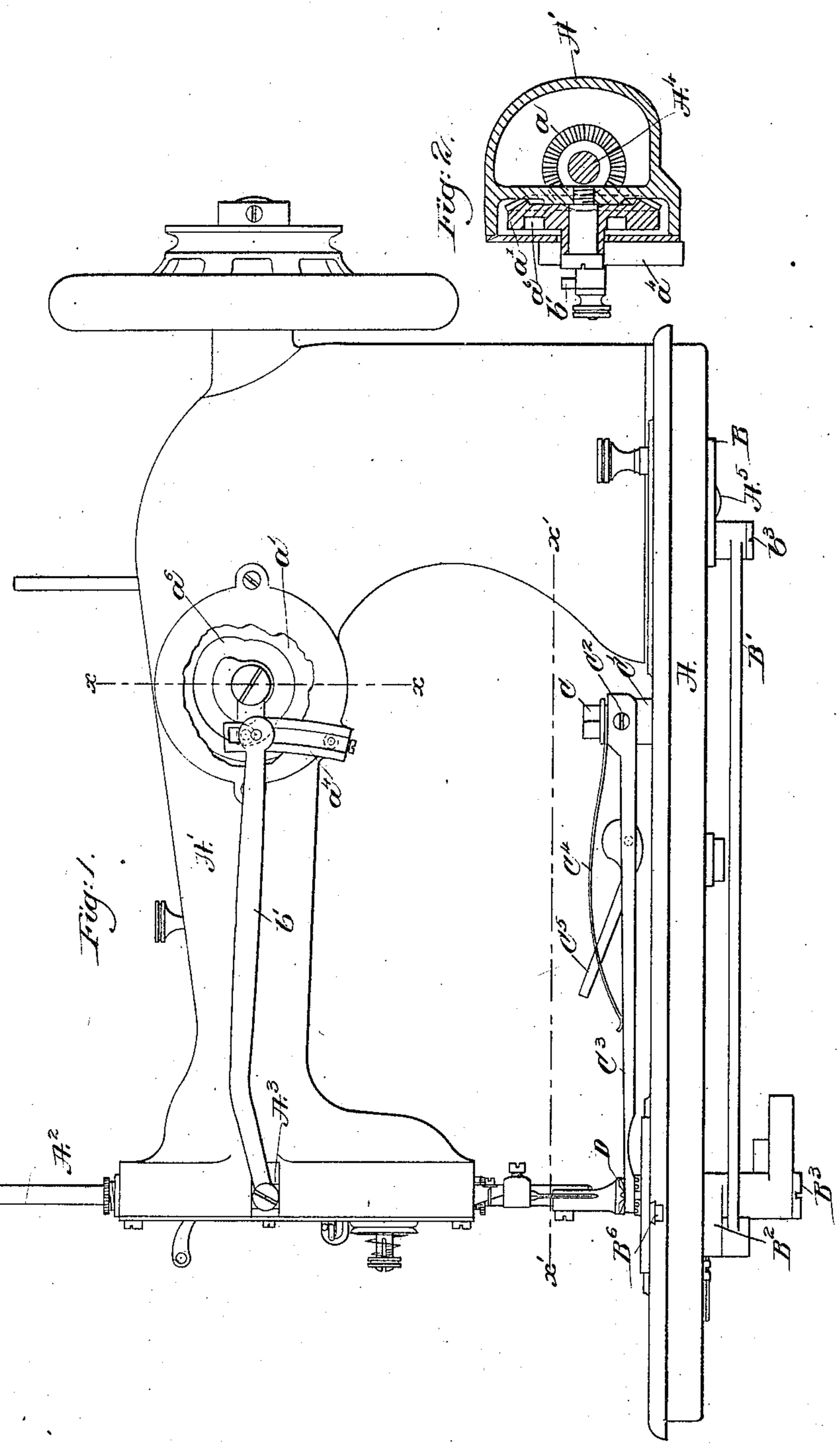
(No Model.) 2 Sheets—Sheet 1.

A. SHEA.

SEWING MACHINE FOR SECURING STAY CORDS AND THRUM ENDS.

No. 405,228. Patented June 11, 1889.



Witnesses.
Fred. S. Greenleaf
Frederick L. Emery.

