

(No Model.)

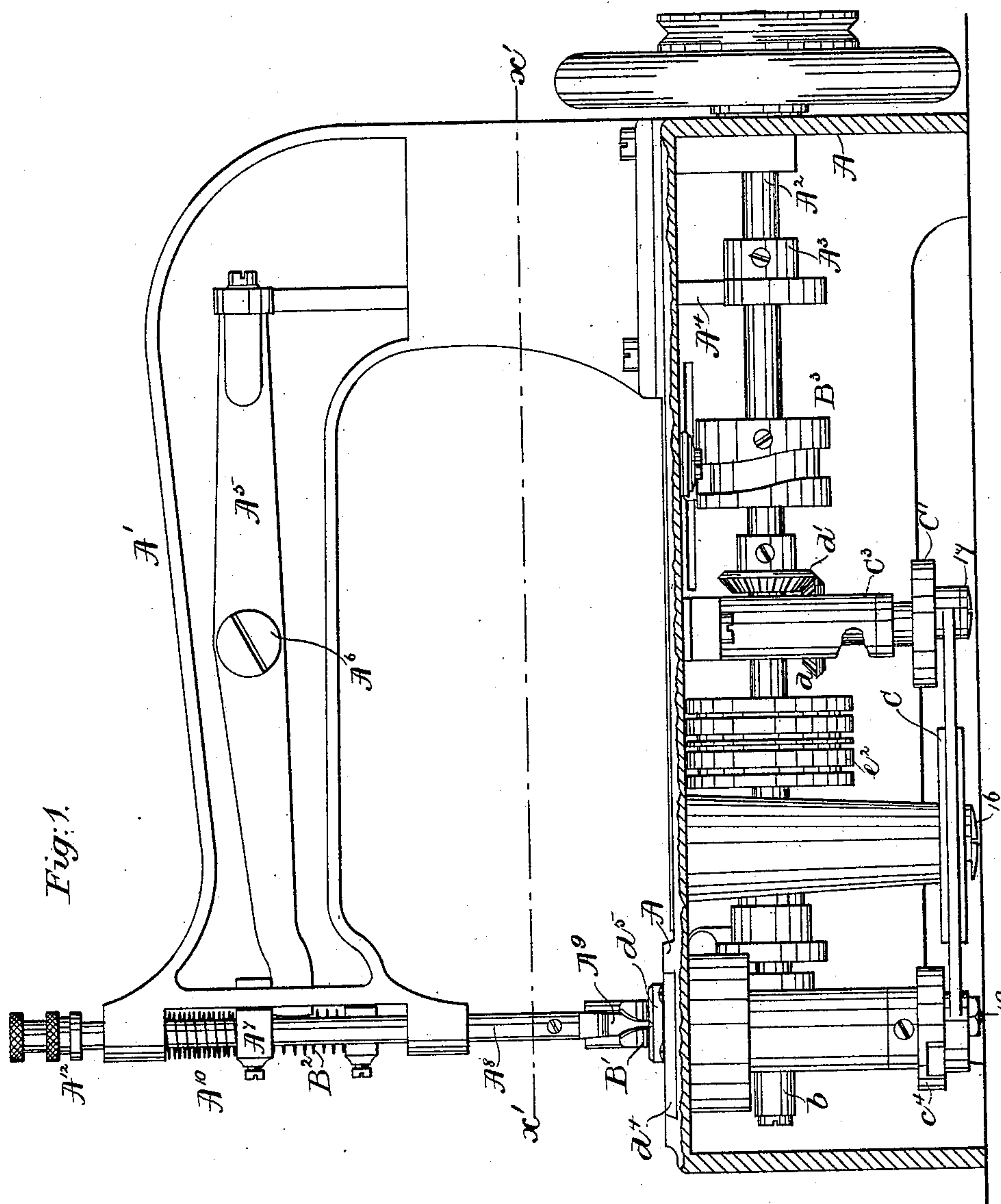
3 Sheets—Sheet 1.

J. REECE.

SEWING MACHINE FOR FINISHING BUTTON HOLE PIECES.

No. 404,863.

Patented June 11, 1889.



Witnesses:
Edgar A. Godden
Frederick L. Emery.

Inventor:
John Reece,
by Crosby & Longory
Attys.

(No Model.)

3 Sheets—Sheet 2.

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Fig:2.

