

No. 729,825.

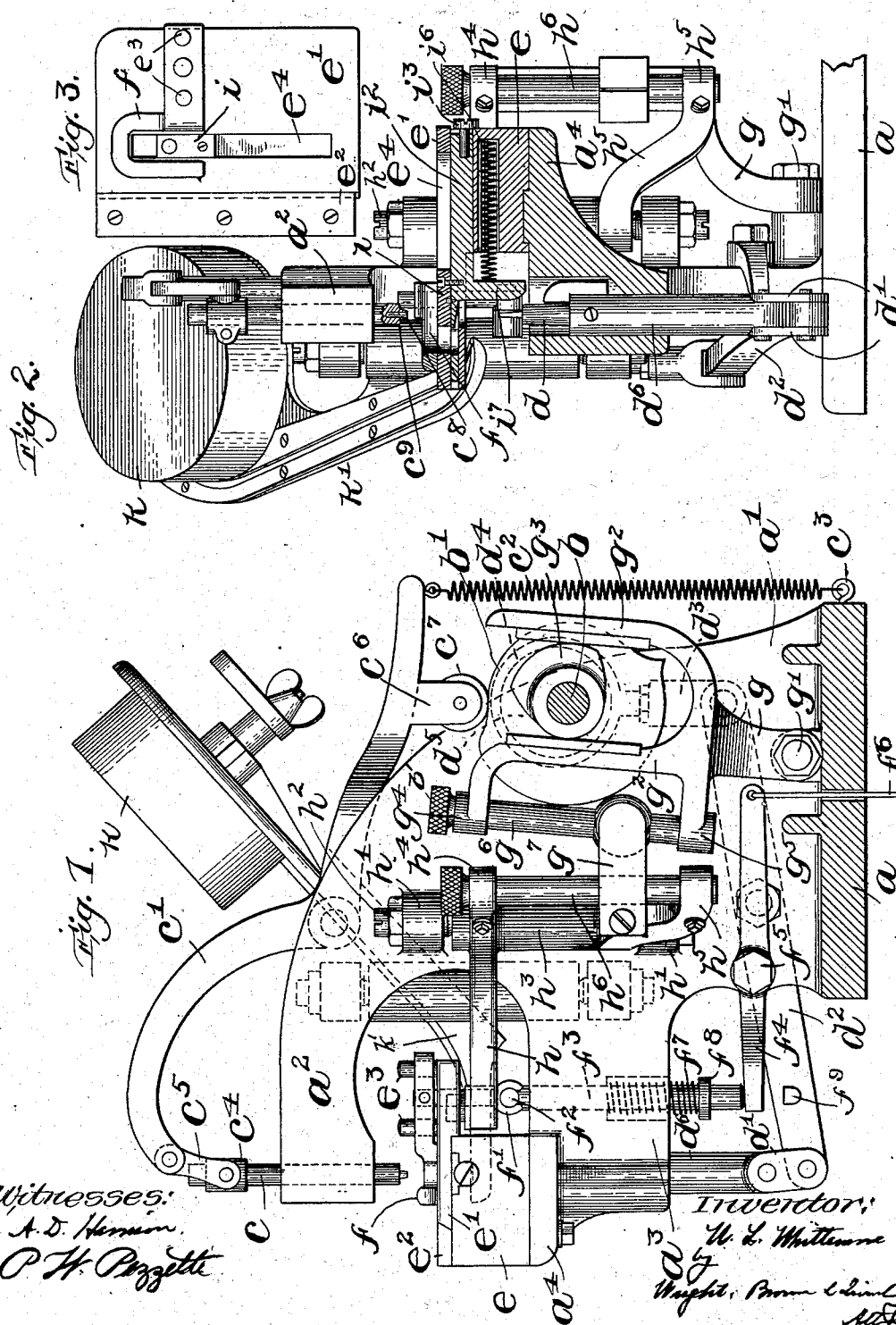
PATENTED JUNE 2, 1903.

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EYELETING MACHINE.

APPLICATION FILED JAN. 23, 1899.

NO MODEL.

