No. 628,291.

Patented July 4, 1899.

# W. L. WHITTEMORE.

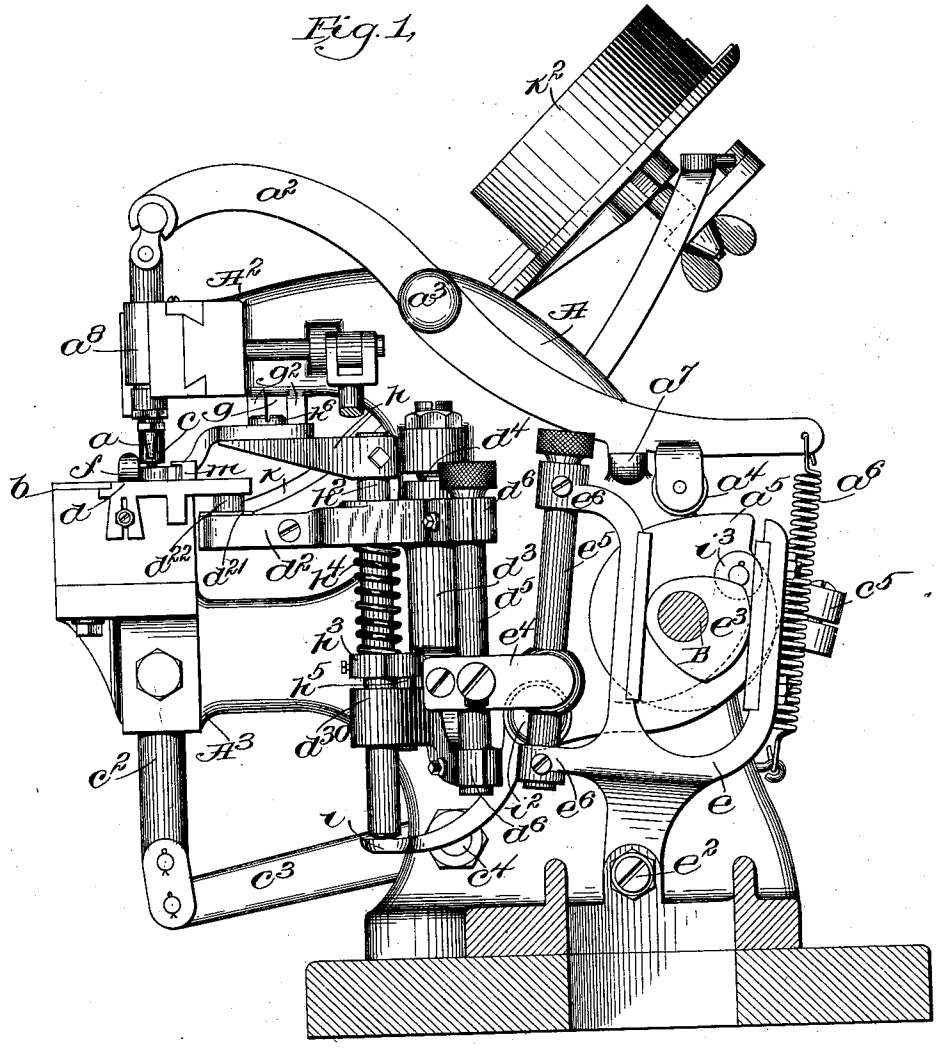
## EYELETING MACHINE.

