, Fig. 1. The mechanism thus described has a double function—viz., that of recapping the shells and of pressing or ramming home the bullet—and its operation is as follows:

As a recapper, Fig. 1, the lever or handle is turned backward to its limit, thereby raising the rammer, and with it the sleeve and its cap-presser, as said sleeve is hung from the rammer on the fixed pin j'. Now, when the

lever or handle is relieved, the parts move down slightly, so that the cap-presser K rests on top of the cap. Now, by moving the lever forward, the rammer itself moves downward, while the sleeve and its cap-presser remain stationary, being held by the shell on which the cap-presser bears below. This downward movement of the lever condenses the spring, and finally the lower end of the rammer comes in contact with the upper end of the cap-presser with a gradual or gentle force, the shock being taken off by the condensing spring, and thereupon said rammer forces the cap-presser downwardly, so as to put the cap on the shell.

As a bullet-rammer the operation is as follows, Fig. 2: The cap-presser K is removed from the lower end of the sleeve, and the rammer and sleeve move upwardly above the end of the cartridge by throwing back the handle or lever. Now, when the handle or lever is thrown forward again, the annular foot of the sleeve comes down upon the rim or mouth of the shell and encircles the bullet, which is fitted to it through its open side j^2. The further movement of the lever forces the rammer upon the top of the bullet, thereby pressing it home, and this force is not a sudden one, on account of the condensing of the spring. The lower end of the rammer is properly grooved out so as to fit the end of the bullet; but in order to prevent the rammer from being forced down too far I have a set-screw L let through the end of the handle or lever, said screw being adapted to bear against the body of the bracket and limit the stroke of the lever, this limit being made variable by moving the screw, Fig. 1.

In the other edge of the raised platform a' is the feed or charging tube M, below which is the feed-funnel N, Figs. 3, 4, and 5. The upper portion of this feed-tube is controlled by the slide-valve O, and its lower portion is controlled by the slide-valve P. The upper valve O is secured to a stem o, having a cross-head o', with springs o^2 attached, said springs serving to hold the valve normally open, Figs. 3 and 5. Under the platform is mounted a rock-shaft Q, having on one end the hand-wheel q, by which it is operated. Secured to this shaft and adapted to be wound thereon are cords R, which extend upwardly from the platform and over guide-pulleys r, and are attached to the cross-head o' of the valve-stem o. The lower slide-valve P is secured to the end of a stem p, Fig. 5, which is pivoted at the point p' under the platform, and to this stem is secured the spring p^2, which serves to hold the valve normally closed. A cord p^3 is attached to the rock-shaft and also to the stem p of the valve P, and its length is such as to cause the valve P to move after the movement of the upper valve O.

U is a hopper for supplying powder to the feed or charging tube. This hopper consists of a main portion and a smaller receptacle or funnel u, Fig. 3. The former has a sloping bottom and communicates through a hole with the latter, which is attached at one side of the bottom of the main portion, and said funnel communicates directly with the feed or charging tube. The object of this is to provide for a more regular and positive discharge of powder than if it passed directly through a hole in the bottom of the main portion, for into the funnel but a limited amount can pass, (just enough to cover the communicating aperture,) and it is relieved of undue pressure.

Although I have described the upper end of the feed or charging tube as being controlled by a slide-valve O, it will be seen that said valve is not located in the tube proper, but is in a plate V, Fig. 4, having a hole v, which practically forms an extension of the tube, and said hole fits down over the top of the tube. The plate V is made vertically adjustable, so as to lengthen or shorten the tube to vary the charge of powder in the following manner: W are guide-screws passing freely through the plate V and into the platform a'. Around these are fitted sleeves w, having exterior threads seated in threaded sockets in plate V. By turning these sleeves the plate is raised or lowered for the purpose described.

