

W. WALKER.
SEWING-MACHINES FOR STITCHING STRAW-BRAIDS.
 No. 176,101. Patented April 11, 1876.

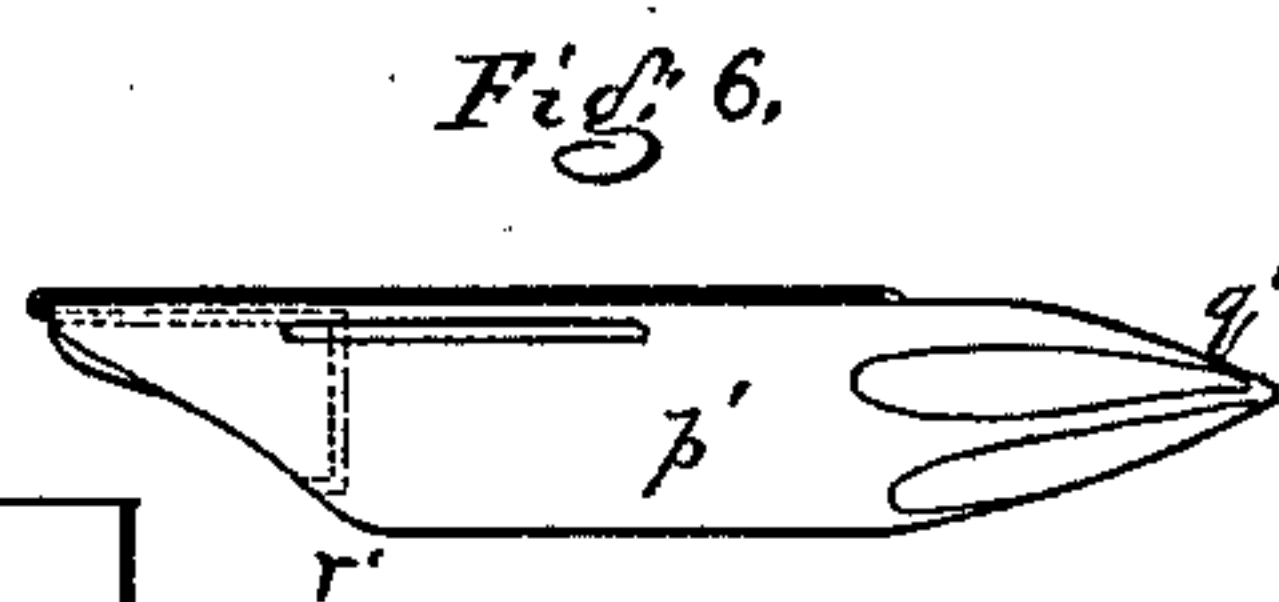
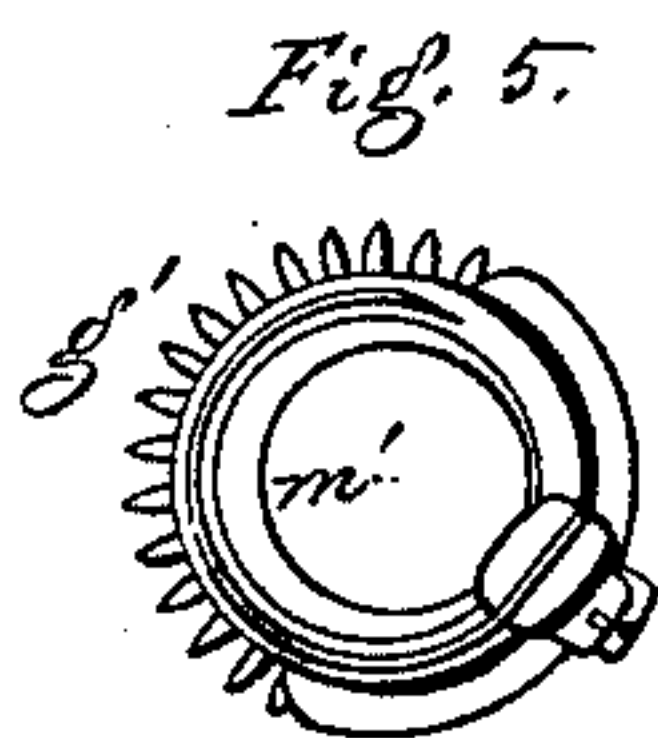
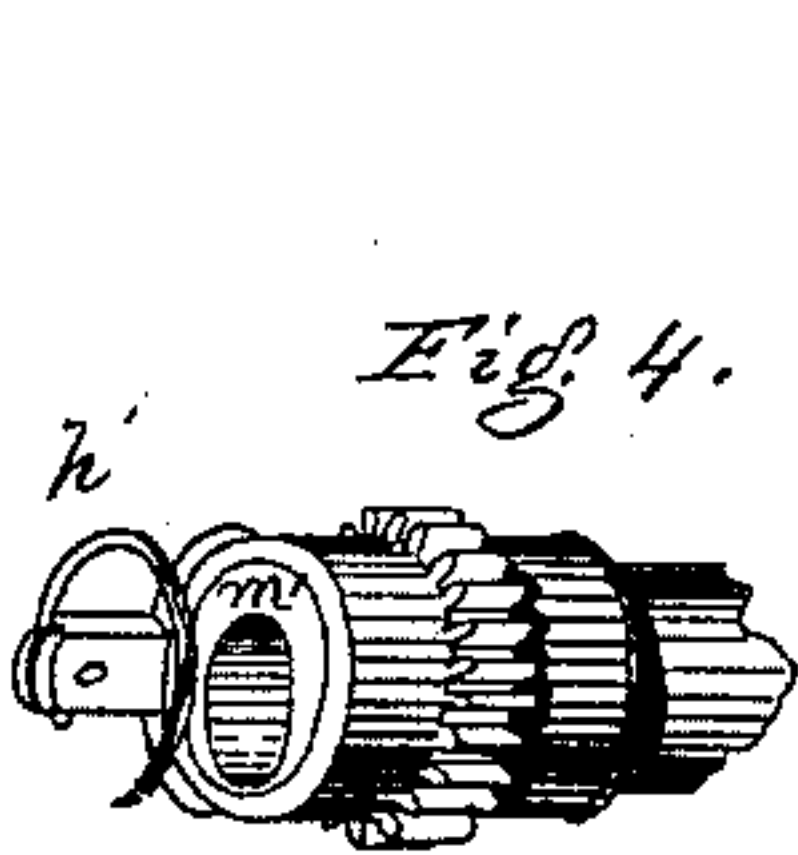
