No. 659,630. Patented Oct. 9, 1900.

L. B. SIMMONS.

WAD SEATING MACHINE.

(Application filed July 31, 1899.)

(No Model.)

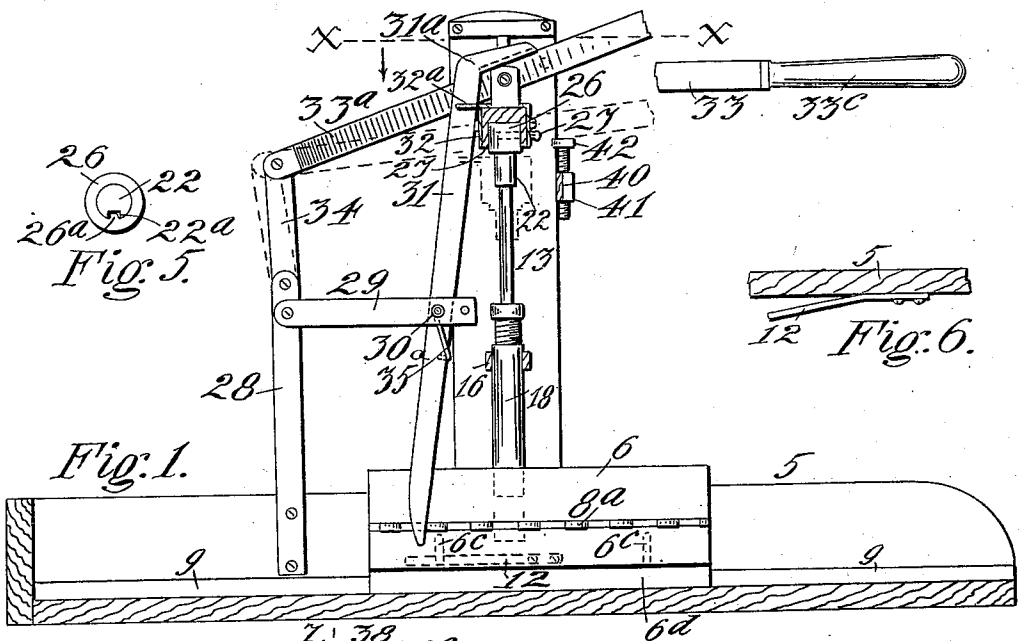


Fig. 1.

Fig. 5.

Fig. 6.

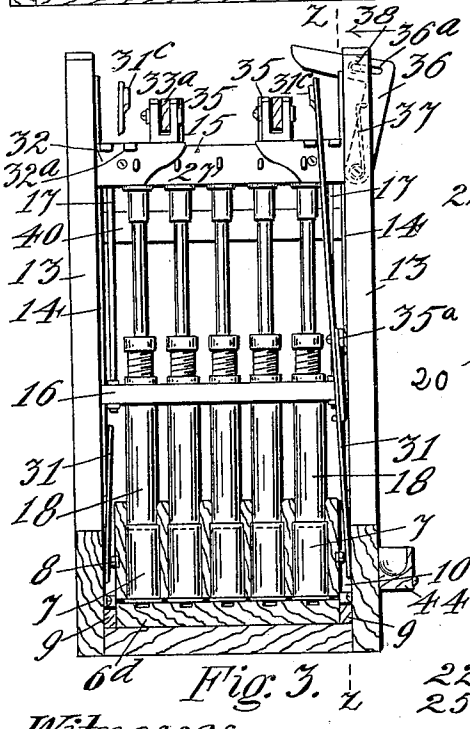


Fig. 3.

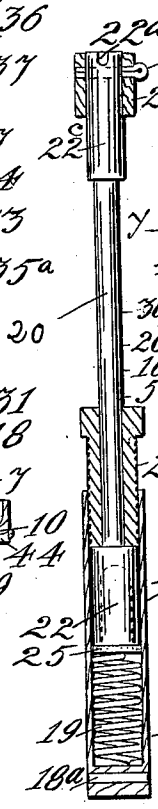


Fig. 4.

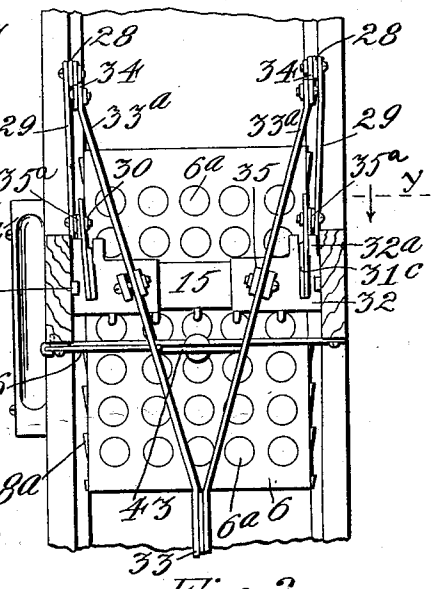


Fig. 2.