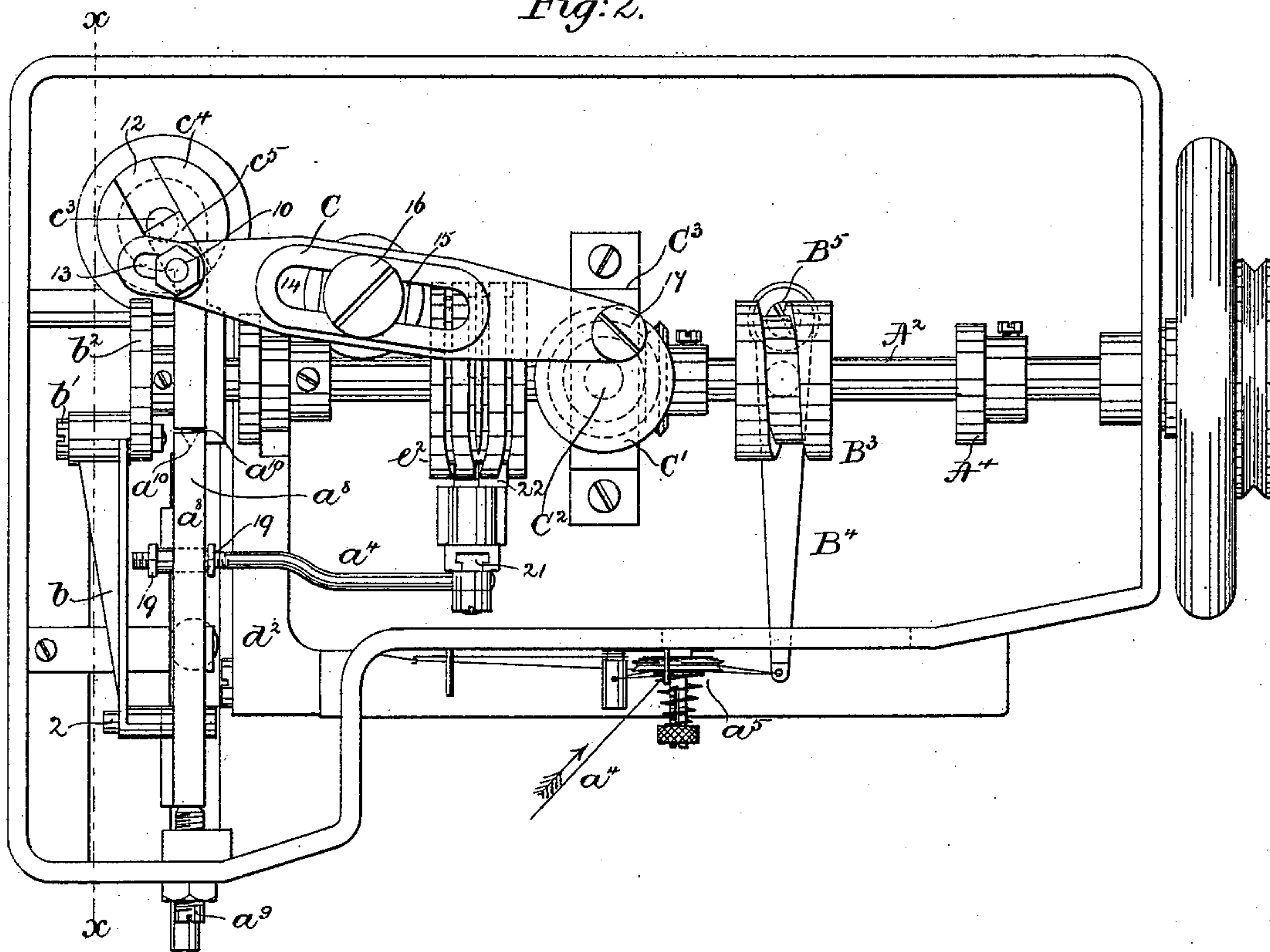
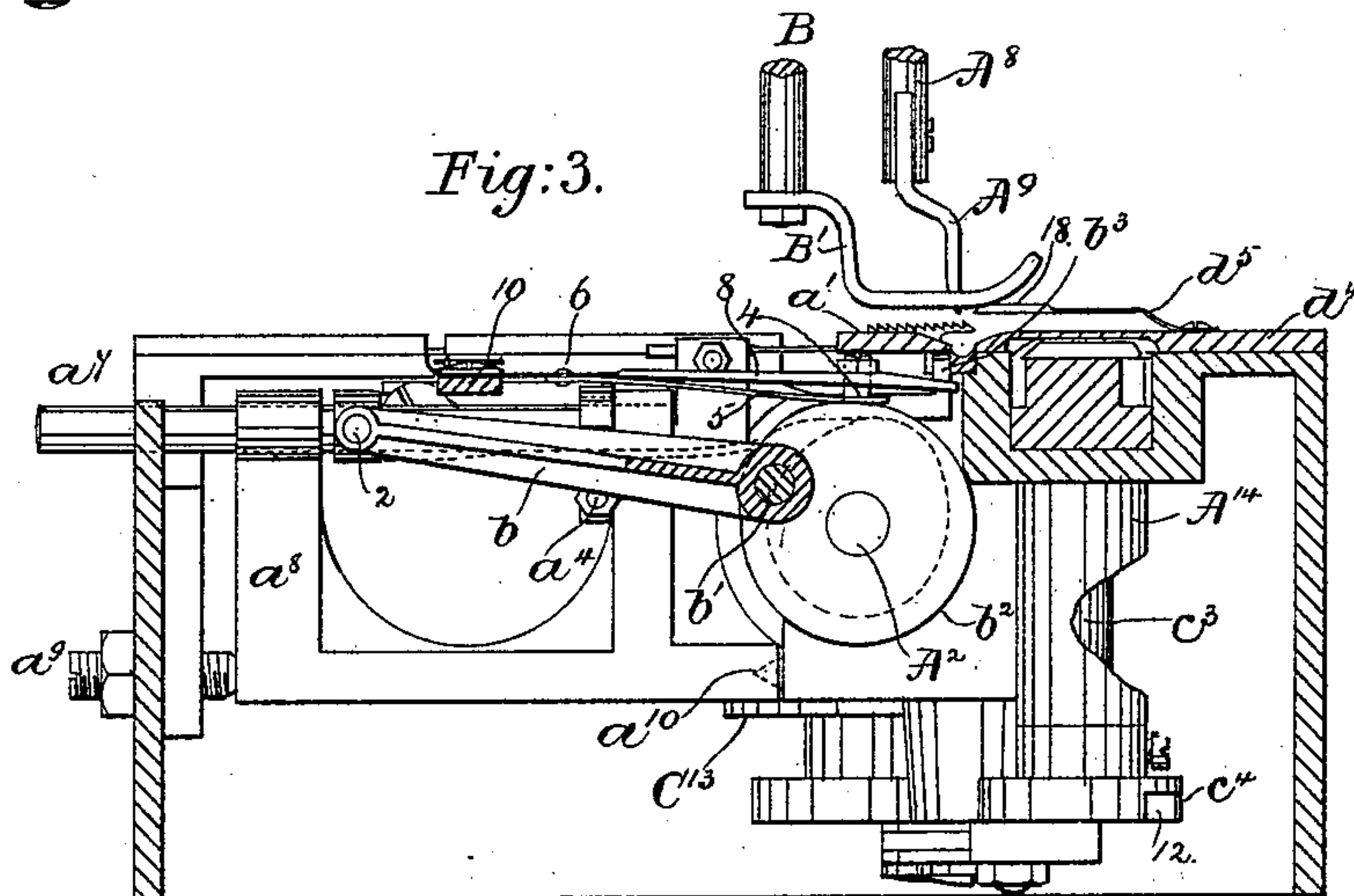


Fig:3.



