2 Sheets—Sheet 1

E. WOODWARD & E. D. GOODSON.

Punching and Feeding Device for Eyeleting Machines.

No. 208,133. **Patented Sept. 17, 1878.**

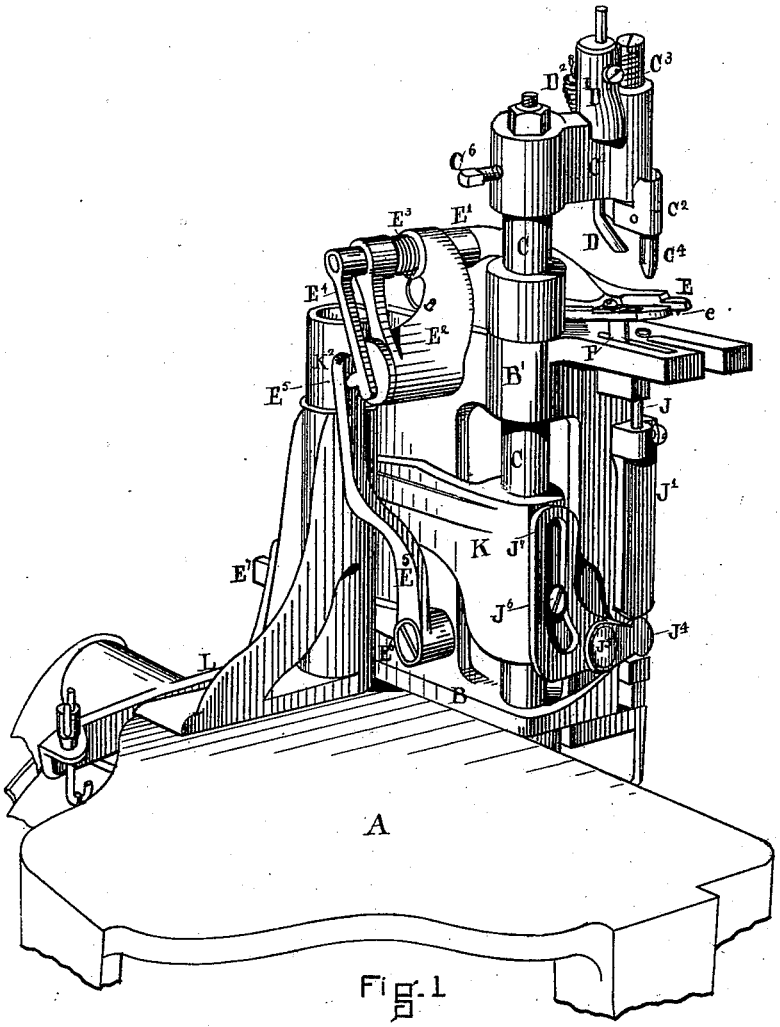

Fig. 1

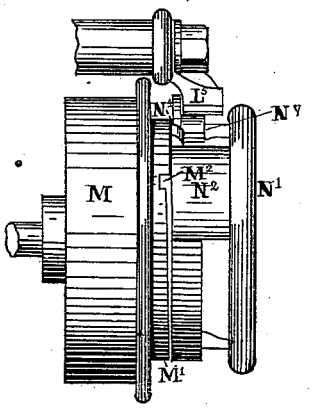

Fig. 2.

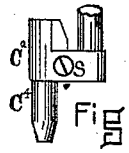

Fig 3

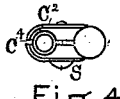

Fig. 4.

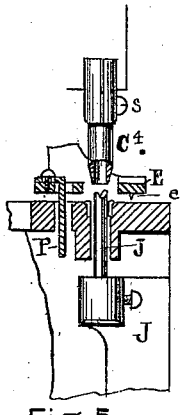

Fig. 5

WITNESSES

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2 Sheets—Sheet 2

E. WOODWARD & E. D. GOODSON.

Punching and Feeding Device for Eyeleting Machines.