Inventor:
Albert Shea
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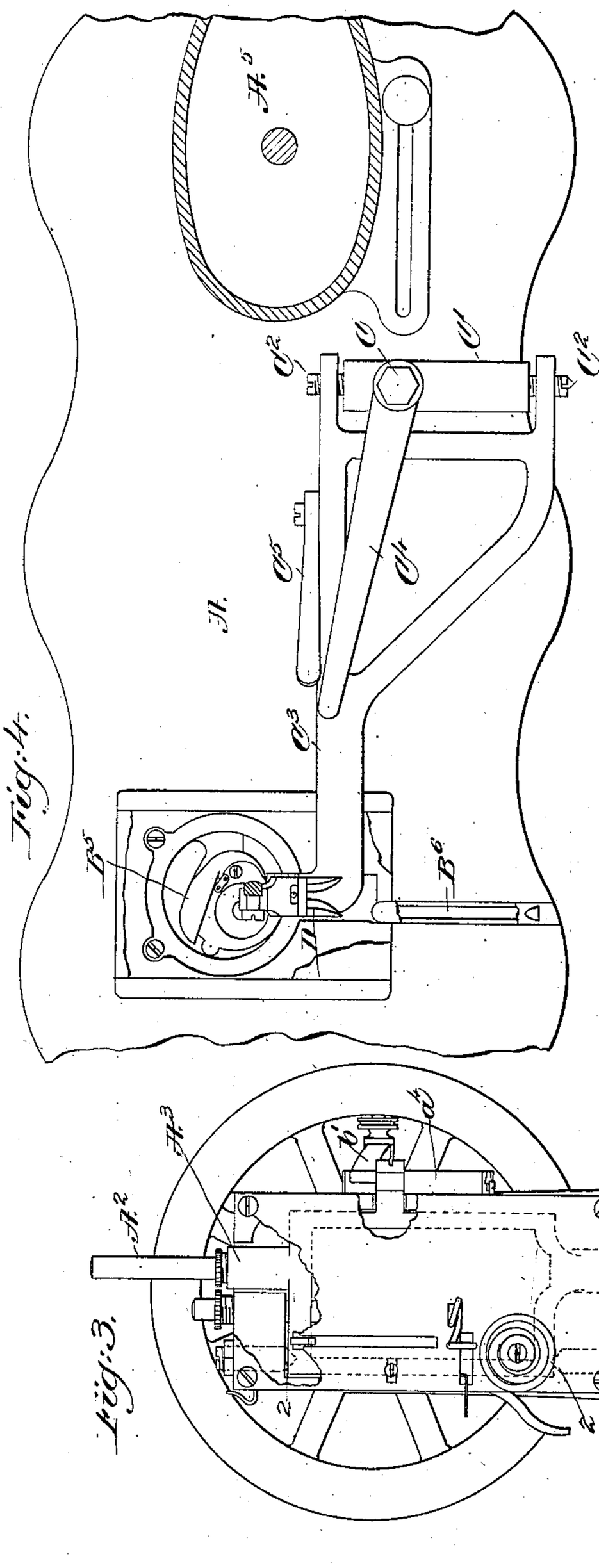

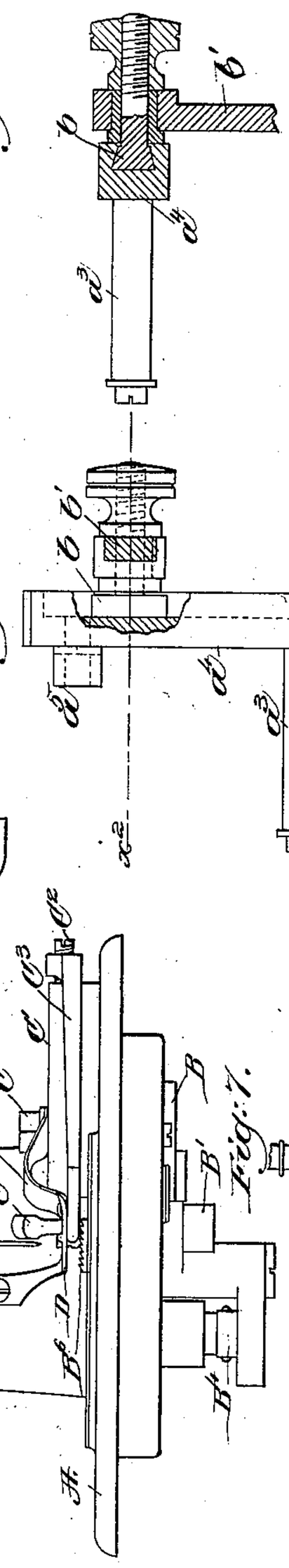

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UNITED STATES PATENT OFFICE.

ALBERT SHEA, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO JOHN REECE, OF SAME PLACE.

SEWING-MACHINE FOR SECURING STAY-CORDS AND THRUM ENDS.

SPECIFICATION forming part of Letters Patent No. 405,228, dated June 11, 1889.

Application filed April 11, 1888. Serial No. 270,328. (No model.)