2 SHEETS—SHEET 1.

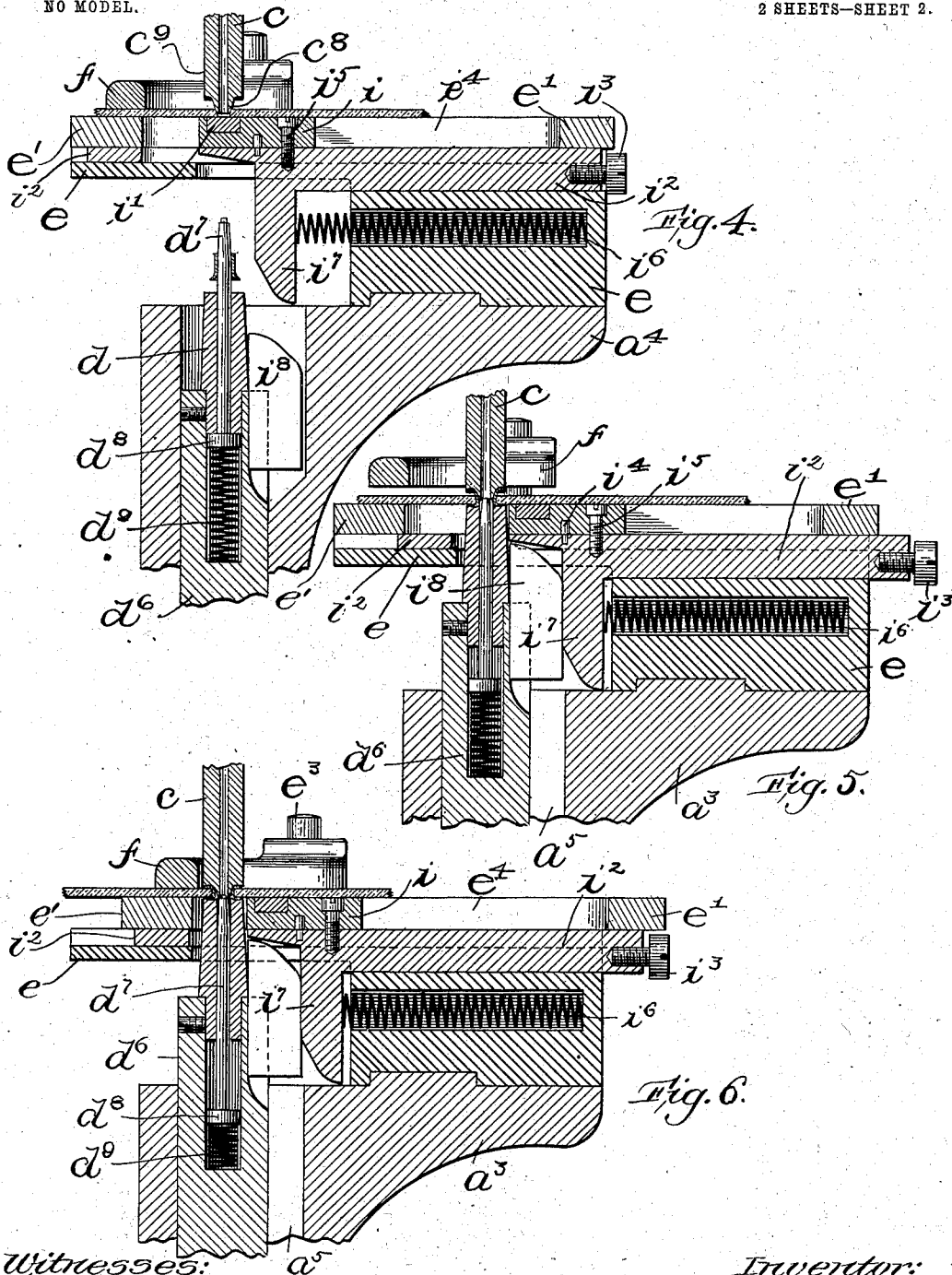


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EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 729,825, dated June 2, 1903.

Application filed January 23, 1899. Serial No. 703,023. (No model.)

To all whom it may concern:

Be it known that I, WALTER L. WHITTEMORE, of Wollaston, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Eye-
5 leting-Machines, of which the following is a specification.

This invention relates to eyeletting-machines, and has for its object to produce certain improvements therein, primarily for the enhancement of their efficiency, and, secondarily, for the simplification of their mechanism; and to these ends the invention consists of an eyeletting-machine possessing certain
10 features of construction and relative arrangement of parts, all as illustrated upon the accompanying drawings, described in the following specification, and finally pointed out in the appended claims.