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(No Model.)

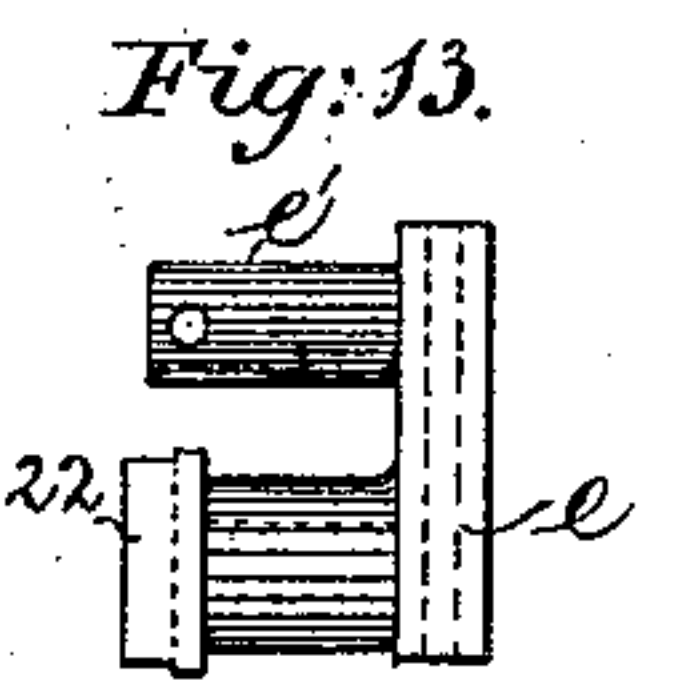