To all whom it may concern:

Be it known that I, ALBERT SHEA, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Sewing-Machines for Securing Staying and Thrum Ends, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a machine by which to easily overstitch and secure to one side of a piece of material a stay-cord and thrum ends.

In accordance with my invention an eye-pointed needle is made to enter the material and emerge therefrom at one and the same side thereof, and the loop of thread carried by it is entered by a shuttle or under thread carrier, the said material being bent at right angles to the direction of feed and at right angles to the stay-cord between the inner ends of the button-holes, the said material being bent over a guide or bar held in a yielding manner—preferably by a spring—the presser-foot resting upon the said material on the said guide or bar, while the feeding device—preferably a serrated dog—engages the material at the under side of the said guide or bar and moves it, the needle and the feeding device and guide or bar having a movement one with relation to the other in such manner that the needle at one thrust or descent enters the material and emerges therefrom at one and the same side, and at one side the stay-cord and thrum ends, the next descent or thrust of the needle performing the same operation, but at the opposite side of the stay-cord and thrum ends.

My invention consists, essentially, in the combination, with stitch-forming mechanism and feeding mechanism, of a bar or guide interposed between the feed and presser-foot, and over which the material to be stitched is bent, the needle forming part of the stitching mechanism in its descent passing alternately into and out from the same side of the material at first one and then at the opposite side of the stay-cord and thrum ends to operate substantially as will be described; also, in a sewing-machine for securing the stay-cord and thrum ends to button-pieces, the following instrumentalities, viz: an eye-pointed thread-carrying needle and complemental stitch-forming mechanism, means to collect the thrum ends parallel to and about the stay-cord, a guide or bar having its effective end at right angles to the direction of the feed, and a feeding dog or device to engage and move the material, the needle in its operation entering the material and emerging therefrom at one and the same side thereof, and at one side of the collected stay-cord and thrum ends, and at its next descent entering said material in like manner, but at the other side of the collected stay-cord and thrum ends, the combination being and operating substantially as will be described.

Figure 1 is a front side elevation of a sufficient portion of a sewing-machine with my improvements added to enable my invention to be understood. Fig. 2 is a partial section in the line *x*, Fig. 1. Fig. 3 is a left-hand end elevation of the machine shown in Fig. 1, partially broken out. Fig. 4 is a partial top view of the bed of the machine below dotted line *x'*, chiefly to show the guide or bar upon which rests the material to be stitched. Fig. 5 is an enlarged detail of the locking-arm, instrumental in vibrating the needle-carrying head or block; Fig. 6, a section of Fig. 5 in the line x^2; Fig. 7, a detail showing the end of the guide or bar with a piece of material bent over it in condition to be penetrated by the descending needle; and Fig. 8 is a detail showing the shape of the front end of the pivoted guide or bar C^3.

The bed-plate A, the overhanging arm A', the needle-bar A^2, adapted to be reciprocated in the needle-bar-guiding block or head A^8, pivoted at 2 upon point-screws, the main shaft A^4, extended through the overhanging arm to actuate the needle-bar, the vertical shaft A^5, (shown in Fig. 1,) it having at its lower end a disk B, the connecting-rod B', attached to the rocking lever B^2, having its fulcrum at B^3 and connected with an arm B^4, fast upon the shaft, having at its upper end the shuttle-carrier B^5, (see Fig. 4,) the feed-bar B^6, with the exception of the direction in which its teeth point, and the toothed gear *a* on the shaft A^4, the

cam-wheel a', having at its rear side bevel-teeth engaged and driven by the teeth of the bevel-gear a, the rock-shaft or stud a^3, having a slotted arm a^4 and a stud a^5 to enter the cam-groove a^6 in the cam-wheel a', and a block b, adjustable in the slotted arm a^4, and the link b', connecting the said block with the vibrating head A^3, in which the needle-bar A^2 slides, are all as in the Singer overstitching machine commonly found in the market, so need not be herein further described, it being understood, however, that the head carrying the needle-bar is vibrated in the arc of a circle about its pivotal point 2 prior to the descent of the needle in making each stitch, so that the needle penetrates the material in such manner as to make what is well known as an "overstitch." To adapt this machine to perform the special work of securing stay-cords and thrum-ends to button-hole pieces for boots and shoes by a blind stitch, which will not penetrate the material, I have had to change the machine referred to by removing the crank-pin b^3, carried by the disk B to a point diametrically opposite that at which it stands in the machine referred to, and in place of the usual feed-dog I have applied to the machine another feed-dog exactly like it in every particular, except that the feeding-points are extended toward the operator rather than away from him, as in the said machine, these changes enabling the feed to engage the material and feed toward the operator rather than away from the operator. To the body of the machine so altered I have secured by a bolt C a block C', upon which, by pivot-screws C^2, I have pivoted a guide or bar C^3, the forward end of which is bent, as shown in Fig. 8, to leave a short surface rounded at its end and standing substantially at right angles to the direction of the feed movement, the forward end of the said bar resting upon the material directly over the feed-bar, the said material being bent around the end of the said bar C^3 and receiving upon it the presser-foot D. The bar C^3 is acted upon by a spring C^4, which normally keeps the front end of the bar pressed down toward the feed, the lever C^5 having a cam-like end, so that when turned over from its position, Fig. 1, fully to the right it acts to lift the free end of the bar C^3 away from the feed to permit the work to be applied.