Reference is to be had to the accompanying drawings, and to the letters marked thereon, forming a part of this specification, the same letters indicating like parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 represents in side elevation a machine embodying my invention. Fig. 2 represents a transverse section of the same to show the movable die. Fig. 3 represents the work-plate of the machine, together
30 with the movable die or punch-block and the feeding device for the work. Figs. 4, 5, and 6 are enlarged sectional views illustrating the operation of the parts last mentioned.

In describing the machine which is illustrated upon the drawings I desire to have it first understood that it has been selected by me for the purpose of disclosing one form of the invention and that while I prefer to claim some of the features more or less in detail,
40 yet the invention may as a whole be embodied in machines differing more or less from that shown in the construction and arrangement of parts.

As illustrated, the machine is provided with a suitable base-plate *a*, having a head or frame
45 *a'*, forwardly from which project an overhanging arm *a²* and a secondary lower arm *a³*, directly under the last-mentioned arm and extended laterally, as at *a⁴*, for the reception
50 of some of the operative parts, to be described.

The shaft from which power is imparted or

transmitted to the eyeletting devices is indicated at *b* and is journaled in the head *a'*, being equipped with belt-wheels (not shown) in the usual way, by means of which it is ro-
55 tated.

The eyeletting mechanism comprises three members, of which one is capable of accomplishing two different functions, said members comprising two sets, and a movable die
60 or punch-block, adapted to coact with one of said sets in perforating the work for the reception of an eyelet, and to feed the work I preferably, though not necessarily, employ a presser-foot and a member movable in the
65 lines of the feed. The upper set or member *c* is mounted to slide in the end of the overhanging arm *a²* and is actuated by a centrally-fulcrumed curved lever *c'*, connected at its rear end by a spring *c²* with a screw-eye *c³* on the
70 base-plate, and connected at its other end to the set by an adjustable collar *c⁴* and a link *c⁵*. The rear end of the lever is also provided with a downwardly-projecting ear *c⁶*, having a roll *c⁷*, which is held against a cam *b'* on
75 the power-shaft *b* by the spring *c²*. The cam *b'* is constructed to actuate the lever *c'* for the purpose of first depressing the set, then allowing it to rise slightly, and then giving it a final downward jog or impulse. The set *c*
80 performs two functions. First, it operates in conjunction with the die or punch-block to perforate the work and then to coöperate with the other set for the purpose of setting an eyelet in the work, and to that end it is
85 provided with the tubular cutting edge *c⁸* and with the setting portion *c⁹*, as shown in Figs. 2 and 4 to 6, inclusive. The lower set is indicated at *d* and is detachably secured in a plunger *d⁶*, mounted to slide in the lower
90 arm *a³*, being connected by pivoted links *d'* with a centrally-fulcrumed lever *d²*, whose other end is connected by an adjustable rod *d³* with an eccentric-strap *d⁴* around an eccentric *d⁵* on the said shaft *b*. The parts *d³*
95 *d⁴* *d⁵* are all indicated in dotted lines in Fig. 1, and it will be seen by reference thereto that as the shaft *b* rotates the lower set *d* will be reciprocated vertically to meet the upper set *c*. The lower set is provided with the
100 usual pin *d⁷*, having a head *d⁸* projecting into a socket in the plunger and engaging a coiled

spring d^9 therein, whereby it is held yieldingly at the upper extreme of its movement to take an eyelet from the chute or raceway, by means of which the eyelets are fed one by one thereto. The hopper or receptacle for the eyelets is indicated at k , being mounted in any suitable way and provided with a downwardly-extending chute or raceway k' , the lower end of which projects into proximity with the sets, so as to deliver the eyelets thereto.