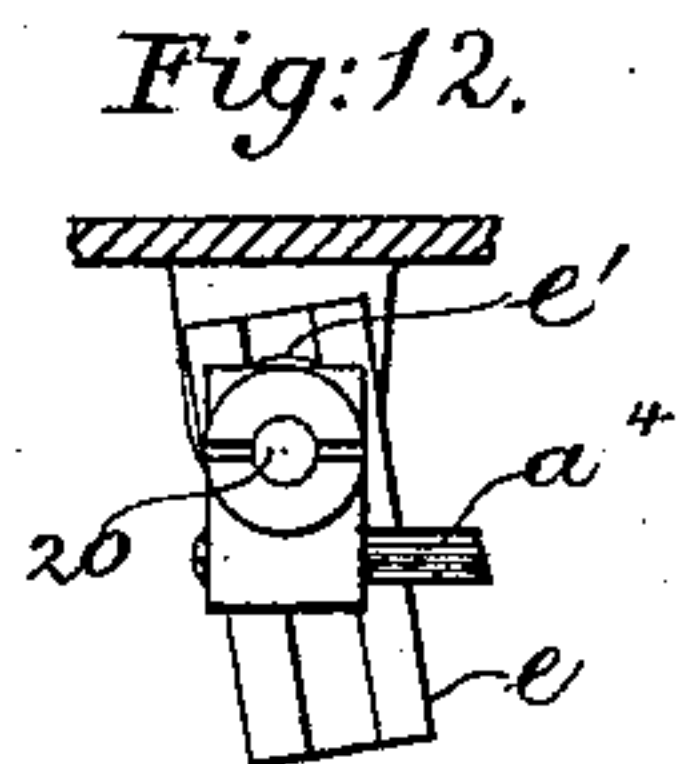
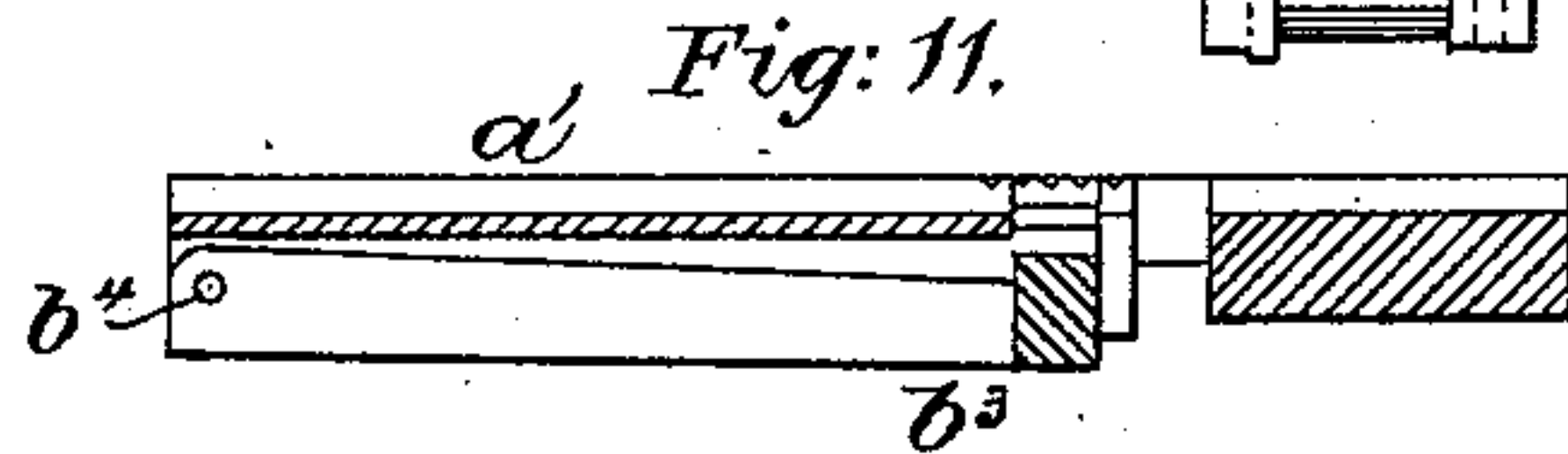
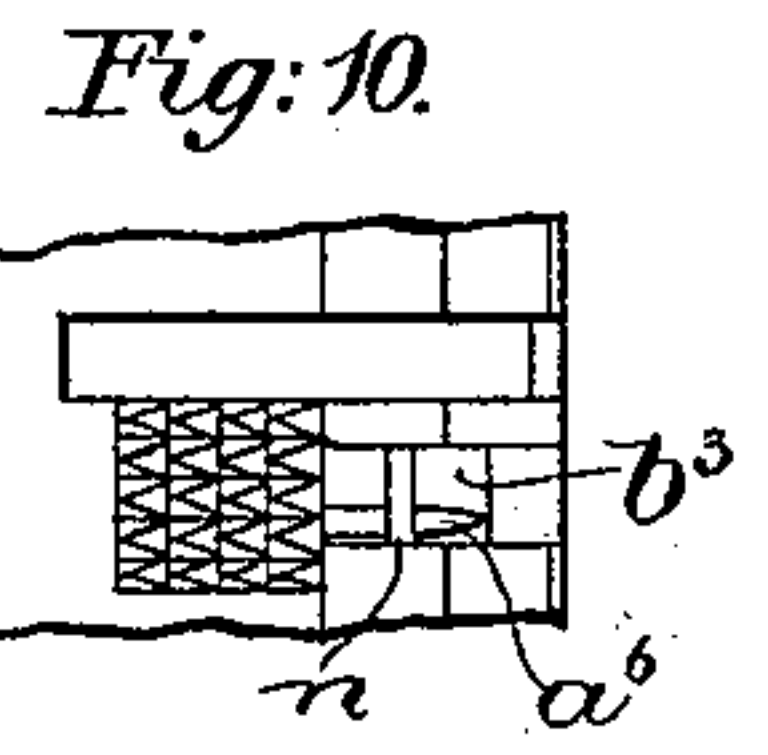