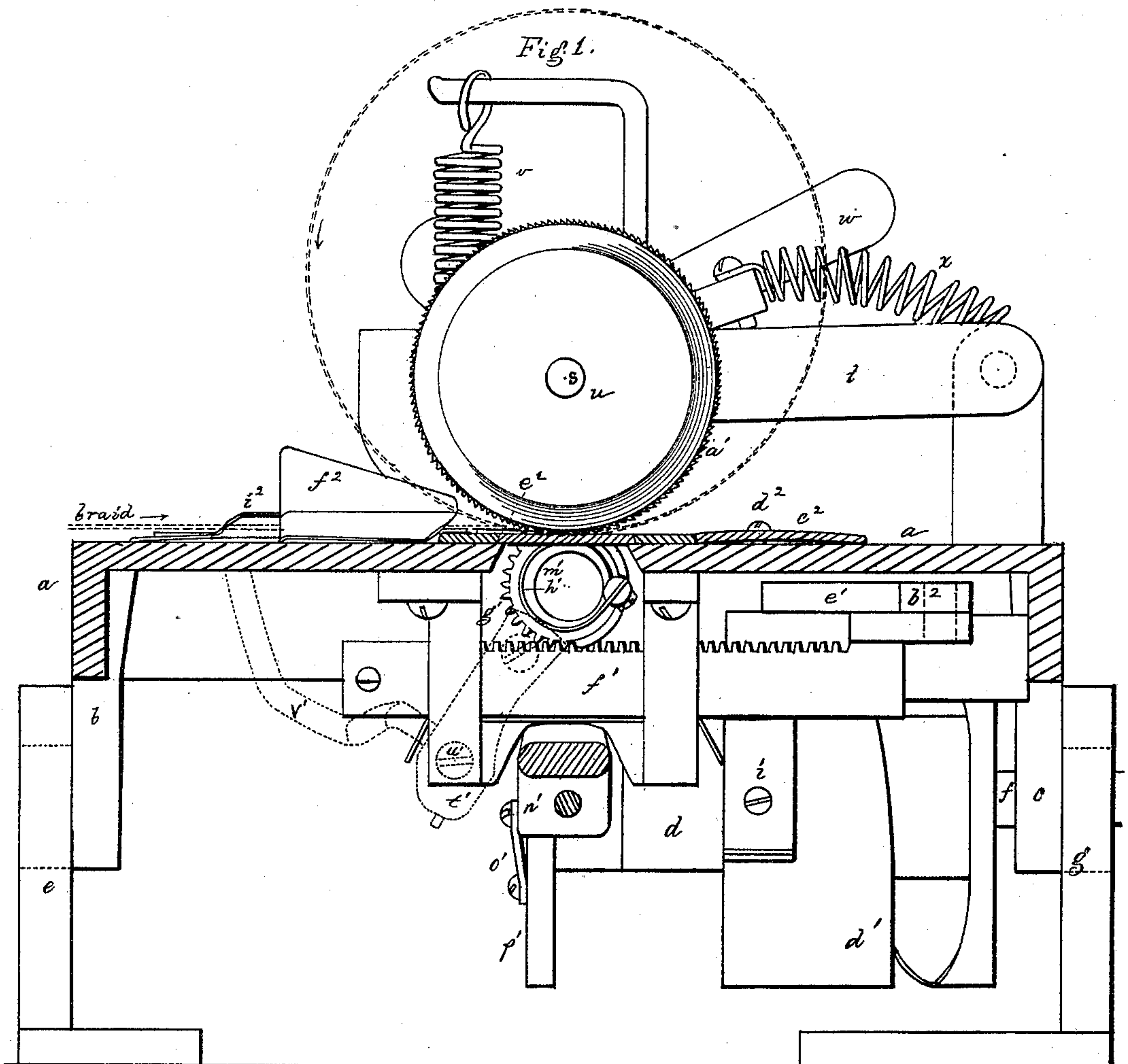
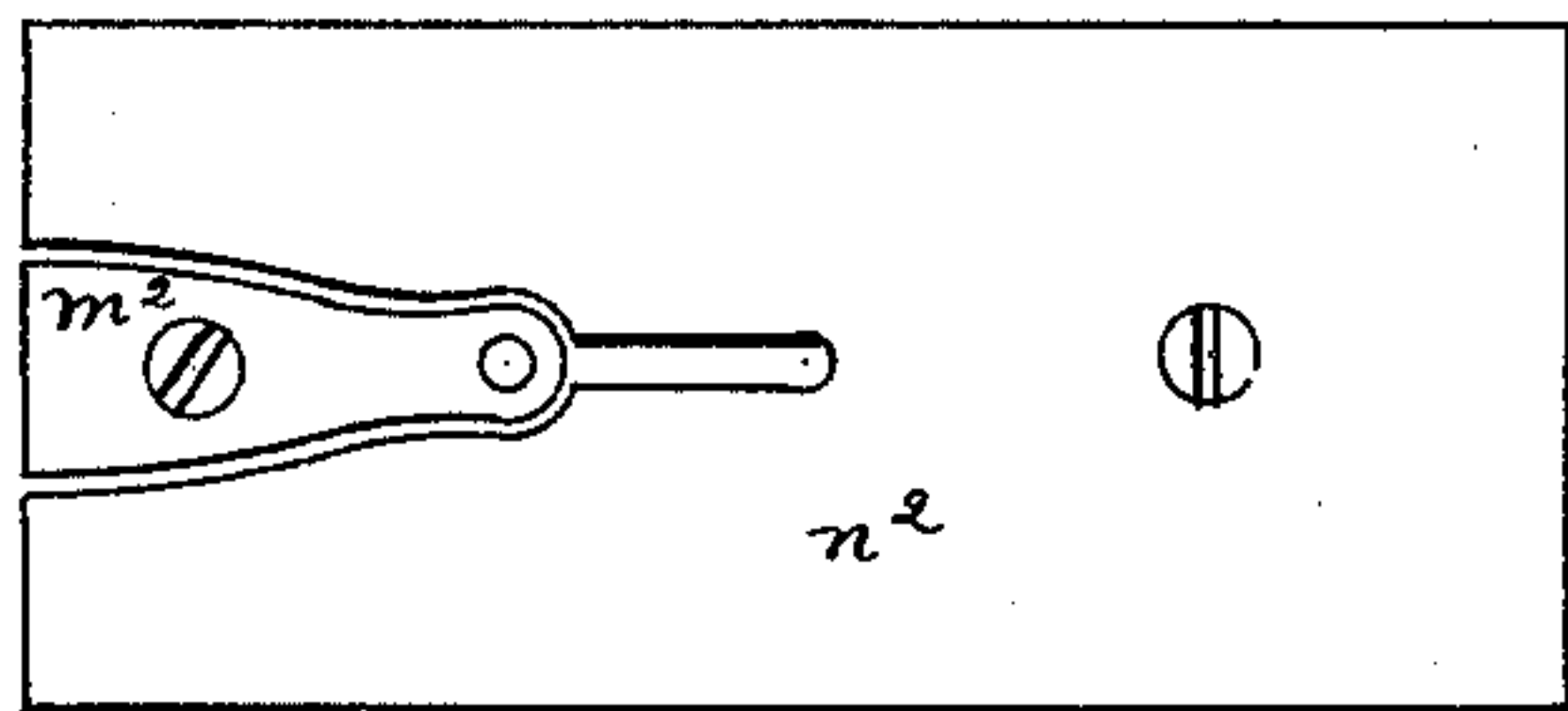