Secured to the laterally-projecting portion a^1 of the arm a^3 is a support e , having provisions for receiving on its upper face the feeding-slide e' , held in place by a gib e^2 . This slide is formed with two upwardly-projecting guiding-pins e^3 to receive a presser-foot f , which is movable toward and from the said plate to grip and release the work intermittently. Said slide is reciprocated transversely of the front of the machine to feed the work between the sets, and to that end is connected to any suitable mechanism actuated from the power-shaft. As shown, said mechanism comprises a lever g , fulcrumed at g' to the base of the machine and having a yoke g^2 to embrace a cam g^3 on the power-shaft b . One of the arms of the yoke is provided with brackets g^4 g^5 to receive a rod or shaft g^6 , connected by a sliding link g^7 with a similar rod h^6 , mounted in brackets h^5 h^4 on a rock-shaft h^3 , journaled on screws h^2 , passed through lugs h' on the head, said rock-shaft having an arm h connected to the slide e' in any suitable way, as by a stud extending into an aperture or slot in the under side thereof. The brackets h^4 h^5 are at an angle to the arm h , whereby when the lever g is rocked about its fulcrum the rock-shaft h^3 is rocked and the feed-slide is reciprocated in a rectilinear path.

The presser-foot f is connected to a rod f' , having its lower end bifurcated to take over a horizontally-extending pin f^2 on a rod f^3 , passed upward through the arm a^3 and having its lower end resting upon a centrally-pivoted lever f^4 , the latter being fulcrumed at f^5 to the head a' and being connected by the link f^6 with a foot-treadle, as shown. There is a spring f^7 inserted in the socket in the under side of the arm a^3 and bearing against the flange f^8 on the rod f^3 , which tends to hold the presser-foot yieldingly against the feed-slide; but by depressing the treadle the rod may be raised for the insertion of the work between the presser-foot and the slide or to remove it therefrom. In order to intermittently raise the presser-foot during the operation of the machine, the lever d^2 is provided with a cam or stop f^9 , adapted to engage the end of the lever f^4 as it approaches the upper extreme of its movement. The presser-foot itself is in the shape of a horse-shoe, whereby it provides a centrally-open space for the passage of the upper set, as shown in Figs. 1 and 3.

The punch-block or die, which is indicated

at i , is formed with a socket to receive a soft-metal filling i' for the cutting edge of the upper set to abut against, although, if desired, I may omit the filling and form the upper surface of the block of hardened polished metal. The said punch-block is connected to a sliding bar i^2 , arranged to slide in a groove in the block or support e , there being an adjustable screw i^3 in the rear end of said bar to limit its movement in the direction of the feed. The punch-block is secured to the said bar or slide i^2 by a steady-pin i^4 and a screw i^5 , and the upper surface of the block is flush with the surface of the feed-plate, said block projecting into a groove e^4 , as best shown in Fig. 3, said groove extending transversely of the front of the machine and intersecting the path of movement of the sets. The punch-block is held normally between the two sets and in the path of movement thereof by a coiled spring i^6 , placed in a socket in the support e and having its outer end bearing against a downwardly-projecting cam i^7 , secured to or forming a part of the slide or sliding bar i^2 . The lower end of the cam i^7 is curved, as shown, to be engaged by a second cam i^8 , secured in a groove in the upper end of the plunger d^6 and sliding in a groove a^5 , formed in the arm a^3 , and hence when the lower set is raised the cam i^8 engages the cam i^7 and forces the punch-block into inoperative position out of alinement with the two sets, whereby the latter can coast in setting an eyelet in the work.

Assuming that the upper set and the lower set are at their upper and lower extremes of movement, respectively, and that the spring i^6 is holding a punch-block in its normal position between them, as shown in Fig. 4, the operation of the parts is as follows: The upper set or member c is depressed to cause its cutter to approach the punch-block or transversely-sliding member i and perforate the work. At this time the feed-slide is at the extreme of its movement in the direction of the feed and the work is clamped thereagainst by the presser-foot. As soon as the cutter perforates the work it is lifted slightly to relieve the pressure on the die or punch-block, but not from engagement with the work, and the lower set begins to rise. As it continues its upward movement the cam i^8 engages the cam i^7 and forces the die or punch-block into the position shown in Fig. 5. As the lower set rises the pin d^7 takes an eyelet from the chute and carries it with it upwardly and with the aid of the upper end of the set forces it through the work with the skirt downward. As soon as the eyelet is well into the work and the lower set is again descending to set the eyelet the presser-foot is raised, and it and the feeding-slide are fed to their extreme of movement in a direction opposite to the line of feed, as shown in Fig. 6. As the lower set then begins to descend the stop f^9 leaves the lever f^4 and rod f^3 and permits the presser-foot to descend and engage the work between

it and the feed-slide, after which the slide is fed in the direction of feed to carry the work forward for the formation of another aperture. The descent of the lower punch also causes the cam $\bar{v}^3$ to release the cam $\bar{v}^7$ and permit the punch-block to be fed forward to again coact with the upper set or member for the formation of an aperture in the work.