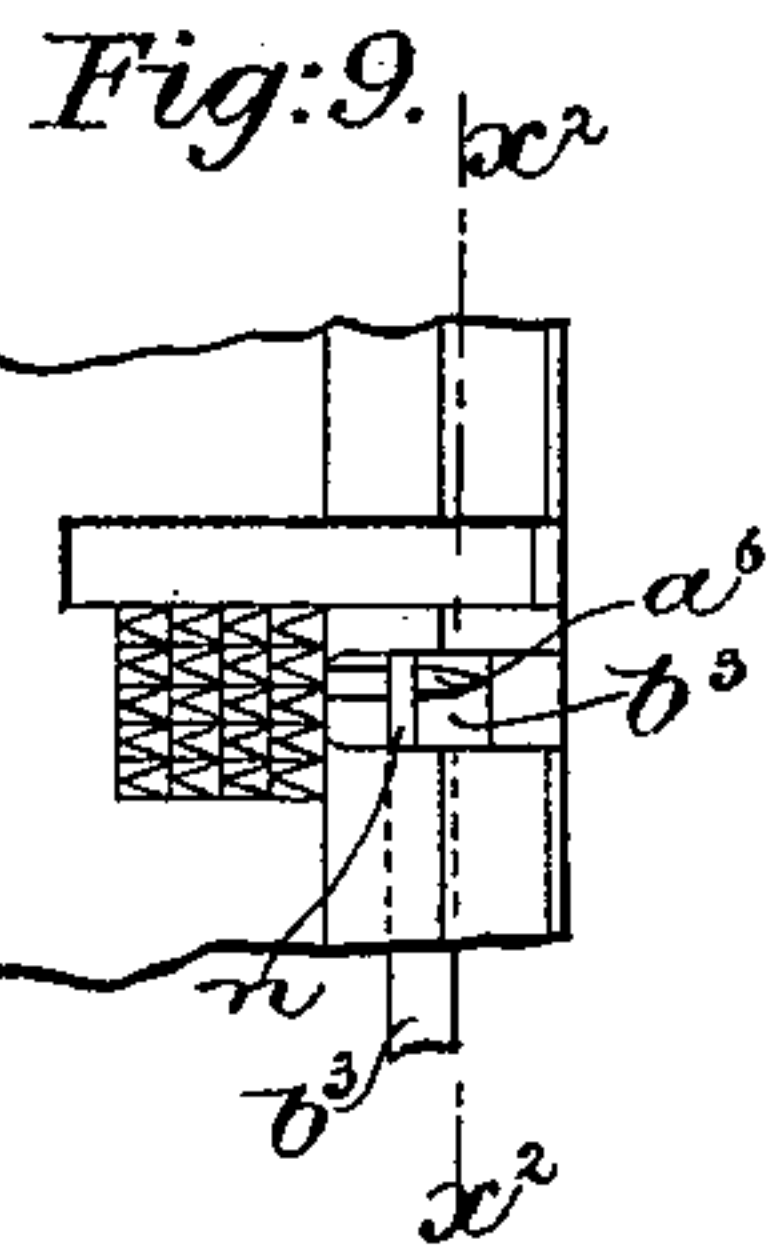
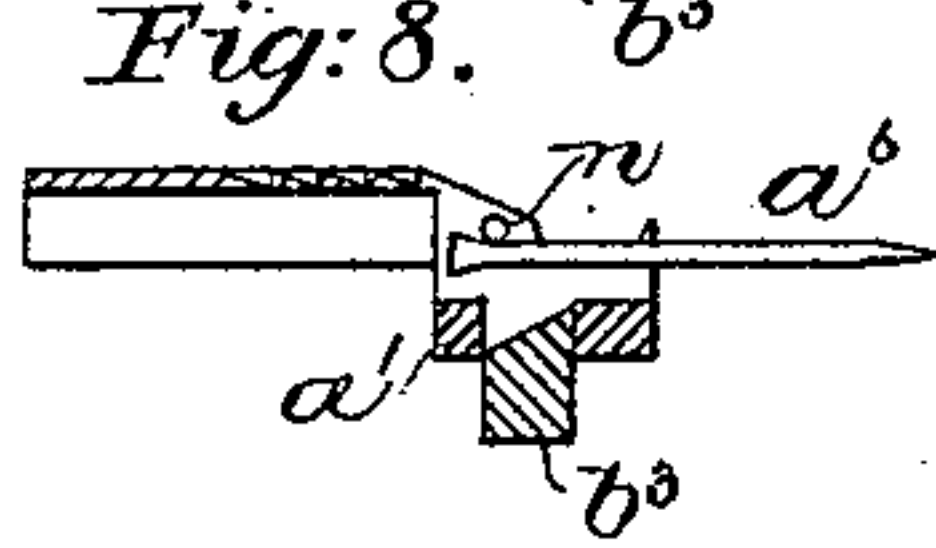
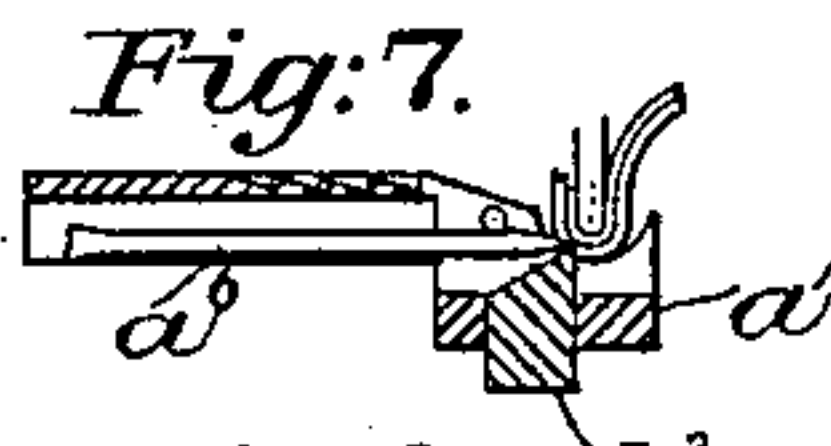