Fig. 7.



Witnesses.

L. H. Coates.

W. G. Pratt.

Inventor.

William Walker

per Crosby & Gregory attys.

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Fig. 2.

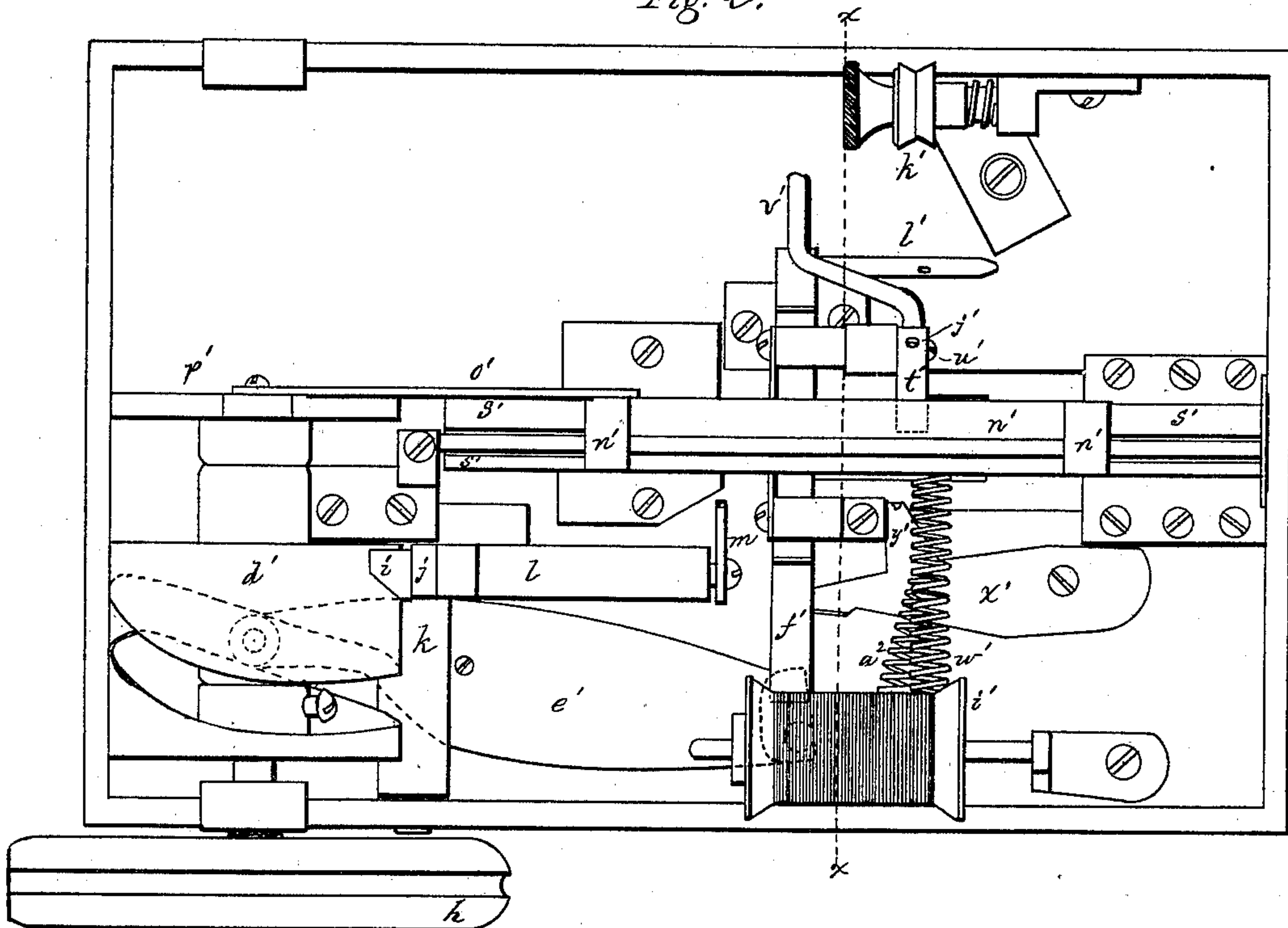
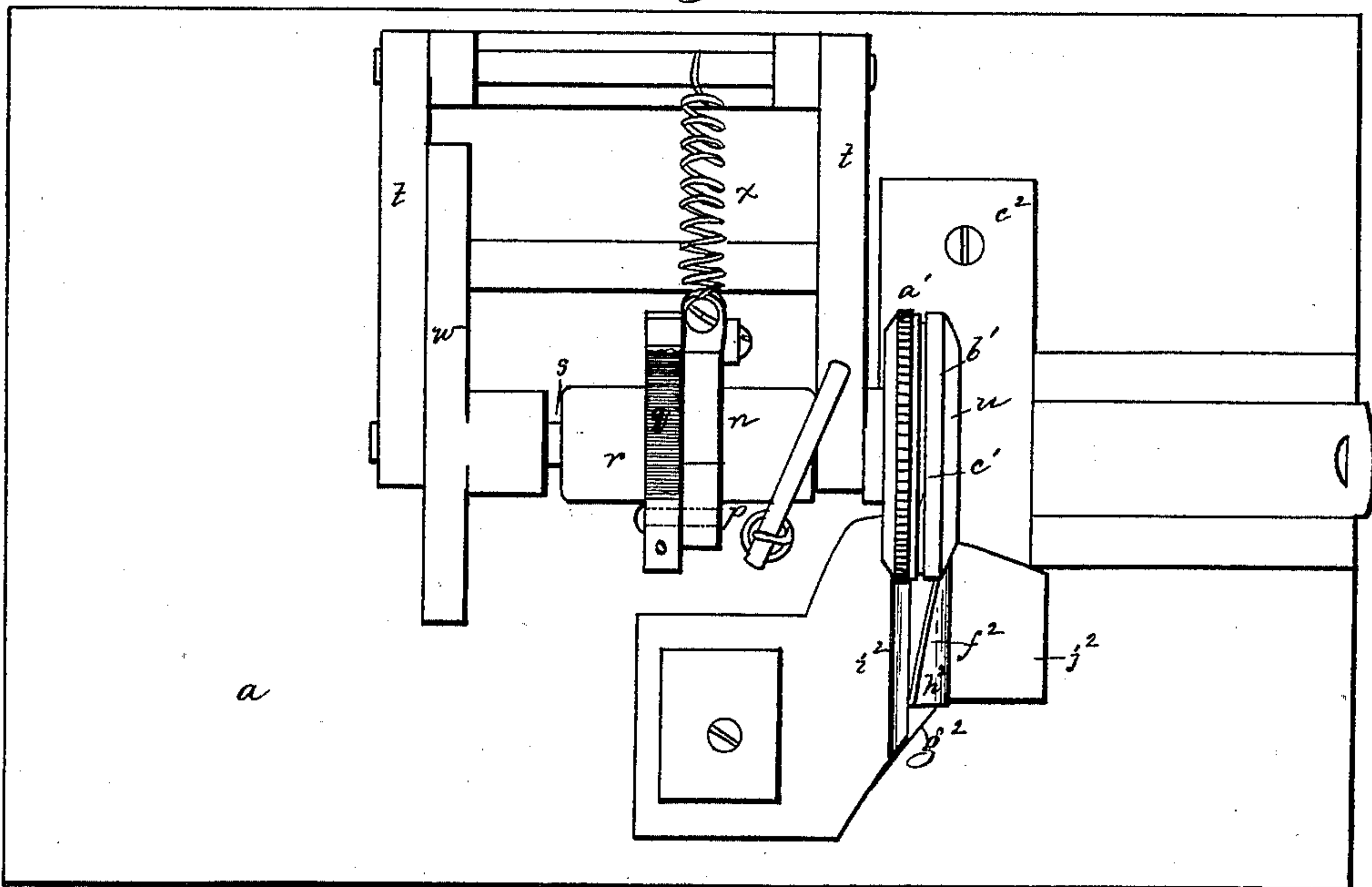