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UNITED STATES PATENT OFFICE.

LEWIS B. SIMMONS, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF TO GEORGE TRITCH, JR., OF SAME PLACE.

WAD-SEATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,630, dated October 9, 1900.

Application filed July 31, 1899. Serial No. 725,616. (No model.)

Patent No. 659,630.

To all whom it may concern:

Be it known that I, LEWIS B. SIMMONS, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Wad-Seating Machines; and I do 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 the figures of reference marked thereon, which form a part of this specification.

My invention relates to a wad-seating machine for use in filling shotgun-cartridge shells; and it consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation, partly in section, of my improved machine. The section is taken on line Z Z, Fig. 3. Fig. 2 is a section taken on the line X X, Fig. 1, looking downwardly. Fig. 3 is a section taken on the line Y Y, Fig. 2, looking in the direction of the arrow. Fig. 4 is a sectional detail view taken through one of the wad-seating plungers, shown on a larger scale. Fig. 5 is a top view of the plunger, showing the bushing-sleeve. Fig. 6 is a fragmentary section illustrating a detail of construction.

Similar reference characters indicating corresponding parts in the views, let the numeral 5 designate a box or trough open at its front end and adapted to receive the block 6, containing the cells 6^a, in which the shells 7 are inserted preparatory to filling. To each side of this block is attached a small metal bar 8, provided with ratchet-teeth 8^a, formed straight on one side and inclined on the other for a purpose hereinafter explained. This box is arranged to slide between two cleats 9, attached to the bottom of the box, one on each side, leaving a space 10 above the cleats between the block and the sides of the box, in which the levers for actuating the cell-block project, as hereinafter described. To each side of the box above the cleat 9 is attached a leaf-spring 12. These springs embrace the block on opposite sides and prevent it from moving farther than is desired when actuated by the levers. The friction between the springs and the sides of the block causes the block to stop moving when the levers stop, thus preventing the block from moving by mere momentum, which movement would be uncertain and cause difficulty, since the block must always stop with a transverse row of cells in position to receive the wad-seating plungers.

The bottom 6^d of the block is detachable to permit the insertion of the shells and the removal of the cartridges. This bottom is held in place by pins 6^c, (shown in dotted lines in Fig. 1,) the said pins entering sockets formed in the body of the block between the cells.

To each side of the box is attached an upright 13. To the inner side of each upright is attached a guide-tongue 14, adapted to engage grooves formed in the ends of two cross-heads 15 and 16, one located directly beneath the other. The two cross-heads are connected by metal rods 17. The upper cross-head 15 contains sockets adapted to receive the upper extremities of the plungers. Each of these plungers consists of a tube 18, a spring 19, a rod 20, provided with a piston 22 and a head 22^c, a tension-nut 23, and a bushing-sleeve 26. The spring 19 is placed within the tube, whose bottom is closed. To the upper extremity of the spring is applied for convenience a loose washer or follower 25, which is engaged by the piston 22, the latter being in turn engaged by the tension-nut 23, which is exteriorly threaded to engage interior threads formed on the tube. The rod 20 passes through and moves freely in a central opening formed in the tension-nut. The pressure of the piston 22 on the spring is regulated by the tension-nut. The rod 20 is graduated and numbered to indicate pressure in pounds as the plunger is forced down upon the wad. The farther the piston moves into the tube 18 the greater the pressure on the wad. Hence when the plunger is in the position shown in Fig. 4 these numbers increase upwardly on the rod. This plunger, however, is reversible, the head 22^c being made of a different size from the tube 18 for wadding shells of a different size. In the drawings the head 22^c is

made smaller than the tube 18, and a detachable bushing-sleeve 26 is applied to the top of this head, where it engages a socket formed in the cross-head 15 and causes the head to fit the socket, which is made large enough to receive the tube 18. The bushing-sleeve is provided with a small interiorly-projecting lug or pin 26^a, adapted to engage a recess 22^a, formed in the head 22^c, to hold the sleeve in place when the key is not in position and also to keep the openings of the two parts in line for the insertion of the key. When the plunger is reversed, the sleeve 26 is first dispensed with and the tube 18 is inserted directly in the socket of the cross-head.

