(Model.) 2 Sheets—Sheet 1.

J. W. BLODGETT.

MACHINE FOR PUNCHING AND STITCHING EYELET HOLES.

No. 345,663. Patented July 20, 1886.

Fig. 1.

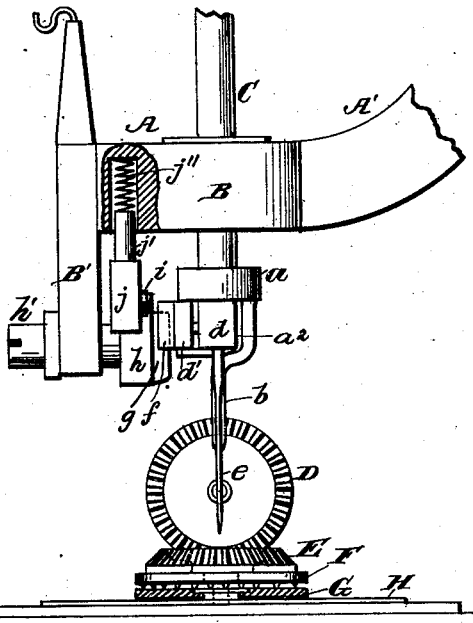


Fig. 3.

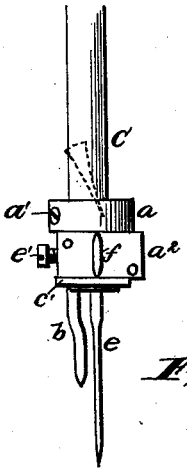


Fig. 4.

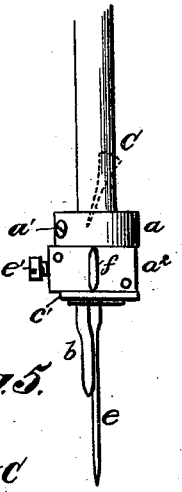


Fig. 5.

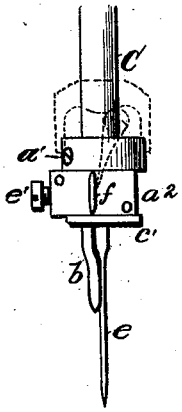


Fig. 2.

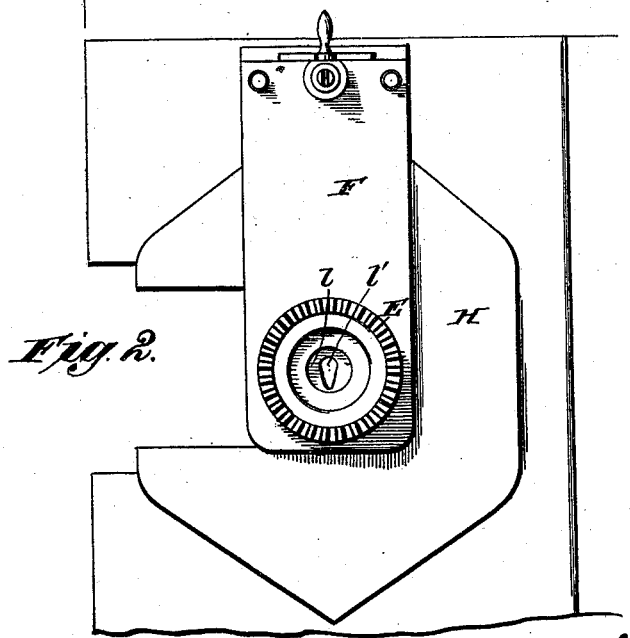
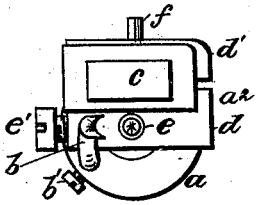


Fig. 6.



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(Model.) 2 Sheets—Sheet 2.

J. W. BLODGETT.

MACHINE FOR PUNCHING AND STITCHING EYELET HOLES.

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Fig. 7.