Fig. 3.



Witnesses. *L. H. Latimer.*
W. J. Pratt.

Inventor *William Walker*
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UNITED STATES PATENT OFFICE.

WILLIAM WALKER, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF
HIS RIGHT TO GEO. H. WOOSTER, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES FOR STITCHING STRAW BRAID.

Specification forming part of Letters Patent No. **176,101**, dated April 11, 1876; application filed
January 3, 1876.

To all whom it may concern:

Be it known that I, WILLIAM WALKER, of Brooklyn, in the county of Kings and State of New York, have invented Improvements in Sewing-Machines, of which the following is a specification:

This invention relates to improvements in sewing-machines of the class adapted to sew straw or other braids into fabrics for head-coverings; and consists in a circular needle arranged to penetrate one side of, and to emerge from the same side of, the material being sewed, in combination with a shuttle or other device for carrying a second thread to lock the loop of needle-thread.

In this machine the braids of straw or other material to be united are supported on a horizontal bed-plate or cloth-support. The needle is circular, and is carried by a rotary reciprocating sleeve. The point of the needle passes from below up through the supporting-bed, thence into the material, but, preferably, not through the uppermost layer. Then the point passes out through the material on the side at which it entered; then below the support; and in that position the loop of needle-thread is entered and locked by a shuttle and shuttle-thread.

Figure 1 is a front view, partly in section, (see lines *x x*, Fig. 2,) of a sewing-machine provided with this invention; Fig. 2, a bottom view thereof; Fig. 3, a top view. Figs. 4 and 5 are details of the needle and its support, and Fig. 6 is a view of the shuttle, and Fig. 7 is a modified form of needle-hole plate.

The bed-plate *a* is sustained in any well-known way, and acts as the support for the material to be sewed. It is shown as provided with ears *b c*, (see Fig. 1,) and a bearing, *d*. A lug on the ear *b* (see dotted lines) enters a bearing, *e*. The driving-shaft *f* of the machine, provided with a belt-pulley, *h*, enters the ear *c* and the bearing *d*, and extends through the bearing *g*, and the axis of the bed-plate is the same as the driving-shaft, so the machine can be turned to inspect the parts below the cloth-plate without unbanding the machine. The driving-shaft is provided with a cam, *i*, that strikes a toe or arm, *j*, of a rock-shaft, *k*, pro-