(Application filed Dec. 29, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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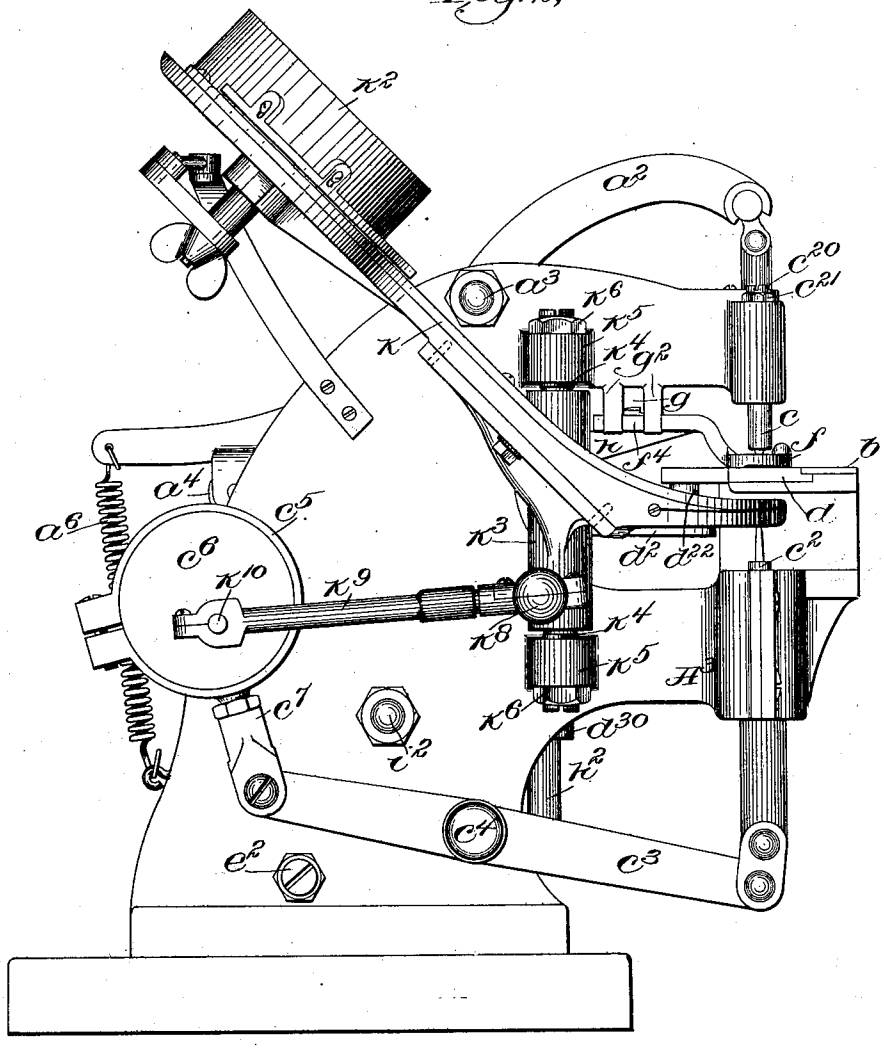
(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

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## EYELETING MACHINE.

(Application filed Dec. 29, 1898.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 3.

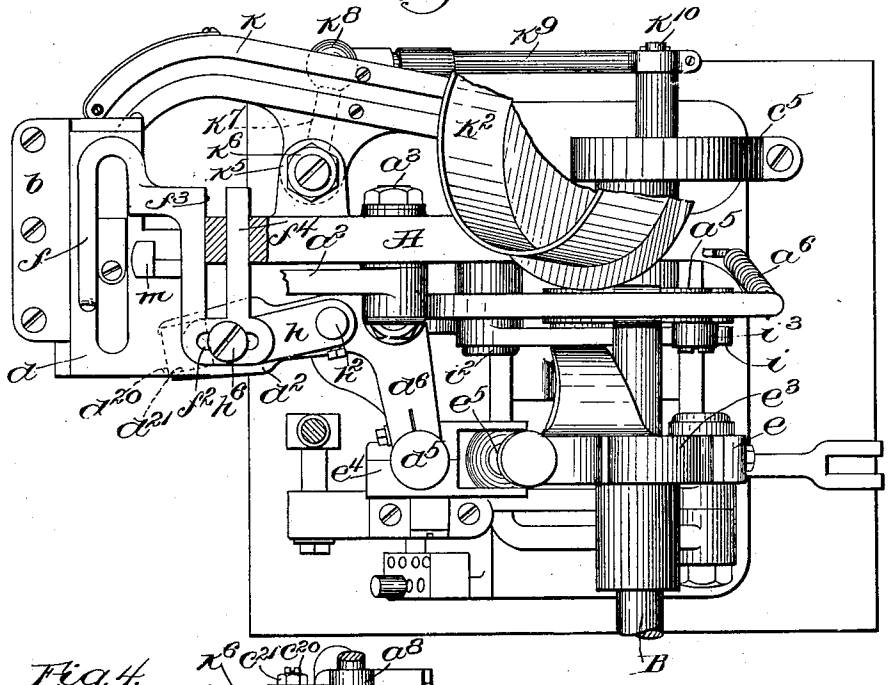
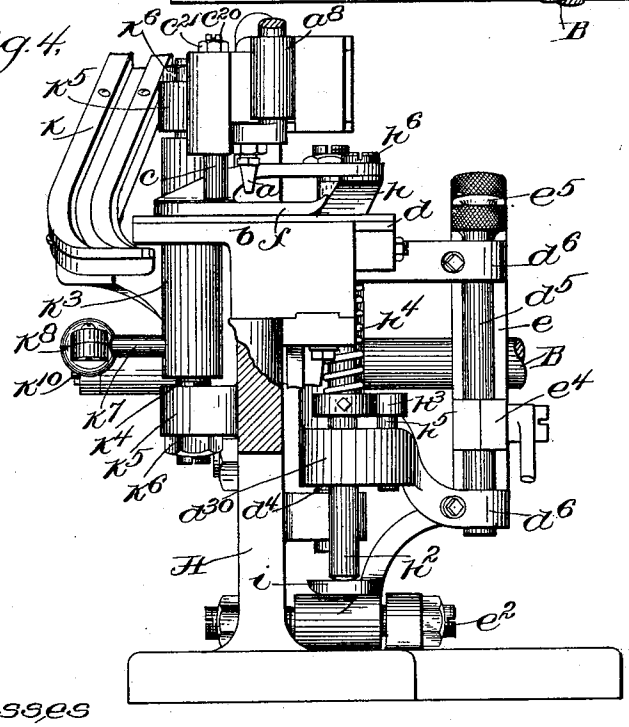