The plungers are prevented from dropping out of the cross-head when the latter is raised by keys 27, which pass through registering apertures formed in the cross-head, the sleeve, and the head 22^c of the rod. The upper extremity of each plunger bears against the top of the socket, which is closed, so that the force exerted in using the plunger is on the cross-head instead of the key. When it is desired to employ the head 22 of the plunger for wad-seating purposes, the key 27 is removed, the bushing-sleeve detached, and the position of the plunger reversed, the free extremity of the tube 18 being inserted in the socket of the cross-head and fastened by the key 27, which is passed through a suitable opening 18^a, formed in the bottom or solid portion of the tube.

Any desired number of plungers may be employed according to the required capacity of the machine. As shown in the drawings, there are five of these plungers attached to the cross-head 15 in the manner heretofore explained. All of the plungers pass through suitable openings formed in the lower cross-head 16.

To each side of the box 5 is attached a vertical bar 28, located in the rear of the uprights 13. These bars are connected with the uprights or standards 13 by horizontal bars 29, upon which are fulcrumed at 30 two levers 31, whose lower extremities are adapted to engage the ratchet-teeth 8^a of the block 6, while their upper extremities are bent or inclined forwardly, as shown at 31^a, and provided with cams 31^c. The levers 31 are loosely fulcrumed to permit a lateral or side rocking movement as well as the ordinary fore-and-aft movement incident to the performance of the ordinary lever function. To the top of the cross-head 15 are attached two plates or shoes 32, having rearward projections 32^a slotted to engage the levers 31. The machine is operated by a lever 33, provided with two arms 33^a, whose rear extremities are respectively connected with the upper extremities of two links 34, the lower extremities of the links being connected with the upper extremities of the bars 28. The arms of the levers at suitable points forward of the links are connected with slotted lugs 35, attached to the cross-head 15. The arms 33^a of the lever approach each other as they extend forwardly, and finally merge into a single arm, terminating in a handpiece 33^c. Around the fulcrum 30 of each lever 31 is coiled a spring 35^a, one extremity of which is made fast, while its other extremity is carried downwardly below the fulcrum and hooked around the forward edge of the lever, having a tendency to throw the lower arm of the lever rearwardly, as shown in Fig. 1, and outwardly, as shown in Fig. 3. The outward thrust of the lower arms of the levers is necessary to enable them to pass the ratchet-teeth 8^a of the block 6, since these teeth are rigid.

During the operation of the device the lower arms of the levers maintain their outward position close to the sides of the box until the operating-lever 33 is raised sufficiently to bring the projections 32^a of the shoes 32 against the cams 31^c of the levers, when these projections acting on the said cams throw the upper arms of the levers 31 outwardly and their lower arms inwardly, causing them to engage a tooth 8^a on each side of the block 6 and thrust the block forwardly sufficiently to bring another transverse row of cells 6^c into line with the plungers, the block before beginning the operation having been moved backwardly to its rearward limit bringing the rearmost transverse row of cells into line with the plungers, the hand-lever being then supported by a dog 36, normally held in a position to clear the hand-lever during its upward and downward movement by a weak spring 37. This dog has a slot 36^a, which engages a pin 38, fast on the upright, and limits the outward movement of the dog. When it is desired to support the hand-lever by this dog, the latter is moved inwardly into the path of said lever, whose weight maintains the dog in the inward position until the hand-lever is raised, when the dog returns automatically to its normal position.

The standards 13 are connected by a horizontal bar 40, attached to their forward edges. To the central portion of this bar is attached a nut 41, into which is screwed a set-bolt 42, which is adjusted with reference to the pressure required upon the powder charge in the shells. As the hand-lever moves downwardly a cross-bar 43, connecting its arms, engages the head of the bolt 42 and stops the movement of the lever, the descent of the plungers, and the cross-heads 15 and 16, which are carried by the hand-lever. It is evident that by adjusting this bolt with reference to the figures on the graduated portion of the rods 20 the exact pressure required may be applied to the powder in seating the wad.

Preparatory to beginning the operation of the machine the shells 7 are inserted in the cells 6^a of the block 6. These shells are inserted from the bottom, the bottom part 6^d of the block being removed for the purpose. This part 6^d is then replaced, the powder put into the cells, and a wad on top of each charge of powder. The hand-lever is then moved

downwardly, forcing the plungers against the wads, which are seated by the required pressure, the hand-lever having been brought to bear upon the set-bolt 42.

In using certain kinds of powder it is important that the pressure to be given the powder-wad be accurately determined; hence the value of this feature of my machine.