vided with a second arm, *l*, connected at its end by a link, *m*, with a pawl-carrying sleeve or disk, *n*, provided with a pawl, *o*, pivoted to the disk at *p*, (see dotted line, Fig. 3,) and having connected with it a backwardly-projecting spring, *q*, the latter being shown in Fig. 3 as transparent, in order to show the teeth on the toothed wheel *r* placed at the side of the disk *n*, and engaged and moved by the pawl *o* on the disk, the wheel *r* being secured to the shaft *s*, supported in pivoted frame *t*, and carrying the feeding-wheel *u*. The frame is held down with the feed against the material by the spring *v*. The frame may be lifted by the lever *w*, arranged to turn on the shaft *s*, and the spring *x* operates the pawl-disk in opposition to the cam *i*. The feed-wheel is shown with a projecting roughened surface, *a'*, of a diameter greater than the diameter of the front part *b'* of the wheel, and the wheel is provided with an annular groove, *c'*, to prevent the needle from meeting the wheel. The enlarged and roughened annular portion *a'* rests on the braid, being sewed to a piece under which it is lapped, and the portion *b'* of the wheel rests on the uppermost lapping-piece, it being above the bed-plate at the sewing-point a distance equal to the thickness of the braid under it, and in this way each part of the feed-wheel bears with equal pressure on two pieces of braid, being united into a head-covering.

I intend sometimes to make the portion *b'* separate from *a'* and loose on its shaft, so as to facilitate the turning of the work as it is sewed to form the hat as desired. A grooved cam-hub, *d'*, engages a roller or pin (see dotted lines, Fig. 2) on the needle-actuating lever *e'* connected with a toothed rack, *f'*, adapted to engage teeth on a toothed sleeve, *g'*, to which is attached the circular eye-pointed needle *h'* grooved on the outer or convex edge, and provided with thread from a spool, *i'*, the thread being led from the spool through an eye, *j'*, then to the tension device *k'* of any suitable construction, then to and through an eye in a bar, *l'*, carried by the rack-bar *f'*, and to and through the eye of the needle to the braid.

The toothed sleeve of the needle-carrier is placed, and made to have a rotary reciprocating motion, about an eccentric portion, m^1 , of the shuttle-race s' , (see Figs. 4 and 5,) the shuttle being reciprocated therein by means of projections on a carrier, the projections engaging the heel and point of the shuttle, and the carrier n^1 being driven from a link, o' , connected with disk p , on shaft f . The shuttle-race is open at bottom, to admit the shuttle-drivers, and the shuttle-race, at the point where the needle works, is cut transversely, to permit the needle to bow the loop into the shuttle-race. The face of the shuttle runs against the thinnest portion of the eccentric shell of the race, and the needle, in its reciprocations in a circular path, eccentric to the path in which the shuttle moves, at the proper time is caused to present its concaved side substantially in line with the inner concave side of the shuttle-race, and to bow its loop into the raceway, so as to permit the shuttle to enter with certainty the loop of thread so thrown out from the needle-eye. If the arc in which the needle moved corresponded exactly with the arc of the circular shuttle race, then the needle would be at all times the same distance from the shuttle, and would not permit the point of the needle to diverge sufficiently far from the shuttle-race to enter the fabric, or to come sufficiently close to the shuttle to have its loop caught. The shuttle p' is cylindrical in form, has its point q' rounded and elevated above its center, and it is held by the carrier, to enter the needle-loop extending from the eye of the needle to the braid, and across the shuttle-race as a chord.

The shuttle is shown in Fig. 6 in full size, and its heel is cut away and rounded, as shown, to enable the carrier to hold it in proper position.

The needle passes through the braid during the backward motion of the shuttle; then the shuttle passes forward through the needle's loop while the needle rests, and, just as the part r' of the shuttle comes opposite the needle, the latter begins to retreat from the braid as the needle completes its extreme backward motion and the shuttle commences to move back.

The shuttle is shown as provided with a tension-spring, substantially as in the Domestic sewing-machine, and the tension-spring holds in place the support for the journal of the bobbin, the support being shown in dotted lines.

A needle-supporter, t' , (see Figs. 2 and 1, in dotted lines,) is pivoted at w' to the lug, in which the rack-bar f^1 moves. This supporter has a finger, v' , and is held forward by a spiral or other spring, w' , the end of the finger meeting the cloth-plate and governing the forward motion of the upper end of the supporter, which, in its forward position, bears against the central outer portion of the needle, between its point and end, during the time the needle-point is penetrating the braid, thereby preventing

such needle from being bent out of shape, and, as the needle enters the braid, the end of the rack-bar strikes the finger v' , and moves the supporter in unison with the needle.