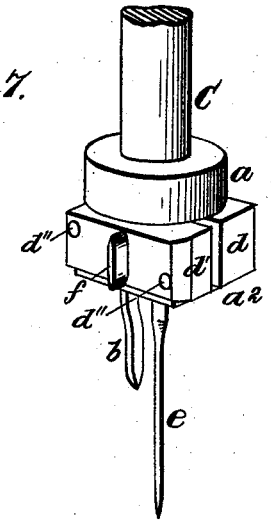


Fig. 8.

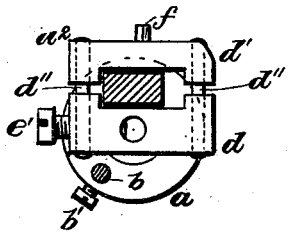


Fig. 9

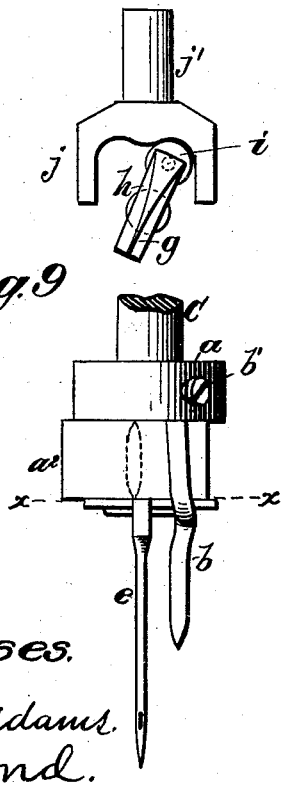


Fig. 10.

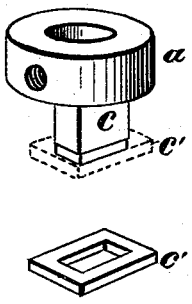
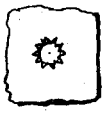


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOHN W. BLODGETT, OF CHICAGO, ILLINOIS.

MACHINE FOR PUNCHING AND STITCHING EYELET-HOLES.

SPECIFICATION forming part of Letters Patent No. 345,663, dated July 20, 1886.

Application filed November 23, 1883. Serial No. 112,652. (Model.)

To all whom it may concern:

Be it known that I, JOHN W. BLODGETT, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Machines for Punching and Stitching Eyelet-Holes, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a detail, being a side elevation of a portion of a sewing-machine head and needle-bar, needle, eyelet-punch, and devices for giving the needle a reciprocating movement, showing also a portion of the table of the machine and the devices for clamping the cloth or material; Fig. 2, a top or plan view of a portion of the bed-plate with the cloth-clamping devices thereon; Fig. 3, a detail elevation of the needle and eyelet-punch, showing the needle moved laterally away from the punch; Fig. 4, a similar view showing the needle moved laterally toward the punch; Fig. 5, a view similar to Fig. 4, showing by dotted lines the fork which engages the pivoted tongue or guide-flange; Fig. 6, a bottom plan view of Fig. 3; Fig. 7, a perspective view of the needle, punch, and attaching devices; Fig. 8, a sectional view taken on the line *x x* of Fig. 9; Fig. 9, a view similar to Fig. 7, looking at the opposite sides of the needle, punch, and attaching devices; Fig. 10, a detached perspective view of the collar having a pendent bar for supporting the slide carrying the needle; Fig. 11, a plan view of a stitched eyelet-hole.

This invention has for its object to provide novel mechanism for punching and stitching eyelet-holes in cloth or other material; and it consists in the construction and combination of devices hereinafter described, and pointed out in the claims.

In the drawings only so much of a complete sewing-machine as is necessary to show the arrangement and location of the devices comprising this invention is represented.

A represents a head on the end of an arm, A′, of a sewing-machine.

B is a block or support having a downwardly-projecting arm or portion B′, the main portion B being provided with a slot or opening for the passage of the head A, to which the block or support B is firmly secured by set-screws or otherwise.