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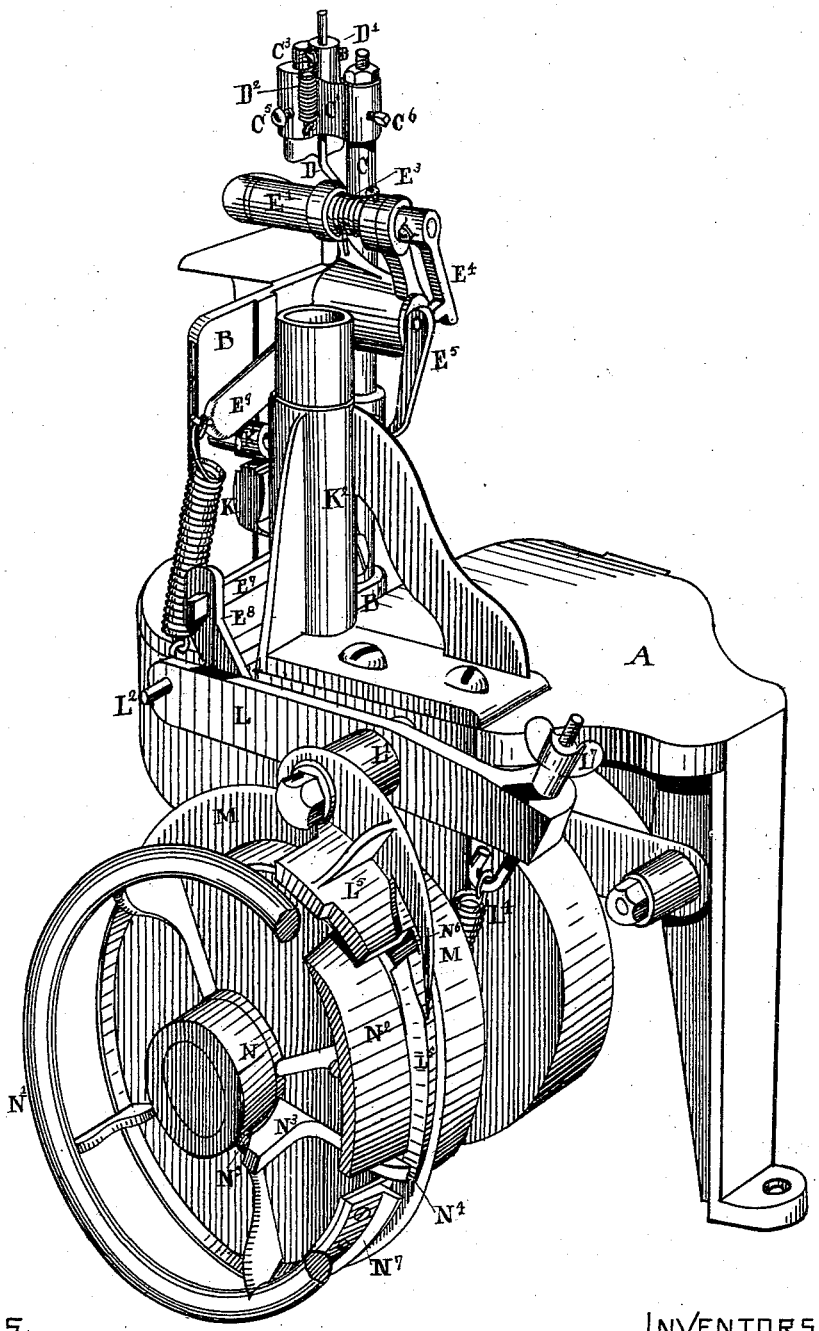

Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD AND EDWARD D. GOODSON, OF BOSTON, MASS.

IMPROVEMENT IN PUNCHING AND FEEDING DEVICES FOR EYELETING-MACHINES.

Specification forming part of Letters Patent No. **208,133**, dated September 17, 1878; application filed August 20, 1877.