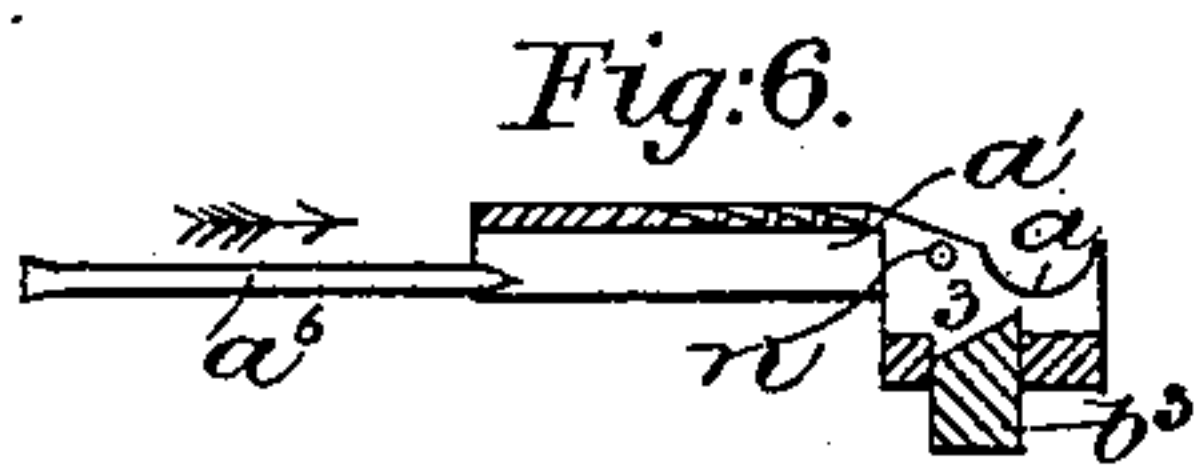
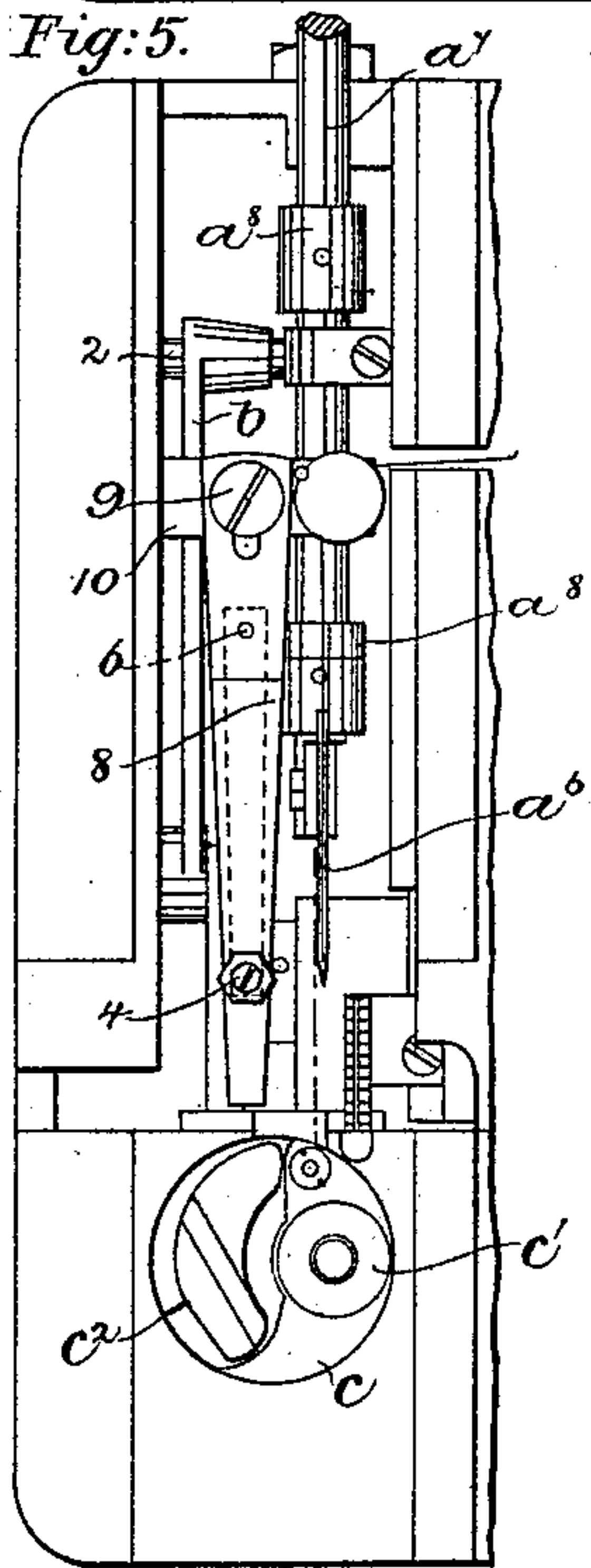
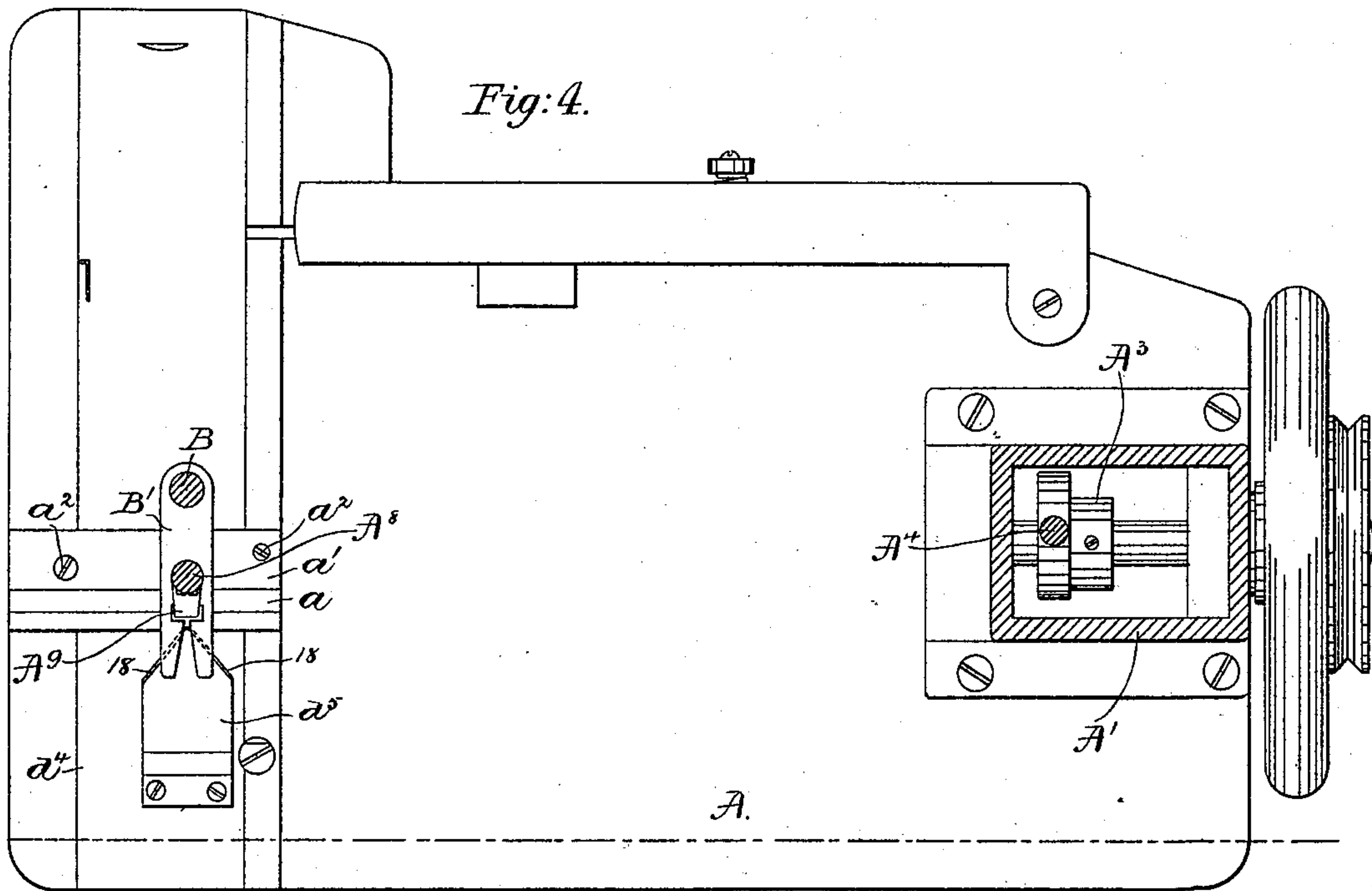
3 Sheets—Sheet 3.