The operation of the valve mechanism is as follows: The upper valve O is normally open and the lower valve P is normally closed. The charge of powder within the feed-tube therefore rests upon the lower valve. Now, by turning the rock-shaft its first effect is to wind up the cords R, thereby pulling on the cross-head and stem of the valve O, and causing said valve to traverse the feed-tube, thereby cutting off the supply of the powder above. As this is done, the slack of the cord p^3 being taken up, said cord begins to wind on the shaft and pulls over the pivoted stem of the valve P, whereby said valve is withdrawn from the feed-tube, and the charge of powder, which is measured by the space between the two valves, is thereby dropped into the feed-funnel N and thence into the shell. The feed-funnel N is mounted upon a spring-arm n, secured under the platform a', Fig. 3. This arm tends to hold the feed-funnel down normally with its neck in the mouth of the shell. A cord n' is attached to said spring-arm, and, extending upwardly over a guide-pulley n^2, is attached to the rock-shaft Q, and is adapted to be wound upon said shaft at the beginning of its movement, so that the feed-funnel is held in a lifted position when the rock-shaft is first about to be moved. Now, when said shaft is partially rotated its first effect is to pay out on the cord n', thereby relieving the spring-arm n, which throws the feed-funnel N downwardly, with its neck in the mouth of the shell, and the continued movement of the shaft operates the valves, as heretofore described.

In order to provide for a variable charge of powder, I have a sliding valve S, which trav-

erses the feed or charging tube at a point between the valves O and P, Figs. 3 and 4. This valve S is upon the end of a pivoted stem *s*, which has a spring *s'*, tending to hold the valve normally closed in the same manner as the valve P is held; but as only one of the valves P or S is to be used at a time I have mounted under the platform near each end the pivoted disengaging-stops T, which are adapted to be turned into contact with either of the stems of the valves P or S at a point beyond their pivotal centers, whereby said stems are moved to throw their valves out of operation and to hold them thus, Fig. 5.

The entire operation of the machine is as follows: The empty shells, having the old caps still in them, are fitted in the holes or sockets of the shell-table, and said table is then placed upon the base-plate C, with the heads of the shells downwardly, there being small holes or grooves *c* in said base-plate just under the shell holes or sockets of the table. Both table and base-plate being fitted upon the center pin *d* of the slide-bar D, said bar is fitted in the groove of the bed *a* of the frame and is moved inwardly, so as to bring a shell of one row directly under the punch F. The handle G above is now operated and the punch is forced down, so that the pin on its lower end drives out the cap from the shell. The punch thereupon moves up under the action of its spring, and the table is then turned axially, so that another shell in the same row is brought under the punch, and so on until all the shells in that row are decapped. Then the whole table is moved diametrically by moving the slide-bar D so as to bring the shells of another row into alignment with the punch, and when this row has been finished the table is again moved diametrically to bring the shells of another row under the punch, and so on until all the shells have been decapped. When this is completed, the slide-bar D is moved outwardly, so as to free the shell-table, which is then taken off from the pin *d* and reversed and again placed on the pin, so that the heads of the shells are uppermost. The heads of the shells are now provided with caps by hand, and the table is then put in place again, so as to bring any of its shells directly under the cap-presser K, which is operated, as heretofore described, to force the cap to place, and the table itself is axially rotated and successively moved diametrically, so as to reach all the shells of all the rows and cap them. When this is done, the table is again moved outwardly and removed from the pin *d* and reversed, so as to present the open mouths of the shells upwardly. It is then moved inwardly, so as to bring a shell of any row directly under the feed-funnel N. The powder from the hopper U above is resting upon the lower valve P. Now, the hand-wheel *q* is turned, and immediately the feed-funnel N, being relieved by the paying out of the cord *n'*, fits its neck into the open mouth of the shell. Then the upper valve O cuts off the powder above, and the lower valve P opens the feed-tube, so that the charge of powder drops down into the funnel and into the shell. Then the wheel *q* is turned back again, returning the parts to their normal position, and the shell-table is turned axially to present another shell to the row. When this row has been charged, the table is moved diametrically to bring another row into place, and so on, as heretofore described.

When the shells have been charged with powder, the cap-presser K is removed, and a bullet is fitted through the open side j^2 of sleeve J, the lower annular end of said sleeve resting in the beveled top of the hole *b* of the shell-table and acting as a guide for said bullet. The rammer *h* is then pressed down and drives the bullet home. Each shell is thus provided successively with a bullet.