Fig. 4.



Witnesses
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# UNITED STATES PATENT OFFICE.

WALTER L. WHITTEMORE, OF QUINCY, MASSACHUSETTS.

## EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 628,291, dated July 4, 1899.

Application filed December 29, 1898. Serial No. 700,643. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER L. WHITTEMORE, of Quincy, county of Norfolk, and State of Massachusetts, have invented an Improvement in Eyeleting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to an eyeleting-machine, and is embodied in a machine of that class shown and described in Patent No. 581,855, granted to P. R. Glass May 4, 1897.

The invention is mainly embodied in certain novel details of construction and arrangement of the stock-feeding device and the eyelet-feeding devices whereby the machine may be more inexpensively constructed and may be utilized to better advantage with certain classes of work.

Figure 1 is a sectional elevation of a machine embodying the invention; Fig. 2, an elevation of the machine, taken from the opposite side to that shown in Fig. 1; Fig. 3, a top plan view, partly in section; and Fig. 4, a partial front view, partly in section.

The machine embodying the invention is provided with a punch $a$, adapted to be vertically reciprocated toward and from a suitable feed-table $b$ by means of a lever $a^2$, pivoted at $a^3$ upon the frame A of the machine, the said lever $a^2$ being provided with a cam-roll $a^4$ to coöperate with the cam $a^5$ upon the main shaft B, which is arranged to be driven in any suitable or usual way. The said punch-lever is shown as provided with a spring $a^6$, whereby it is held in normal position above the work, being forced downward to punch the stock against the stress of said spring by the cam $a^5$ aforesaid. The lever is normally supported, as shown, on a stop $a^7$, so that it does not remain in contact with the cam $a^5$ during the complete revolution thereof, thus avoiding unnecessary friction. Coöperating with the said punch $a$ are the upper and lower setting devices $c$ and $c^2$, the former being secured in an overhanging projection $A^2$ of the frame A and the latter being arranged to reciprocate in a projection $A^3$ through the agency of the lever $c^3$, pivoted at $c^4$ and arranged to be operated by an eccentric-strap $c^5$ on an eccentric $c^6$, mounted on the shaft B.

As thus far described the construction of the various parts is substantially the same as that shown in the Glass patent above referred to, the present invention relating mainly to the construction and arrangement of the feeding device for moving the stock from the punch to the setting devices and that of the eyelet feed-chute, which is adapted to present the eyelets to the lower setting device in the operation of the machine.

The stock-feeding device comprises a reciprocating slide $d$ and a gripper member $f$, the slide $d$ being arranged to travel back and forth in a suitable guideway formed in that part of the machine which supports the table $b$ and being actuated by a lever $d^2$, mounted on a rock-shaft $d^3$, having cone-bearings $d^4$, the said rock-shaft being actuated by a lever $e$, pivoted at $e^2$ and arranged to be actuated by the cam $e^3$ on the shaft B. The said lever $e$ is shown as forked, and the fork members thereof engage the cam $e^3$ at opposite sides, so that the lever is positively moved in each direction during the rotation of said cam. In the operation of the machine, therefore, the reciprocating member $d$ travels back and forth, and in order to operate upon the stock to transfer the same from the punch to the setting devices the gripper member $f$ is arranged to travel with the said feed-slide and to be pressed toward the same during its movement in one direction, so as to grip the stock between said members and cause the same to move and to be separated from said feed-slide during its movement in the other direction, so that the two parts travel back without operating upon the stock. In accordance with the present invention the said gripper member $f$ is arranged to be guided in its reciprocating movement independent of the slide and is shown as traveling in a guide $g$, formed in the under side of the projecting portion $A^2$ of the frame, the said member being actuated by an arm $h$, arranged to travel with the lever $d^2$, but vertically movable with relation thereto for the purpose of separating the said gripper member $f$ from the slide $d$. The said arm $h$ is connected with a rod $h^2$, projecting upward through a suitable opening in the lever $d^2$ and provided with a collar $h^3$, secured by a set-screw, between which collar and the under

