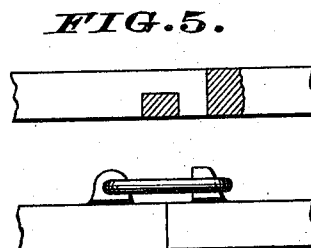
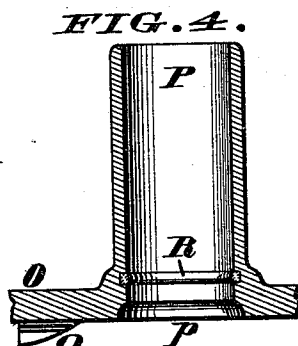
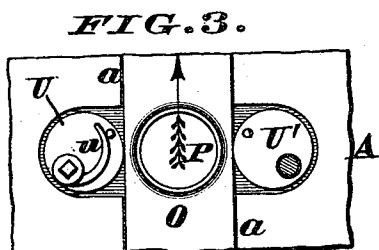
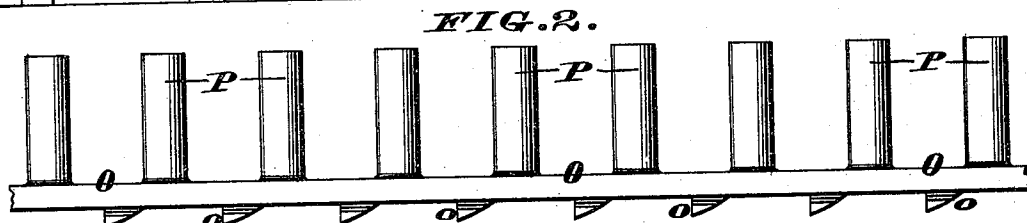
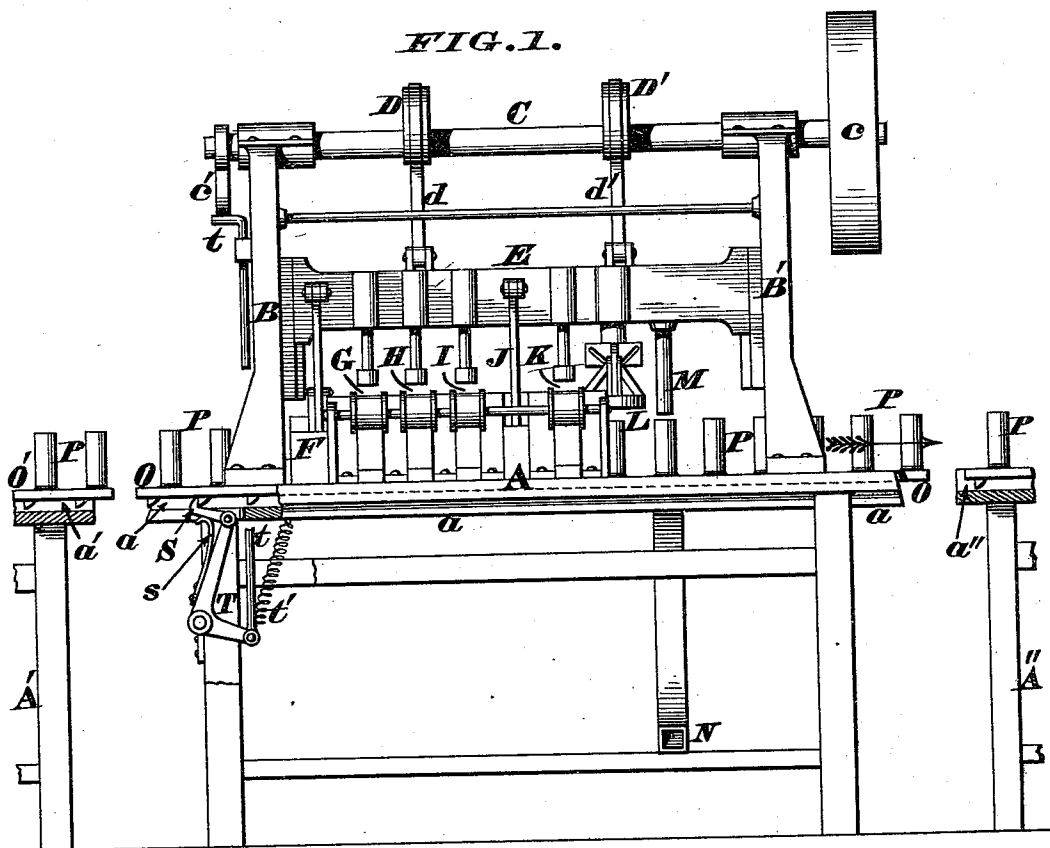


J. H. LAYMAN.
CARTRIDGE LOADING MACHINE.

Patented July 12, 1892.