It will be seen from the foregoing description that I have provided a machine possessing a minimum number of parts, each simple in form and easily constructed, while at the same time the efficiency of the machine is increased over those heretofore constructed or proposed.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A punching and eyeleting machine comprising a combined punch and set having a tubular cutter and an annular clenching-shoulder, an anvil or punch-block having a solid surface with which the cutter may coact in perforating the work, a lower set having a spring-pressed pin adapted to engage an eyelet, a roadway adapted to deliver eyelets below the work to the spring-pressed pin, a shaft, a cam on said shaft for effecting the engagement of the cutter on the punch and the punch-block, means for reciprocating the lower set, and a work-support located substantially in the plane of the anvil or punch-block when the latter is in operative position, and provisions for imparting a step-by-step movement to the work.

2. An eyeleting-machine comprising a combined punch and set having a tubular cutter with provisions for the upward discharge of cuttings and an annular clenching-shoulder, a movable anvil having a solid surface adapted to coact with the cutter in effecting the perforation of the work, means whereby the cutter and punch-block are brought into contact and one of them is then moved out of the path of the punch, a lower set adapted to cooperate with the annular clenching-shoulder on the combined punch and set, means for reciprocating the said lower set, a spring-pressed pin on said lower set adapted to receive an eyelet, a raceway adapted to deliver eyelets below the plane of the work to said pin, and provisions for effecting a step-by-step movement of the work, substantially as described.

3. A punching and eyeleting machine comprising a combined punch and set having a tubular cutter and an annular clenching-shoulder, an anvil or punch-block having a solid surface with which the cutter may coact in perforating the work, a lower set having a spring-pressed pin adapted to engage an eyelet, a roadway adapted to deliver eyelets below the work to the spring-pressed pin, a shaft, a cam on said shaft for effecting the

engagement of the cutter on the punch and the punch-block, means for reciprocating the lower set, a work-support located substantially in the plane of the anvil or punch-block when the latter is in operative position, and provisions for effecting a lateral relative movement of the anvil or punch-block and the said combined punch and set.

4. An eyeleting-machine comprising three cooperating movable members constructed and arranged to perforate the work and set an eyelet therein, said members consisting of a die or punch-block and two sets one of which is formed with a cutter in its operative setting end to coact with said block, the other having means for carrying the eyelet, means for feeding the work, and means for moving one of said members bodily in the direction of the feed of the work.

5. An eyeleting-machine comprising two cooperative sets of which one has a cutter in its operative end, a laterally-movable punch-block or die, and connections between the non-cutting set and said die or block whereby the latter is actuated by the former.

6. An eyeleting-machine comprising two cooperative movable sets of which one has a cutter in its operative end, the other having means for carrying the eyelet, means for moving the sets toward and from each other, a punch-block or die, means for causing the registration of the cutter-carrying set with said die or block, a presser-foot, and mechanism for causing said presser-foot and said sets to engage the work intermittently.

7. An eyeleting-machine comprising two cooperative movable sets of which one has a cutter in its operative end, the other having means for carrying the eyelet, a punch-block or die adapted to coact with said cutter-carrying set in perforating the work, means for feeding the work, and means on one of the sets for moving said punch-block or die out of the lines of movement of the sets.

8. An eyeleting-machine comprising a combined punch and set having a tubular cutter and an annular clenching-shoulder, a lower set having a spring-pressed pin adapted to engage an eyelet, an anvil movable into and out of the lines of movement of the sets, and a cam on the lower set for moving the anvil.

9. An eyeleting-machine comprising a combined punch and set having a tubular cutter and an annular clenching-shoulder, a lower set having a spring-pressed pin adapted to engage an eyelet, an anvil movable into and out of the lines of movement of the sets, and a cam on the lower set for moving the anvil in one direction, and a spring for moving the anvil in the opposite direction.

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

WALTER L. WHITEMORE.

Witnesses:

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C. C. STECHER.