C is the needle-bar passing through the head A, and operated to have a vertical reciprocating movement, as usual. The lower end of the needle-bar C has firmly secured thereto by a set-screw, *a′*, a ring or collar, *a*, from the under face of which, when attached, there depends a bar or pendant, *c*, having a cross-piece or head, *c′*, between which and the under face of the ring or collar is formed a channel or space on all sides of the bar or pendant *c*, as shown in Fig. 8. This pendant *c* supports a slide, a^2, formed of two sections or halves, *d d′*, which are placed on each side of the pendent bar *c*, and secured by pins or set-screws *d″*. Each section of the head or slide a^2 has a vertical longitudinal opening, which, when the slide is on the pendant *c*, allows of a lateral or reciprocating movement of the slide to the extent required to give the needle its throw laterally. The needle *e* has its shank secured in the section *d* of the slide by a set-screw, *e′*, the end of which screw comes in contact with the shank of the needle and holds it firmly. The rear face of the section *d′* of the slide has a vertical tongue or flange, *f*, which engages with the alternate sides or edges of the tongue or guide-flange *g* on the pivoted tappet or guide *h*, which tappet or guide is pivotally supported at its lower end, so that its upper end is free to vibrate and change its position as the tongue or flange *f* engages with the opposite sides of the tongue *g* with each alternate vertical movement of the needle-bar. The upper end of the tappet or guide *h* is located between the arms or sides of the fork *j*, so that the limit of its vibration is controlled by the fork, and in order to present a slight resistance and a retention of the head on either side of the fork the upper face thereof has an incline from each side toward the center, and with such inclines a roller, *i*, located in the upper end of the tappet or guide engages, which roller facilitates the carrying over of the tappet or guide from side to side as the apex of the incline is passed, and also prevents too much resistance to the vibrations of the tappet or guide in changing position. The fork *j* is attached to the lower end of a rod, *j′*, the upper end of which projects up into

the head B, and is acted upon by the spring j'', so as to hold the head or fork j down, and at the same time allow it to rise readily with the vibrations of the tappet or guide h. This fork j, with its spring j'', furnishes a support for the upper end of the tappet or guide, by which its movements in either direction are limited, and at the same time allows an upward yield for the passage of the tappet or guide with sufficient pressure to hold the tappet or guide against accidental displacement, and in proper relation to have its upper end changed, which latter result is also partly due to the support furnished the upper end by the fork. The pivot for the tappet or guide h is furnished by the end of a screw, h', the body of which passes through the lower end of the portion B'' of the support B, and, as shown, a washer, h'', is provided, located around the pivot h' between the arm B' and the tappet or guide, to furnish a small amount of friction. The ring or collar a has secured thereto by a set-screw, b', an eyelet-punch, b, the shank of which passes up into a suitable hole in the collar, to be engaged by the end of the set-screw and hold the eyelet-punch firmly in position. This eyelet-punch has its body bent or curved to bring its acting portion to stand in planes parallel with the needle, and this acting portion, as shown, has that face of it which is adjacent to the needle hollowed out or cut away, so that such acting portion will readily pass through the material, and this acting portion is provided with a point to cause the punch to pass readily. This punch is shorter than the needle, so that it does not enter the material until after the needle has partly passed through, by which means the drawing of the cloth or material is prevented as the punch passes through.

D is a vertical beveled gear-wheel.

E is a horizontal beveled gear-wheel.

F is a plate to which the wheel E is attached.

G is a secondary plate located below the plate F.

H is a plate secured in any suitable manner to the bed-plate I of the machine, to which plate H the plate G is pivotally attached, the pivot being located around the center of motion of the wheel E, and being so formed as to hold the plate G connected with the plate H, and at the same time allow the plate G to revolve or be carried around by the wheel E. At the center of the wheel E, extending through the plates G and H, is a circular hole, l, and through the plate H is an opening or slot, l', which openings $l\,l'$ are located in line with the needle-bar, so that as the needle and the eyelet-punch descend they will pass through the material and the opening l', and this opening l' is elongated to allow the needle to pass at the opposite ends of its lateral movement. The wheel D is to be given an intermittent rotary movement from the vertical movements of the needle-bar by an arrangement of devices similar to those shown in the patent granted to me April 25, 1882, No. 256,871, and the two plates G and H are to be held together by devices similar to those shown in my said patent for holding the cloth-clamping plates of that patent. The upper plate, G, is to have a circular flange on its under side, the edge of which has serrations or teeth for insuring a firm grip on the cloth or material, by which it will be carried with the plates.