J. REECE.

SEWING MACHINE FOR FINISHING BUTTON HOLE PIECES.

No. 404,863.

Patented June 11, 1889.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN REECE, OF BOSTON, MASSACHUSETTS.

SEWING-MACHINE FOR FINISHING BUTTON-HOLE PIECES.

SPECIFICATION forming part of Letters Patent No. 404,863, dated June 11, 1889.

Application filed November 1, 1888. Serial No. 289,758. (No model.)

To all whom it may concern:

Be it known that I, JOHN REECE, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Sewing-Machines, 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 to improve that class of sewing-machines wherein the material to be stitched is bent just before it is to be penetrated by the needle, in order that the needle may enter and its point emerge from the same side of the material to thereby produce what is called a "blind stitch."

The machine herein to be described shows my invention as adapted to stitch down what is known as "thrums" in the production of button-holes in button-pieces for boots or shoes, the machine being adapted to produce the stitch and to secure the thrums in the method especially described in United States Patent No. 380,731.

My invention consists in the combination, with a grooved or slotted throat-plate, a reciprocating bender to bend the material into the groove or slot of the throat-plate, and an eye-pointed needle and complementary stitch-forming mechanism, of devices to reciprocate the needle in the direction of its length and transversely to the said groove or slot, and devices to impart to the needle a lateral motion in opposite directions in a plane substantially at right angles to the bender-actuating plane at each alternate thrust, and feeding mechanism acting to move the material in the direction of the needle's length; also the combination, with an eye-pointed needle, complementary stitch-forming mechanism, and a bender, of a slotted throat-plate with which the bender co-operates to bend the material prior to the formation of each stitch, a needle-guide and devices to vibrate it in a plane substantially at right angles to the needle-actuating plane to prevent the point of the needle glancing from the material, and feeding mechanism to operate substantially as will be described.

Other features of my invention will be described in the specification and claimed in claims at the end thereof.

Figure 1 is a side elevation, with the bed-

plate broken out, of a sewing-machine embodying my invention; Fig. 2, an under side view thereof; Fig. 3, a partial section in the line x , Fig. 2. Fig. 4 is a section below the line x' , Fig. 1. Fig. 5 is a view of the left-hand end of the machine shown in Fig. 4, with the cover-plate removed. Figs. 6 to 8, inclusive, are elevations showing the needle and its guide in different positions with relation to the throat. Fig. 9 is a top or plan view, enlarged, of the bed-plate, feed-bar, and the needle and its guide with a part of the throat. Fig. 10 is a like view with the needle swung aside to enter the material at the opposite side of the stay-cord and thrum ends. Fig. 11 is a section in the line x^2 , Fig. 9. Fig. 12 is a detail to be referred to; and Fig. 13, a side elevation of the arm e and swivel shoe or stud.

The bed-plate A, having the overhanging arm A', is and may be of usual or suitable shape to support the working parts.

The main shaft A², driven in any usual manner, has an eccentric, as A³, which, through an eccentric-strap and band A⁴, vibrates the lever A⁵, pivoted at A⁶, the forward end of the said lever engaging a block A⁷, fast upon the bender-bar A⁸, to the lower end of which is secured the bender A⁹, a spring, as A¹⁰, resting at one end of the said block and at its other end against the frame-work, normally acting to throw down the said bender-bar, the point to which the said bender may descend being, however, determined by an adjusting device A¹². (Shown as a nut screwed upon the threaded upper end of the said bender-bar.) The lower point to which the bender descends into the groove a of the throat a' , secured to the bed-plate by the screws a^2 , the more abrupt the bend in the material to be stitched and the deeper the stitch into the said material. The overhanging arm A' guides, in usual manner, the bar B of the presser-foot B', it being normally depressed by a spring B². The shaft A² has on it a cam B³, which actuates the take-up lever B⁴, pivoted at B⁵, the outer end of the said bar (see Fig. 2) having an eye through which is extended the needle-thread a^4 between the usual tension device a^5 and the eye of the reciprocating eye-pointed needle a^6 , secured to the needle-bar a^7 , shown as horizontally placed and as having its bearings in a

yoke a^8 mounted on pivot-points a^9 a^{10} (see Figs. 2 and 3) parallel to the needle-bar. The needle-bar has a collar provided with a stud 2, which is embraced by a link b , the opposite end of which is pivoted on a crank-pin b' , projecting from a disk b^2 , secured to the front end of the shaft A^2 . The needle throat-plate a' is slotted longitudinally at its under side, (see Figs. 3 and 11,) and in the said slot is pivoted the needle-guide b^3 , the pivot being marked b^4 . The needle-guide b^3 , the upturned acting end of which is shown in section in Figs. 6 to 8 and in top view in Figs. 9 and 11, is beveled at one side, as at 3, and the said guide is made to rise and fall in a slot in the bottom of the groove a of the throat-plate a' by means of the cam-shaped periphery of the disk b^2 referred to, the said cam-surface acting, as herein shown, upon a spring 5, connected by a pin 6 to a spring-arm 8 adjustably secured by a screw 9 to a stand 10 of the frame-work, the position of the free end of the said spring being adjustable by or through an adjusting-screw 4, screwed into the arm 8.

The free end of the arm 8 (see Fig. 3) is extended under the needle-guide b^3 , so that the said needle-guide is raised from the position Fig. 8 into the position Fig. 6. As the point of the needle a^6 commences to move toward the material, the said needle-guide, by the time that the point of the needle is about to enter the bent material, (shown only in Fig. 7,) presents its beveled face 3 (see Fig. 6) close to the line of travel of the needle-point, so that the upper edge of the guide touches the needle-point just as it is to enter the material, thus holding or bearing up the point of the needle as it enters the material, thus obviating all liability of the needle to glance as the point of the needle a^6 meets the convexed surface of the bent material, which in the present machine is supposed to be leather. The guide b^3 is gradually lowered from its position Fig. 7 into the position Fig. 8 as the needle is moved into the material, the upper edge of the guide remaining in contact with the needle until the latter enters the material sufficiently to prevent the needle from glancing.

The loop of needle-thread thrown out from the eye of the needle as it emerges from the same side of the material at which it entered is caught, as herein shown, by the point of a shuttle c , having a bobbin c' rotated in a circular race by a driver c^2 at the upper end of a shaft c^3 , mounted in bearings A^{14} , forming part of the framing, the said shaft at its lower end having secured to it a disk c^4 , having a crank-pin 10 carried by a block c^5 fitted in a slot 12 of the disk c^4 . This pin 10 is extended through and made adjustable in a slot 13 of the shuttle-actuating lever C , slotted at 14 to both vibrate and slide on a block 15 held in place by a screw 16, the rear end of the said lever being jointed by a crank-stud 17, extended from a disk C' at the lower end of a

shaft C^2 , having its bearings in a bracket C^3 attached to the under side of the bed-plate, the said shaft C^2 being provided at its upper end with a bevel-gear d , which is engaged and rotated by a bevel-gear d' fast on the shaft A^2 . The feed-bar d^2 , having the usual serrated surface to engage the material, is of the four-motion class, and derives its motion in usual manner from two cams on the shaft A^2 immediately back of the disk b^2 .