At the time the shuttle enters the loop of needle-thread it is desirable to be able to place the needle in exact position, and retain it there for the passage of the shuttle, and so that the needle cannot spring away from the point of the shuttle as it enters the loop of needle-thread. For this purpose I employ a deflector, x' , with a notched finger, y' . This deflector is pivoted to the bed a , is held away from the shuttle-race by a spring, a^2 , and is pushed forward in operative position by a shoulder, b^2 , on the rack-bar f^1 . The notched finger of the deflector engages, places, and holds the needle in correct position for the entrance of the shuttle through its loop, and prevents the shuttle from skipping stitches.

The curved needle works from below the supporting-plate a , up through a slot in the adjustable needle-hole plate c^2 . This plate c^2 is curved, (see Fig. 1,) and provided with a set-screw, d^2 , to raise or lower the plate to permit the needle in its movements to pass above such plate, more or less, and, consequently, to penetrate a greater or less distance into the fabric or braid. This plate c^2 is also provided with a gage, e^2 , for the edge of the braid being tucked under the upper strip of braid that rests on the top of such gage, the edge of the upper braid also resting and being guided against the edge f^2 of the braid-guides. (See Figs. 1 and 3.) In practice the needle-hole plate will be made in two parts, as shown in Fig. 7. The portion m^2 will be fastened to the table and be provided with a hole to serve as a guide, and for the needle, to prevent it from springing toward the center of the curve as it passes through the hole and into the work being sewed. And the other portion n^2 will be provided with a slot for the passage of the needle to carry its loop below the cloth-support. The braid, from a reel or otherwise, is led into the mouth g^2 of the gage under the lips h^2 and i^2 , and is delivered to the needle and under the feeding-roller. The part i^2 of the gage is made adjustable on the other part j^2 of the gage, to accommodate braids of different widths, and both parts are adjustable on the bed or support a to cause the braids to lap each other more or less. The braid coming from the reel or supply is presented under the edge of the piece of braid to which it is to be sewed, (under the edge of the course of braid last joined, to form the hat or head-covering,) each course of braid lapping under a previously-laid course. The hat is commenced at the center of the crown, and a circular or elliptical fabric or form is sewed for the tip of the crown; then the crown-tip is turned in a vertical position, and the braid is laid, course after course, until the tubular portion of the crown is formed of sufficient length, and then the crown which

so far during the process of its manufacture has been wrong-side out, is turned, and then the brim is formed and attached to the crown, course after course. The feeding-wheel also serves as a presser to retain the braid on the supporting-bed.

The dotted lines in Fig. 1 represent the cylindrical portion of the crown of a hat in the position it will occupy when being formed.

I do not broadly claim an eye-pointed circular penetrating thread-carrying needle; but

I do claim—

1. A supporting-bed for the material being sewed, and a curved circularly-moving eye-pointed perforating-needle adapted to be projected from the under side of the supporting-bed and through the material being sewed, in combination with a shuttle, and with mechanism to move it through the circular or ring-like needle to lock the loop of needle-thread, substantially as described.

2. The combination, with the support of a rotating feeding-wheel and presser, provided with a grooved periphery and with a toothed peripheral surface, adapted to project beyond the grooved portion of the wheel, whereby the wheel is permitted to properly hold and feed superimposed braids, substantially as described.

3. A curved circularly-moving needle, in combination with a needle-supporter, adapted

to operate on the convex surface of the needle during the time it penetrates the fabric, substantially as described.

4. A circular and rotary reciprocating eye-pointed perforating-needle, in combination with a shuttle-race located within the circular path in which the needle moves, and provided with a raceway located eccentrically with relation to the arc in which the needle moves, substantially as described.

5. A circular rotary reciprocating eye-pointed needle, in combination with a supporting-bed and an adjustable needle-hole plate through which it works, to govern the extent to which the needle penetrates the material being sewed, substantially as described.

6. A supporting-plate for the material, a guide adapted to guide the edge of one course of braid, and a guide adapted to direct the edge of another course of braid to be sewed to the preceding course, in combination with a curved circularly-moving eye-pointed penetrating-needle, a thread-carrier to lock the loop of needle-thread, and a feed to move the braid, substantially as described.

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

WM. WALKER.

Witnesses:

E. C. WOOSTER,
PHILIP BLOHM.