The operation is as follows: The material is placed between the clamping-plates G and H at the proper point to bring the plates where the eyelet-hole is to be made centrally of the hole l, over and in line with the slot l', and there held by forcing the plate G down through the clamping devices. (Not shown.) The machine is then started, and with each descent of the needle-bar the needle and the eyelet-punch are forced through the material, the punch descending always in the same vertical plane and passing through the enlarged end of the slot l', but the needle with each alternate descent passing down in different vertical planes, one adjacent to the punch and the other removed therefrom, the two positions or planes of descent in relation to the punch being shown in Figs. 3 and 4, the result being that the thread is overcast around the edge of the eyelet-hole, as shown in Fig. 11. This change in the position of the needle is effected through the tongue or guide f on the sliding head, carrying the needle and reversible tappet or guide h, the guide h being in the position shown in dotted lines in Fig. 4. As the needle ascends, the tongue or guide f, coming in contact with the upper face of the tappet or guide g, will carry the sliding head in the direction to bring the needle adjacent to the eyelet-punch, and as the tongue passes down this side of the tappet or guide, and passes from the lower end thereof, the needle will be to the limit of its movement in that direction. The ascent of the needle brings the tongue f in contact with the under face of the tappet or guide, throwing the tappet or guide at its upper end over into the position shown by the dotted lines in Fig. 3, so that on the next descent of the needle the tongue or flange f will pass down what is now the upper face, but was the under face of the tappet or guide, carrying the sliding head away from the eyelet-punch, bringing the needle into the position shown in Fig. 6, as the tongue leaves the lower end of the tappet or guide. The eyelet-punch and needle are operated simultaneously, and by the same means, so that the eyelet-hole is being punched at the same time it is being worked, and the two devices thus working together make an eyelet-hole more uniform and even, without any wrinkling or gathering of the material around the eyelet-opening, as is apt to be the case where the hole is first punched and then worked, and the form of the eyelet-punch is one which forces its way through the material without jamming or compressing it, as is the case with the hollow or solid punch commonly used for making

holes. By using the fork *j*, operated by a pressure-spring and straddling the tappet or guide, the guide is free to swing at its upper end, and at the same time such end has a firm support in its inclined position at either side of the fork.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. The combination, with a needle-carrying bar of a sewing-machine and a laterally-vibrating needle, of an eyelet-punch carried by said bar at one side of and parallel to said needle, and provided with a pointed lower end and hollowed out on one side, substantially as described.

2. The combination, with the needle-bar of a sewing-machine, of a pointed eyelet-punch hollowed out at one side, a needle, a needle-carrier, and means for reciprocating the needle-carrier laterally, substantially as described.

3. The combination, with the needle-bar of a sewing-machine, of a pointed eyelet-punch hollowed out at one side and connected with said bar, a needle, a needle-carrying slide arranged on the needle-bar at one side of the shank of the punch, and means for reciprocating the needle laterally, substantially as described.

4. The combination, with the reciprocating needle-bar of a sewing-machine, of an eyelet-punch connected with said bar, a needle, also carried by said needle-bar, and means for operating the needle and the punch, whereby to punch and work an eyelet-hole, substantially as described.

5. The combination, with the vertically-reciprocating needle-bar of a sewing-machine, of an eyelet-punch connected with said bar, a needle carried by said bar, and means for reciprocating the needle laterally, substantially as described.

6. The combination of an eyelet-punch, *b*, laterally-reciprocating needle *e*, and needle-bar C with a cloth-holding clamp and means to produce a rotary movement around a center in line with the center of the needle-bar, for punching and working an eyelet-hole, substantially as specified.

7. The combination of a vertically-reciprocating needle-bar, an eyelet-punch, a laterally-vibrating needle, a sectional needle-carrying slide provided with a flange, *f*, a pivoted tappet having a tongue or flange, *g*, and the yielding guide-yoke *j*, substantially as described.

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