In the stitching of button-holes in button-hole pieces for boot and shoe work the button-holes are overstitched, and the overstitching going around the edges of the button-hole also cover and inclose at the under side of the material a stay-cord, the said stay-cord being permitted to extend from one to the next button-hole of the series, it passing along and connecting the inner ends of the button-holes.

In the stitching of button-holes, as described, it is customary to use two threads—one carried by a needle and the other by a shuttle—and when one button-hole has been stitched and the material is to be moved into position to have a second button-hole stitched the needle-thread is cut off, leaving an end attached to the work; but the shuttle-thread is not cut, it being left to extend parallel with the stay-cord, as described, to the next button-hole. After the button-holes have been completed in the button-piece, it becomes necessary to confine the stay-cord and the end of the needle-thread, which are denominated "thrum ends," to the under side of the material, and it is the object of my present invention to do this automatically in a novel manner. A button-hole piece having had its series of button-holes overstitched, as described, will be taken to the machine herein described, and the button-hole piece will be folded at one end over the end of the guide or bar C^3 parallel to the length of the button-holes, and so as to leave the stay-cord substantially in the line of the descent of the needle, the main body of the material lying above the guide C^3 and between it and the presser-foot D.

It will be noticed in Fig. 4 that the front end of the presser-foot is cut out, leaving a V-shaped opening, which by its converging edges acts, as it were, to bring into the same line the stay-cord and thrum ends. In this condition the machine will be started, and the needle e, it being supplied in usual manner with thread, will pass through the material so folded and emerge from the same side thereof, but without penetrating through to the opposite side of the material, and the loop of needle-thread will be locked in usual manner by the shuttle-thread. Then the needle will rise, the feed will act to move the material for the length of a stitch, and the needle-bar-carrying head will be swung upon its pivot, so that at the next descent of the needle it will again penetrate the material in like manner, but at the opposite side of the stay-cord and thrum ends, and a stitch will be made, this operation being repeated until the stay-cord and thrum ends throughout the length of the button-piece have been covered by stitches made from the needle and shuttle thread.

The method of operation herein described is more fully explained in and made the subject-matter of an application, Serial No. 268,321, for United States Patent, filed on the 24th day of March, 1888, and the button-piece such as herein described forms the subject-matter of a patent of the United States, No. 380,731, dated April 10, 1888.

The guide C^3 has to be adjusted forward and backward with relation to the needle, according to the depth that it is desired the needle shall penetrate into the material from the under side of the button-piece, and to accommodate for this the adjusting-screws c^2, which are threaded into the ears of the bar or guide C^3 and rest against the block C', may be rotated, one being turned out as the other is turned in.

The shape of the front end of the bar C^3, over which the button-piece is folded, is best shown in Fig. 8.

I claim—

1. In a machine for stitching stay-cords and thrum ends, stitch-forming mechanism and feeding mechanism to produce an overseaming-stitch, the feeding-bar having its teeth formed to move the material toward the toe of the presser-foot, combined with a presser D and thrum-gathering surfaces, and with the bar or guide C^3 interposed between the feed and presser-foot and over which the material to be stitched is bent, as described, whereby the needle at one descent is made to enter and emerge from the same side of the material at one side of the stay-cord and thrum ends, and at its next descent to enter and emerge from the same side of the material, but at the opposite side of the said stay-cord and thrum ends, to operate substantially as described.

2. In a sewing-machine for securing the stay-cord and thrum ends in the stitching of button-hole pieces, the following instrumentalities, viz: an eye-pointed thread-carrying needle and complemental stitch forming and feeding mechanism to produce an overseaming-stitch as desired, means to collect the thrum ends parallel to and about the stay-cord, a guide or bar having its effective end at right angles to the direction of the feed of the material, the needle in its operation entering the material and emerging therefrom at one and the same side thereof, and at one side of the collected stay-cord and thrum ends, and at its next descent entering said material in like manner, but at the other side of the collected stay-cord and thrum ends, the combination being and operating substantially as described.

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

ALBERT SHEA.

Witnesses:
G. W. GREGORY,
C. M. CONE.