side of the lever $d^2$ is interposed a spring $h^4$, whereby the said rod is normally pressed downward, thereby holding the gripper member $f$ against the material supported upon the slide $d$. The said rod $h^2$ is also guided and supported in a projection $d^{30}$ from the rock-shaft $d^3$, so that as the said rock-shaft oscillates the rod $h^2$ will be moved laterally with the lever $d^2$, whereby the feed-slide and gripper member are caused to travel together. To prevent displacement of the gripper member, the rod $h^2$ is prevented from turning in its supports, the collar $h^3$ being shown as provided with a projection $h^5$, which enters a socket or bore in the projection $d^{30}$.

In order to lift the gripper member during the return movement of the feed, the rod $h^2$ is arranged to be acted upon at its lower end by the lever $i$, pivoted at $i^2$ and arranged to be acted upon by a cam-roll $i^3$, shown as secured to the side of the cam $a^5$, which operates the punch. The lower end of the lever $i$, where it is engaged by the rod $h^2$, is sufficiently wide to engage the said rod while the latter travels laterally back and forth in the movement of the rock-shaft $d^3$, the movement being comparatively slight, since the rod is close to the axis of the rock-shaft $d^3$. In the operation of the machine, therefore, the punch is first moved downward by the operation of the cam $a^5$ and is restored by the spring $a^6$ after punching an opening in the stock, and as soon as the punch rises the feed members, having the stock gripped between them, are moved from the punch toward the setting devices through the agency of the cam $e^3$. The lower set then rises, picking up an eyelet from the eyelet feed-chute, which will be hereinafter described, and inserting the same in the opening in the stock and clenching the same in conjunction with the upper set $c$. The lever $i$ is then operated upon by the cam-roll $i^3$, lifting the gripper member $f$ out of contact with the stock, the cam $e^3$ then causing the return movement of the feed members thus separated.

Since the lever $d^2$, which operates the feed-slide $d$, and the arm $h$, which operates the gripper member $f$, both move on the arc of a circle around the axis of the rock-shaft $d^3$, while the feed members themselves are adapted to travel in a straight line, the said feed members are connected with their actuating-arms respectively by means of compensating connecting devices. To this end the lever $d^2$ is provided with a forked end $d^{20}$, Fig. 3, in which is guided a block $d^{21}$, having a bearing for a stem $d^{22}$, which projects downward from a portion of the feed-slide $d$, the said block being capable of longitudinal movement with relation to the lever $d^2$, while the stem is capable of rotary movement in said block. The gripper member $f$, which, as stated, is guided by the guide $g$, is shown as provided with a slot $f^2$, through which extends a screw $h^6$, secured to the arm $h$, said screw holding the gripper member against the surface of the arm $h$, but permitting an independent movement of said arm with relation to said gripper member to compensate for the difference in direction of movement of the two parts.

The guide $g$ is shown as consisting of two tongues $g^2$, projecting downward from the projecting portion $A^2$ of the frame, and the gripper member $f$ is provided with a guide-surface $f^3$, adapted to engage the outside of one of said tongues, and with a projection $f^4$, adapted to pass between the same, so that the said gripper member is prevented from twisting and is efficiently guided in its rectilinear movement. By this construction the connection between the two feed members is at the rear of the feed-table, while the rear portion of the gripper member is separated by some distance from the feed-slide, so that there is ample room for the insertion of material of any size or shape, while there is nothing to interfere with the proper manipulation of a piece of material having a curved or irregular edge along which eyelets are to be set. The feed-table is shown as provided with a suitable edge-gage $m$ to position the material which is being operated upon.

The lever $e$ is shown as connected with the rock-shaft $d^3$ by means of a link $e^4$, connected with guides $d^5$ and $e^5$, the former being secured to projections $d^6$ from the rock-shaft $d^3$ and the latter to brackets $e^6$, forming part of the lever $e$. The purpose of this specific form of connection is described in a prior application, Serial No. 670,238, filed February 14, 1898, of Whittemore and Glass, and this part of the machine needs no further description, as it forms no part of the present invention. The punch $a$ is also shown as supported in a laterally-movable guide $a^8$, as in said Whittemore and Glass application.