The shuttle-cover or slide-plate d^4 , as best shown in Figs. 3 and 4, has attached to it a thrum-end-gathering plate d^5 , having edges or surfaces herein shown as converging, the said edges or surfaces being herein represented as formed by raising or turning up the metal of the plate, thus forming a trough or guide with converging lips 18, the said lips serving to act upon and sweep the thrum ends toward and in line with the usual stay-cord at the under side of the material, the latter resting upon the said spring-plate, so that the said thrum ends collected along side of the stay-cord may be over stitched by the threads carried by the needle and shuttle. The thrum-gatherer thus made as a spring-plate acts uniformly to gather the thrum ends, notwithstanding the up-and-down movement of the material, due not only to the action of the bender, but also to the action of the feed in feeding the material. Herein the needle enters the material bent under the bender first at one and then at the other side of the stay-cord and the thrum ends collected alongside of the said cord.

To enable the needle carried by the horizontal reciprocating needle-bar to penetrate the material in this manner at opposite sides of the stay-cord and thrum ends, the needle-bar, in addition to its movements of reciprocation, also has to be moved laterally, and this is easily accomplished, owing to the fact that the yoke a^8 , in which the needle-bar slides, is pivoted, as described. This yoke a^8 (see Fig. 2) has connected to it one end of a link a^4 , the connection being by a block and nuts, as 19, on the screw-threaded end of the rod, so that the effective length of the rod may be altered as desired. This link at its inner end (see the detail, Fig. 12) has a block or eye which embraces a stud 20 of a T-shaped block 21, which enters a correspondingly-shaped groove in an arm e , pivoted near its upper end, as at e' , and having near its lower free end a swiveled shoe or stud 22, which enters the grooves of the double-grooved switch-cam e^2 , common to the Wheeler & Wilson button-hole machine, the said cam acting to reciprocate the link a^4 in such manner as to move the needle-bar laterally, so that the point of the needle enters the material at alternate thrusts at opposite sides, the stay-cord and thrum ends making a stitch such as described in the said patent.

If it should be desired to employ the machine described for stitching straw-braid, then

the block 21 will be adjusted into such position that the switch-cam will not reciprocate the said link a^{14} .

By adjusting the stud 10 in the slot 13 the speed of rotation of the shuttle may be more or less accelerated.

In this present application the needle enters the material at each thrust, but at opposite sides of the stay-cord and thrum ends, thus making a cross-stitch to cross over the stay-cord and thrum ends and bind them down upon the back or rear side of the material; but in another application, Serial No. 248,827, filed by me on the 5th day of September, 1887, I have shown and described a feeding device to engage the material, an eye-pointed needle and devices to move the said feeding mechanism and needle to form an overseaming or zigzag stitch, the said devices being combined with a work-holder, and a guide-block having a longitudinal groove or recess at right angles to the plane in which the needle reciprocates, the said parts co-operating to form a stitch in the bent portion of the material and then outside the material, to thus bind the thrum ends to the stay-cord; and so, also, in an application, Serial No. 286,327, I have shown similar devices to those employed in application Serial No. 248,827, modified, however, by placing the needle and needle-bar in a horizontal plane, the complementary stitch-forming mechanism being shown as a circularly-moving shuttle. Herein I do not claim anything shown in the said applications Nos. 286,327 or 248,827.

The throat a' has a pin n , under which the needle a^6 reciprocates, the said pin acting to prevent the guide b^3 from unduly raising the needle.

It is obvious that my invention herein described would be the same were the material moved laterally rather than the needle-bar.

I claim—

1. In combination, the grooved or slotted throat-plate, a reciprocating bender to bend the material into the said groove or slot, an eye-pointed needle and complementary stitch-forming mechanism, devices to reciprocate the needle in the direction of its length and transversely to the said groove or slot, and devices to impart to the needle a lateral motion in opposite directions at each alternate thrust, or in a plane substantially at right angles to the bender-actuating plane, and a feeding mechanism acting in the direction of the needle's length, substantially as described.

2. In a sewing-machine, an eye-pointed reciprocating needle, complementary stitch-form-

ing mechanism, a bender, and a throat-plate co-operating therewith to bend the material prior to the formation of each stitch, combined with a needle-guide and devices to vibrate it in a plane substantially at right angles to the needle-actuating plane to prevent the point of the needle glancing from the material, and feeding mechanism, substantially as described.

3. A grooved or slotted throat-plate, and a reciprocating bender to bend the material between it and the said throat-plate, combined with feeding mechanism, a needle-bar, an eye-pointed needle and complementary stitch-forming mechanism, and laterally-movable bearings in which said needle-bar reciprocates, whereby the needle of the stitch-forming mechanism at one thrust is enabled to penetrate a bent portion of the material held between the bender and throat-plate, and at another thrust to enter said material at a distance from the preceding stitch in the direction of the bend in the material, substantially as described.

4. The needle-bar, its eye-pointed needle, and complementary stitch-forming mechanism, the pivoted yoke in which the needle-bar has its bearings, devices to reciprocate the needle-bar, and devices to vibrate the said yoke, combined with a throat-plate grooved or slotted transversely to the path of reciprocation of the needle, a bender, and devices to actuate it, whereby the said bender forces the material into said groove or slot at right angles to the needle-actuating plane and feeding mechanism, substantially as described.

5. In a sewing-machine, a grooved or slotted throat-plate, a needle, and complementary stitch-forming mechanism, devices for moving the needle in a path transverse to said groove or slot, and devices to impart to it a lateral motion in opposite directions at each alternate thrust in a plane substantially at right angles to the bender-actuating plane, and a bender, and devices to reciprocate it to bend or press the material into the groove or slot of said throat-plate, combined with a spring-supported or yielding thrum-gatherer and feeding mechanism, substantially as described.

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

JOHN REECE.

Witnesses:

JAS. H. CHURCHILL,
G. W. GREGORY.