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UNITED STATES PATENT OFFICE.

JAMES H. LAYMAN, OF CINCINNATI, OHIO.

CARTRIDGE-LOADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 478,614, dated July 12, 1892.

Application filed January 28, 1892. Serial No. 419,507. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. LAYMAN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, 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, reference being had to the annexed drawings, which form part of this specification.

In a certain class of cartridge-loading machines the empty shells are first delivered into tubular holders, each of which latter projects from a link or section of an endless chain or carrier, and when this carrier is set in motion the holders are successively brought in line with charging devices that fill the shells with a proper quantity of powder, wads, and shot and then discharges them from the machine finished and ready for use; but the numerous joints of such carriers are subject to considerable wear and tear and "lost motion" is the natural result. This lost motion prevents the holders being brought accurately in line with said charging devices, and therefore some of the shells are left unfilled. Not only is this true, but any breaking of the jointed carrier renders the entire machine inoperative until proper repairs have been made to the same.

The object of my invention is to render it impossible for lost motion to occur in such machines, thereby insuring the complete charging of each shell at the proper moment; but in case an accident should happen to either of the holders the improvement is of such a character as to enable the difficulty being immediately overcome without calling in the aid of a skilled artisan. To accomplish these results, a number of shell-holders are either rigidly secured to or made integral with a bar or plate capable of being fed through the machine after the empty cartridges have been inserted within said holders, which preliminary operation can be done by hand. Therefore by providing three or four of these bars for each machine and feeding one into it as rapidly as its predecessor is run through and bodily removed the operation is continuous and may be kept up for an indefinite period of time, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a rear elevation of my improved cartridge-loading machine, a portion of one end of the table being broken away and sectioned to expose the feed mechanism. Fig. 2 is an enlarged side elevation of one of the bodily-detachable bars provided with a series of shell-holders. Fig. 3 is a plan of the friction-clamps of the machine. Fig. 4 is an enlarged vertical section of a holder and a portion of its integral bar. Fig. 5 shows two modifications of my invention.

The main table A of the machine supports a pair of vertical standards B B', having at their upper ends journal-bearings for a horizontal shaft C, provided with two cranks or cams D D', a driving-pulley c, and eccentric c'. Coupled to cams D D' are connecting-rods d d', carrying a vertically-reciprocating cross-head E, that operates the devices for charging the empty shells. These charging devices, however, constitute no part of my invention, and may be constructed and arranged to operate in any approved manner; but in the present case F, G, H, I, J, K, L, and M represent, respectively, the powder-filling appliance, the first paper-wad inserter, the felt-wad inserter, the second paper-wad inserter, the shot-charger, the last paper-wad inserter, the shell-crimper, and the rammer that ejects the finished cartridges and causes them to escape at the discharge-tube N.

Table A has a longitudinal groove or race a in its upper surface to admit a rigid bar or plate O, carrying any desired number of tubular shell-holders P, the latter being counterbored at their lower ends, as seen at p in Fig. 4, to admit the cartridge-rim. These holders may be secured to the bar by screwing or otherwise; but it is preferred to make them integral with the bar in order that said holders may always preserve their proper vertical position and never spring laterally. Furthermore, each holder has an annular groove turned in it just above the counterbore p to admit an india-rubber or other expandible ring R, for a purpose that will presently appear.

Projecting from the underside of bar O are ratchet-teeth o, one for each holder, which teeth are adapted at the proper moment to be caught by a pawl S, pivoted to the long

arm of a bell-crank T and held in engagement with said teeth by a spring s, the short arm of said bell-crank being coupled to a rod t, operated by the eccentric c'.

5 t' is a spring that restores the crank T to its normal position after the rod t is relieved from the downward thrust of said eccentric.