The eyelets are fed to the setting devices through a feed-chute $k$ and hopper $k^2$, which are of usual construction, the said feed-chute, however, being provided with novel supporting means and devices for moving the same toward and from the lower setting device for the purpose of properly presenting eyelets thereto one by one. In accordance with the present invention the said feed-chute is mounted on an oscillating member $k^3$, having a vertically-adjustable bearing consisting, as herein shown, of cones $k^4$, screw-threaded in lugs $k^5$, projecting from the frame A of the machine, the said cones being held in position by lock-nuts $k^6$. The end of the feed-chute is curved, as shown in Fig. 3, so that as it is oscillated upon the member $k^3$ its end will be moved into and out of the path of the lower set, which will pick up eyelets therefrom in the usual way. To produce the oscillation of said member, it is provided with a radial arm $k^7$, Fig. 4 and dotted lines, Fig. 3, connected by a ball-and-socket joint $k^8$ with a pitman $k^9$, connected with a wrist-pin $k^{10}$, projecting laterally from the face of the eccentric $c^6$, which operates the lower set. This construction not only simplifies the assem-

bling of the machine, but also affords means for a slight vertical adjustment of the eyelet chute or raceway, which is desirable in case it is necessary to raise the upper set and to correspondingly adjust the throw of the lower set, which may be accomplished by means of an adjustable connection $c^7$ with the eccentric-strap $c^5$. If, therefore, it is found that the upper set is too close to the feed-table for convenience, the trouble may be easily remedied by simply raising the upper set, which is positioned by means of a screw $c^{20}$ and nut $c^{21}$, and correspondingly adjusting the position of the lower set and the eyelet feed-chute.

I claim—

1. In an eyeleting-machine having a punch and setting devices, the herein-described feeding device for transferring the stock from the punch to the setting devices which comprises a feed-slide, a lever for producing a reciprocating movement of said slide, a gripper member, an independent guide for said gripper member, a lifting-rod for said gripper member connected with the feed-slide lever, a compensating connection between said gripper member and the said lifting-rod, a lever for lifting the said rod, and a cam coöperating with said lever, substantially as described.

2. In an eyeleting-machine having a punch and setting devices, the herein-described feeding device for transferring the stock from the punch to the setting devices which comprises a feed-slide, a lever for producing a reciprocating movement of said slide, a gripper member, an independent guide for said gripper member, a lifting-rod for said gripper member connected with the feed-slide lever, a compensating connection between said gripper member and the said lifting-rod, and means for lifting said rod during the movement of the feed-slide in one direction but not during its movement in the other direction, substantially as described.

3. In an eyeleting-machine, the combination with the feed-table supported in the forward portion of the frame, of a projection from said frame overhanging said feed-table, a setting device and punch supported by said overhanging projection, a feed-slide adapted to reciprocate along said table and having a guide-support thereon, a gripper member to coöperate with said feed-slide and having a guide-support in said overhanging frame member, lever-arms connected respectively with said feed-slide and said gripper members, said lever-arms being adapted to travel together, and means for separating said lever-arms during their movement in one direction but not in the other, substantially as described.

4. In an eyeleting-machine provided with a punch and setting devices, the herein-described feeding device which comprises the feed-slide $d$, the actuating-lever $d^2$ connected with the rock-shaft $d^3$, means for oscillating said rock-shaft to produce a movement of said lever, the gripper member $f$ provided with the guide $g$, and the lifting-rod $h$ for said gripper member parallel to and connected with the said rock-shaft, substantially as described.

5. In an eyeleting-machine, the combination with the setting devices, of an eyelet-feed-chute, an oscillating support for said chute, and adjustable bearings for said support whereby the support and chute may be vertically adjusted, substantially as described.

6. In an eyeleting-machine, the combination with the setting devices, of an eyelet chute for presenting eyelets to said setting devices, a vertical pivotal support for said eyelet-chute, an arm projecting radially from said support, and a pitman connected by a universal joint with said arm, said pitman being operated by the main shaft of the machine, substantially as described.

7. The combination with the setting devices, of the eyelet feed-chute $g$, the oscillating support $g^3$ therefor, adjustable cone-bearings for said oscillating support, a projection from said oscillating support, and a pitman operated from the shaft of the machine and connected with said projection, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER L. WHITTEMORE.

Witnesses:

HENRY J. LIVERMORE,

NANCY P. FORD.