To all whom it may concern:

Be it known that we, ERASTUS WOODWARD and EDWARD D. GOODSON, both of Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in a Punching and Feeding Device for Eyeleting-Machines, of which the following is a specification:

Our invention consists in the combination and arrangement, in a punching and feeding device for eyeleting-machines, of a hollow punch and a solid punch, the two punches working in opposite directions, and are combined with the work-support and a peculiar feeding device; also, in the combination and arrangement of the feeding-foot and an auxiliary presser and its operating device; also, in a peculiar mechanism for starting and stopping the machine—the several features being of such a complicated nature as to be best understood by reference to the complete specification and drawings, the same being particularly set forth in the claims.

Figure 1 is a perspective view, showing some of the principal features of our invention. Fig. 2 is an elevation, showing the loose driving-pulley and its adjuncts; Figs. 3, 4, and 5, detail views of the punch and its connections. Fig. 6 is a perspective view taken from a different point from that of Fig. 1.

In the drawings I have omitted the operating-cams and their levers, as they may be constructed in any of the ordinary methods.

The table A is made large, so that it may form a base for the eyeleting-machine proper, which is to be used in connection with this punching and feeding device.

B B′, Figs. 1 and 6, is a housing or frame which sets upon the table A and holds the punching and feeding devices. This housing may be moved up the table, so as to adjust the punch and feed to the eyeleting-machine.

C C is a sliding bar, which is moved up and down by a lever and cam. (Not shown in the drawings.) To the top of this bar we attach the arm C^1, and fasten the same by a nut at the top and a set-screw, C^6. In this arm we fasten the punch-holder C^2, Fig. 1. This punch is adjusted vertically by the screw C^3, and is held in any desired position by the set-screw C^5. The punch proper, C^4, Figs. 1, 3, and 4, is held by the part C^2, which is split, so that it may be compressed by the screw S, allowing the punch C^4 to be readily removed and centered.

J, Figs. 1 and 5, is a rod, having a notched upper end, as shown in Fig. 5. This rod serves as an under punch, and operates from the under side of the stock, in connection with the hollow punch C^4 on the upper side, the under cutter, J, slipping into the hollow punch C^4, the action being to make the lower side of the hole in the stock as large as the upper side. The under cutter, J, is connected to the slide J^1, and is operated by the action of the screw-pin J^6, (on the arm K, attached to the rod C,) acting on the slotted lever J^4 J^7, which is pivoted at J^5, Fig. 1.

If desirable, a hollow punch may be used instead of the under cutter, J, and a movable block in place of the upper punch, C^4.

The feeding-foot E, Figs. 1 and 5, is provided with small projecting points *e e* on its under side, for the purpose of giving it firmer grasp upon the stock, and is connected to a rocker-shaft, E^1, in the rocking housing E^2. E^3 is a coil-spring about the shaft E^1, and serves to throw the feeding-foot E down upon the stock. The rocking housing E^2 has a swinging motion, which causes the feeding-foot E to move back and forward. This motion of the rocking housing E^2 is communicated to it from the arm K, Figs. 1 and 6, which is made fast to the bar C, and communicates its motion through the roller K^1 (which is attached to a piston sliding in the tube K^2) to the arm E^9, which is attached to the rocking housing E^2.

E^4 is an arm attached to the rocker-shaft E^1, and serves to lift the feed-foot E off from the work when the machine stops. This action is accomplished through the bent lever E^5 E^7, Figs. 1 and 6, which is pivoted at E^6 and is operated by the link E^8, which is connected to the starting and stopping lever L. Therefore, when the front end of the lever L is thrown up the arm E^5 of the bent lever E^5 E^7 is thrown forward against the arm E^4 of the rocker-shaft E^1, causing them to move so as to throw up the feeding-foot E.

P, Figs. 1 and 5, is an adjustable gage attached to the feeding-foot E.

D is an auxiliary presser attached to a movable slide, D^1, Figs. 1 and 6, which is mounted upon the arm C^1 in such a manner that it may have a limited vertical motion, and is held down to the arm C^1 by the spring D^2. The object of the auxiliary presser D is to act on the feeding-foot E and cause its barbs to take firm hold of the article being operated upon.