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

1. In a cartridge-loading machine, a rotary table provided with circular concentric rows of holes or sockets for receiving shells, said table being mounted and adapted to be diametrically moved, whereby each shell and each row of shells may be brought into position beneath the shell-charging mechanism, substantially as herein described.

2. In a cartridge-loading machine, a rotary shell-table provided with circular concentric rows of holes or sockets for receiving the shells, in combination with a sliding bar having a pin on which the shell-table is centrally pivoted, and by the movement of which each row of shells is brought into position under the shell-charging mechanism, substantially as herein described.

3. In a cartridge-loader, a frame and a bar mounted in the base of said frame and adapted to slide diametrically therein, whereby each row of shells may be brought into position beneath the shell-charging mechanism, in combination with a shell-table centrally pivoted on said bar and provided with circular concentric rows of holes or sockets for receiving the shells, substantially as herein described.

4. In a cartridge-loader, the diametrically-sliding bar and the base-plate C, pivoted centrally thereon, in combination with a reversible shell-table resting upon the base-plate and pivoted centrally on the bar, whereby it may be rotated to bring each row of shells into position beneath the charging mechanism, said table having circular concentric rows of holes or sockets for receiving the shells, substantially as herein described.

5. In a cartridge-loader, a feed or charging tube, in combination with the upper valve and a lower valve operating in said tube, and the mechanism for actuating said valves, consisting of springs for holding them in normal position, a rock-shaft, and cords connecting said shaft with the valves, whereby they are operated to alternately open and close the

feed or charging tube, substantially as herein described.

6. In a cartridge-loader, a feed or charging tube, in combination with the upper valve O, having a stem and cross-head, with springs for holding it normally open, the rock-shaft, and cords connecting the rock-shaft with the cross-head of the valve-stem, whereby said valve is closed, substantially as herein described.

7. In a cartridge-loader, the feed or charging tube, in combination with the lower valve P, having a pivoted stem, and a spring for holding the valve normally closed, the rock-shaft, and the cord connecting said shaft with the valve-stem, whereby said valve is opened, substantially as herein described.

8. In a cartridge-loader, the feed or charging tube, the upper valve O, having a spring holding it normally open, and the lower valve P, having a spring holding it normally closed, in combination with the rock-shaft, the cords connecting said shaft with the upper valve O, whereby said valve is closed, and the cord connecting said shaft with the lower valve P, whereby said valve is opened upon the closing of the upper valve O, substantially as herein described.

9. In a cartridge-loader, the feed or charging tube having valves, in combination with the feed-funnel below the tube, the spring-arm carrying said funnel and by which it is normally depressed, in combination with the rock-shaft by which the valves are operated, and the cord connecting the shaft with the spring-arm of the feed-funnel, by which said funnel is raised after the valves are operated, substantially as herein described.

10. In a cartridge-loader, the feed or charging tube, the normally-open spring-controlled upper valve O, the normally-closed spring-controlled lower valve P, and the underlying feed-funnel supported by a spring-arm holding it normally depressed, in combination with the rock-shaft, the cord connecting said rock-shaft with the spring-arm of the feed-funnel for elevating said funnel, the cords connecting said shaft with the upper valve O for closing said valve, and the cords connecting the shaft with the lower valve P for opening said valve, substantially as herein described.

11. In a cartridge-loading machine, the feed or charging tube, in combination with the alternative valves P and S, having pivoted stems, as described, and the pivoted disengaging-stops T, for throwing one or the other of said valves out of action, substantially as herein described.

12. In a cartridge-loading machine, the vertically-adjustable rammer, in combination with the open-sided sleeve adjustably connected to its lower end and having an annular foot, the spring between the upper end of the sleeve and a shoulder on the rammer, and a removable cap-presser bar in the annular foot of the sleeve, substantially as herein described.

13. In a cartridge-loading machine, the feed or charging tube for the powder having a controlling-valve below, in combination with the vertically-movable plate V, having the hole *v* fitting over and continuing the top of the feed-tube, the fixed guide-screws, and the sleeves *w*, threaded in the plate, whereby it is vertically moved, and the valve O in the plate, substantially as herein described.

In witness whereof I have hereunto set my hand.

ULRICH BACHMANN.

Witnesses:
S. H. NOURSE,
H. C. LEE.