If it should happen that one wad is thicker than the others, the plungers above the thinner wads will descend until all the wads are seated, which could not be accomplished by rigid plungers. After the wads are seated in the shells of a transverse row of cells the hand-lever is raised and the levers 31 actuated to move the block forward to bring the next row of cells into line with the plungers in the manner heretofore explained, the operation being repeated until the powder-wads of all the shells in the block have been seated. The block is then removed and the charges of shot and their respective wads placed in the shells, when the block is again placed in the box and the shot-wads seated in the same manner, except that the set-bolt 42 need not be employed in seating these wads, as but little pressure is given the wads on the shot, and it can be easily determined by the operator without the use of adjusting devices.

There is a small receptacle 44 attached to one side of the box 5 to hold the bushing-sleeve 26 when not in use.

Having thus described my invention, what I claim is—

1. In a wad-cutting machine, the combination with a shell-block and a suitable guide box or trough in which the block is located, of a reciprocating frame, one or more plungers attached to said frame, a lever for operating the plungers, and means actuated by the plunger-supporting frame for feeding the shell-block, said means comprising a spring-held lever fulcrumed to permit a lateral rocking movement as well as a fore-and-aft movement, the upper extremity of the lever being bent forwardly and provided with a cam, both the cam and the bent lever portions being adapted to be engaged by the plunger-frame.

2. The combination with a shell-block and a guide therefor, of a cross-head, a guide for the cross-head, a number of plungers attached to the cross-head, a lever for operating the cross-head, and means actuated by the cross-head for feeding the shell-block, said means comprising spring-held levers fulcrumed to permit a lateral rocking movement as well as a fore-and-aft movement, the upper extremities of the levers being bent forwardly and provided with cams, both the cams and the bent lever portions being adapted to be engaged by the cross-head.

3. The combination with a suitable stationary frame and a shell-block, of a cross-head, a number of plungers attached thereto, and levers actuated by the cross-head and arranged to feed the shell-block, said levers being pivoted to permit a lateral as well as a fore-and-aft movement and bent forwardly and provided with cams, both the cams and the bent lever portions being adapted to be engaged by the cross-head.

4. The combination with a suitable stationary frame, of a shell-block provided with ratchet-teeth on opposite sides, a reciprocating cross-head, plungers supported thereon, spring-held levers actuated by the cross-head for engaging the teeth of the shell-block and feeding the latter, the said levers being fulcrumed to permit a lateral rocking movement as well as a fore-and-aft movement, the upper extremities of the levers being bent and provided with cams, both the cams and the bent lever portions being adapted to be engaged by the cross-head.

5. The combination with a suitable stationary frame, of a shell-block provided with ratchet-teeth, spring-held levers whose lower arms are normally held outside the plane of the ratchet-teeth on the block, the upper extremities of the levers being bent or inclined forwardly and provided with cams, a cross-head, plungers carried thereby, and means mounted on the cross-head for engaging the cams and actuating the levers to throw their lower arms inwardly to engagement with the ratchet-teeth of the shell-block, before the forward movement is imparted to the said arms by the engagement of the cross-head with the bent upper extremities of the plungers.

6. The combination of a box, a shell-block arranged to slide therein, springs attached to the box and engaging the shell-block on opposite sides, the said block being provided with ratchet-teeth, standards attached to the box and provided with vertical tongues, a cross-head frame grooved to receive said tongues, plungers carried by the cross-head frame, levers actuated by the cross-head frame and arranged to engage the ratchet-teeth of the shell-block, vertical bars attached to the box in the rear of the standards, links mounted on said bars, a lever fulcrumed on said links and connected with the cross-head for operating the latter.

7. The combination with a stationary frame and a reciprocating cross-head, of a reversible plunger engaging a socket formed in the cross-head with which it is detachably connected, said plunger having its extremities of different sizes, the cross-head socket being of a size to receive the larger extremity of the plunger, the smaller end being provided with a detachable bushing-sleeve to cause it to fit the socket of the cross-head.

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

LEWIS B. SIMMONS.

Witnesses:
A. J. O'BRIEN,
NELLIE G. DANIELS.

Correction in Letters Patent No. 659,630.

It is hereby certified that in Letters Patent No. 659,630, granted October 9, 1900, upon the application of Lewis B. Simmons, of Denver, Colorado, for an improvement in "Wad-Seating Machines," an error appears in the printed specification requiring correction, as follows: Page 3, line 35 the compound word "wad-cutting" should read *wad-seating;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 20th day of November, A. D., 1900.

[SEAL.]

THOS. RYAN,
First Assistant Secretary of the Interior.

Countersigned:

C. H. DUELL,
Commissioner of Patents.

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