U U' in Fig. 3 represent a pair of eccentrics so applied to the table A as to bear against the opposite edges of bar O, the arrangement of said eccentrics being such as to permit said bar to move freely in the direction of the arrow, but to prevent any retrograde slipping thereof. Each of these eccentrics may have a spring u to increase the friction against the bar, if desired.

A' represents part of a table having a groove a', and A'' is a portion of another table having a similar groove a''.

20 As a matter of convenience, it is preferred to operate this machine in conjunction with the two extra tables A' A'', because they will greatly facilitate the application and removal of the bar O; but previous to this application the holders P of said bar must first be filled with empty cartridge-shells. This filling is readily accomplished by inverting the bar and inserting a shell in each holder, the shell being forced down until its rim bears snugly within the counterbore p and being held in position by the yielding ring R. Said bar is then turned over, placed in the groove a' of table A' and slid forward until it enters the groove a of table A, and is thereby engaged with the pawl S of bell-crank T. The various mechanisms F, G, H, I, J, and K are then charged with the requisite amount of powder, shot, and wads, and the machine is set in motion, the feed devices S T serving to advance the bar O, so as to bring each of its holders P successively under the action of said mechanisms. Consequently by the time each holder has passed through said mechanisms, each shell will have been charged and crimped, and will be finally ejected from the machine by the rammer M forcing said finished shell into the discharge-spout N. As the first bar passes through the machine, its advancing end enters the groove a'' of table A'' and 50 can then be followed by a second bar O', which should be pressed up snugly against the trailing end of the first bar, so as to preserve a continuity of action. While the first and second bars are advancing together the holders of the third bar may be charged with empty shells, and as this act can be accomplished by the attendant there will be no trouble in keeping up a continuous feed of the machine, neither will there be any extra 60 expense involved in running it.

Instead of simply causing the end of one bar to abut against the end of its predecessor, the bars can be temporarily coupled together by either of the expedients seen in Fig. 5. The upper illustration in this view shows a 65 notch in one end of a bar and a hook on the end of another bar to engage with said notch; but in the lower illustration the leading-bar has a lug over which is engaged a link coupled to an ear on a trailing-bar. 70

The invention can be further modified by using gearing or other appliances for advancing the bars through the machine.

Finally the invention is not limited to any special number of charging devices nor to 75 any peculiar arrangement of the machine, provided the shell-holders are carried by a bar or plate that is free from joints or other connections liable to produce lost motion, and is capable of bodily removal after the cartridges are removed. 80

I claim as my invention—

1. In a cartridge-loading machine, the combination, with shell-charging devices, of a bodily-removable bar or plate provided with 85 a series of projecting tubes that hold the shells and a feed appliance for advancing said bar, substantially as herein described.

2. In a cartridge-loading machine, the combination, with shell-charging devices, of a 90 bodily-removable bar or plate provided with a series of projecting integral tubes that hold the shells and a feed appliance for advancing said bar, substantially as herein described.

3. In a cartridge-loading machine, the combination, with shell-charging devices, of a 95 bodily-removable bar or plate provided with a series of projecting shell-holders and having on its under side teeth adapted to be caught by the pawl of a reciprocating feed appliance, substantially as herein described. 100

4. The combination, in a cartridge-loading machine, of the table A, having a longitudinal groove a and eccentric clamps U U', and the 105 bodily-removable bar O, provided with projecting shell-holders P, said bar being inserted within said groove and having said eccentrics in contact with its edges, for the purpose described.

5. In a cartridge-loading machine, the bodily-removable bar O, provided with projecting shell-holders P, each of said holders being furnished with an internal spring-ring R near its lower end, for the purpose described. 110

In testimony whereof I affix my signature in 115 presence of two witnesses.

JAMES H. LAYMAN.

Witnesses:

L. E. LAYMAN,

M. E. LAYMAN.

It is hereby certified that in Letters Patent No. 478,614, granted July 12, 1892 upon the application of James H. Layman, of Cincinnati, Ohio, for an improvement in "Cartridge-Loading Machines," errors appear in the printed specification requiring correction as follows: On page 2, commas should be inserted after the word "shells," in lines 87 and 93; and that the Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 10th day of January, A. D. 1893.

[SEAL.]

CYRUS BUSSEY,

Assistant Secretary of the Interior.

Countersigned:

N. L. FROTHINGHAM,

Acting Commissioner of Patents.

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