The stopping and starting lever L is connected to a foot-lever by any suitable means, connection being made at the pin L^2, the counter-action of the lever being caused by the spring L^4, the tension of which is regulated by the thumb-nut L^7. (See Fig. 6.) This lever is pivoted at L^1, and has an arm, L^5 L^6, which is shaped substantially as shown. The part L^5 of the arm forms a brake, which acts on the segment N^2 of the driving-wheel N N^1 at certain times, which will be hereinafter explained.

N^3 N^4 is a coupling-dog attached to the wheel N N^1 by a pivot near its angle, (not shown,) and is operated upon by a spring, N^5. The end N^4 of this coupling-dog engages with the notch M^2, Fig. 2, made in an annular projection, M^1, formed on the loose pulley M, so that as the loose pulley is revolved by the driving-belt it will cause (acting through the dog N^4 N^3) the driving-pulley N N^1 to revolve, and thus give motion to the whole machine.

The part L^6 of the arm L^5 L^6 is curved and wedge-shaped, as shown in Fig. 6, and is so formed and placed in relation to the driving-wheel N N^1 that when the lever L, to which it is attached, is not pressed down by the foot, it (the wedge-shaped piece L^6) will force the end N^4 of the coupling-dog out of the notch M^2 of the loose pulley M, so that the machine will stop, but when the lever L is depressed by the foot the arm L^5 L^6 will be thrown up out of the way of the dog N^3 N^4, leaving it (the dog) free to catch and remain in the notch M^2, thus causing the machine to operate.

The arm L^5 L^6 is also so arranged in relation to the brake-segment N^2 that the brake at L^5 will begin to act on N^2, and thus check the motion of the wheel N^1 as soon as the wedge L^6 has forced the dog N^4 out of the notch M^2. This brake continues to act and gradually check the motion of the wheel N N^1 until the end N^4 of the coupling-dog reaches the notch N^6 in the arm L^5 L^6, at which point the wheel abruptly stops.

N^7 is a segment-lug attached to the driving-wheel N. (See Figs. 6 and 2.) This lug is placed immediately behind the dog N^3 N^4, and its function is to receive and hold up the arm L^5 L^6, which action prevents the lever L from rising when relieved from the pressure of the foot, as it would otherwise do, and in so doing would act, through the link E^8, lever E^7 E^5, and arm E^4, so as to lift the feeding-foot E before the punch would have time to act on the stock, and thus interfere with the proper action of the machine.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a punching and feeding device for eyeleting-machines, of the hollow punch C, automatic feeding device E, and the table or work-support with the reciprocating under cutter, J, whereby the stock to be cut is first held in position on the table by the hollow punch C, then the under cutter comes up through the table and cuts against the upper cutter, so that the article is cut from both sides simultaneously, all arranged substantially as described, and for the purpose set forth.

2. The combination of the feeding-foot E, provided with spurs *e*, having a vertical as well as a lateral motion, with the auxiliary presser D and its operating device D^1 C^1 C, substantially as described, and for the purpose set forth.

3. The combination of the feeding-foot E, rocker-shaft E^1, and arm E^4 with the bent lever E^5 E^7, link E^8, and starting-lever L, all operating together substantially as described, and for the purpose set forth.

4. In a feeding and punching machine, the combination of the lever L, arm L^5 L^6, with the brake-segment N^2, having an eccentric surface on the wheel N N^1, all operating together substantially as described, and for the purpose set forth.

5. The combination of the coupling-dog N^3 N^4, the wheel N N^1, and the loose pulley M with the inclined arm L^6, the notch N^6, and the lever L L^1 L^5, all the parts operating together substantially as described, and for the purpose set forth.

6. The combination of the wedge-shaped projection L^6 of the arm L^5 L^6 with the coupling-dog N^3 N^4 of the wheel N N^1 and the loose pulley M, all operating together substantially as described, and for the purpose set forth.

7. The combination of the lug N^7 and the wheel N N^1 with the arm L^5 L^6, operating substantially as described, and for the purpose set forth.

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