2 Sheets--Sheet 1.

HELEN A. BLANCHARD.

Sewing-Machines.

No. 152,721. Patented July 7, 1874.

Fig. 1

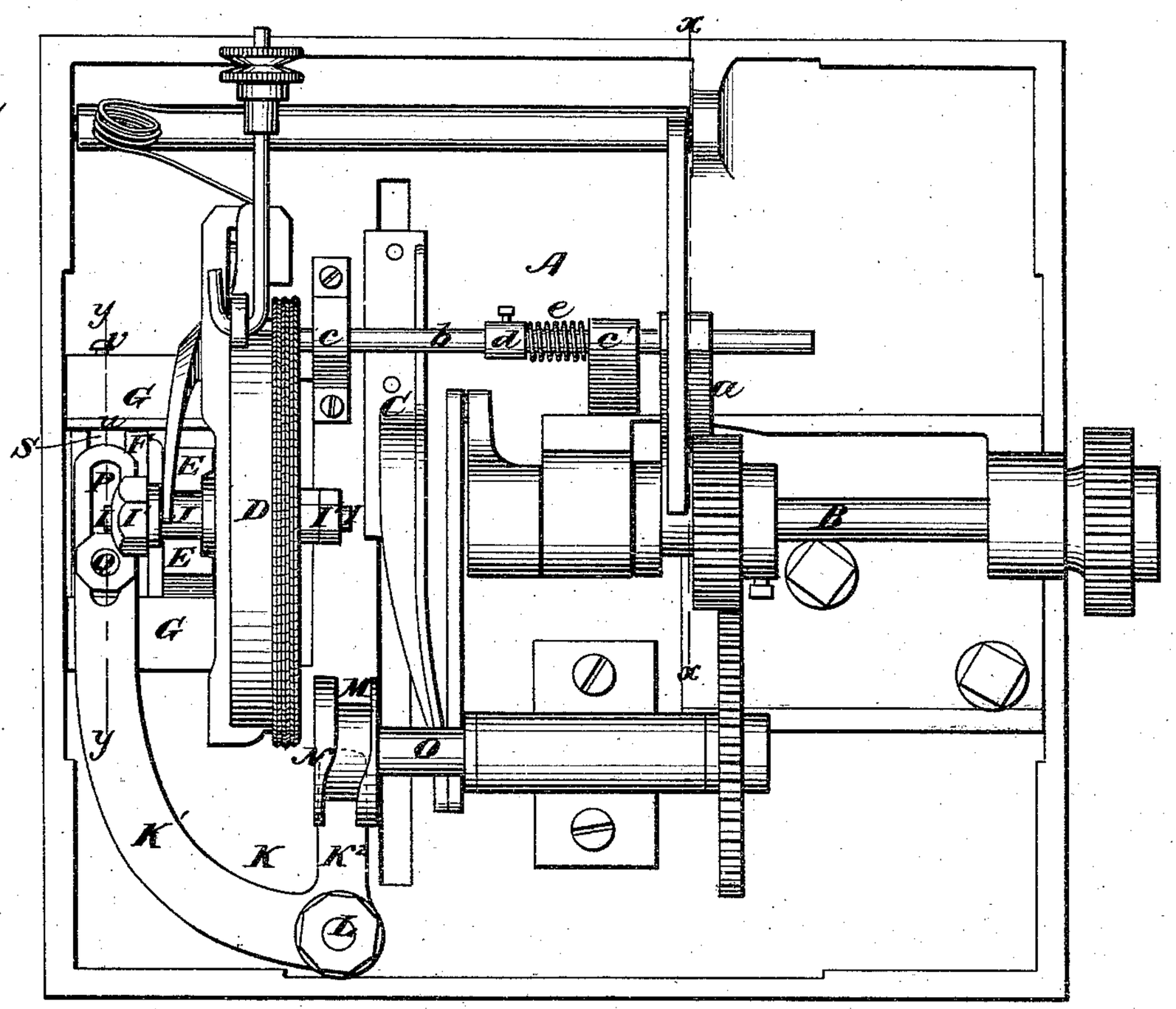


Fig. 2

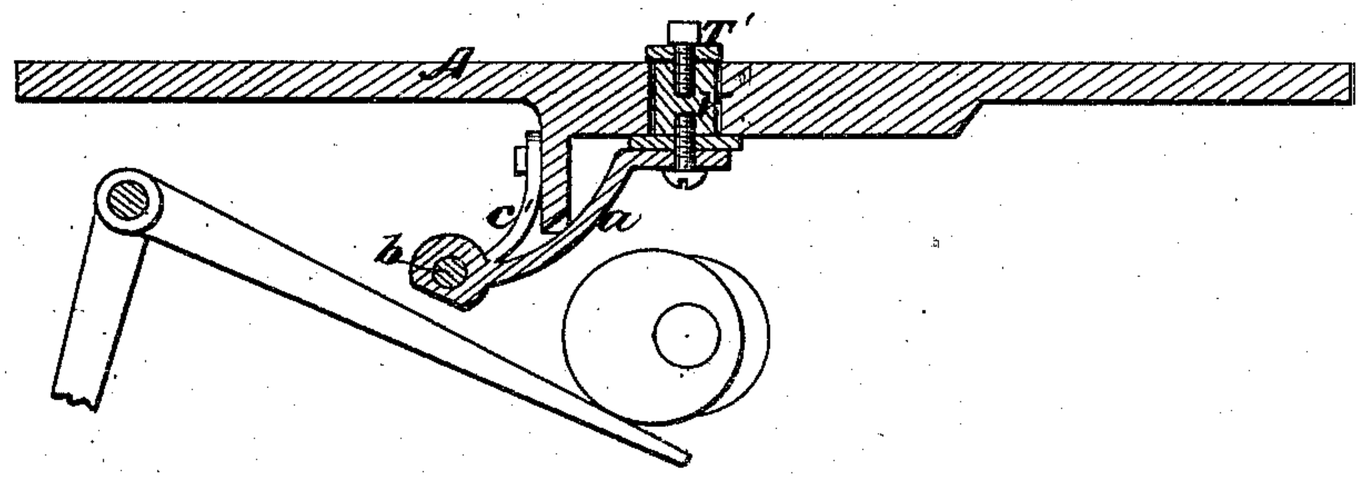
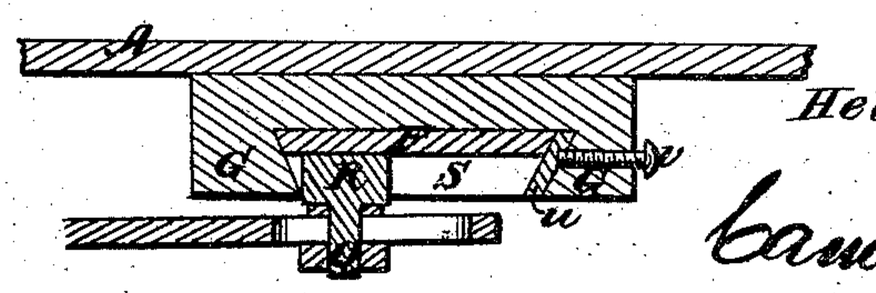


Fig. 3.



Witnesses.
C. F. Brown.
L. H. Kellie

Inventor
Helen A. Blanchard
by her Atty.
Lovell S. Wright.

2 Sheets--Sheet 2.

HELEN A. BLANCHARD.

Sewing-Machines.

No. 152,721. Patented July 7, 1874.

Fig. 5.

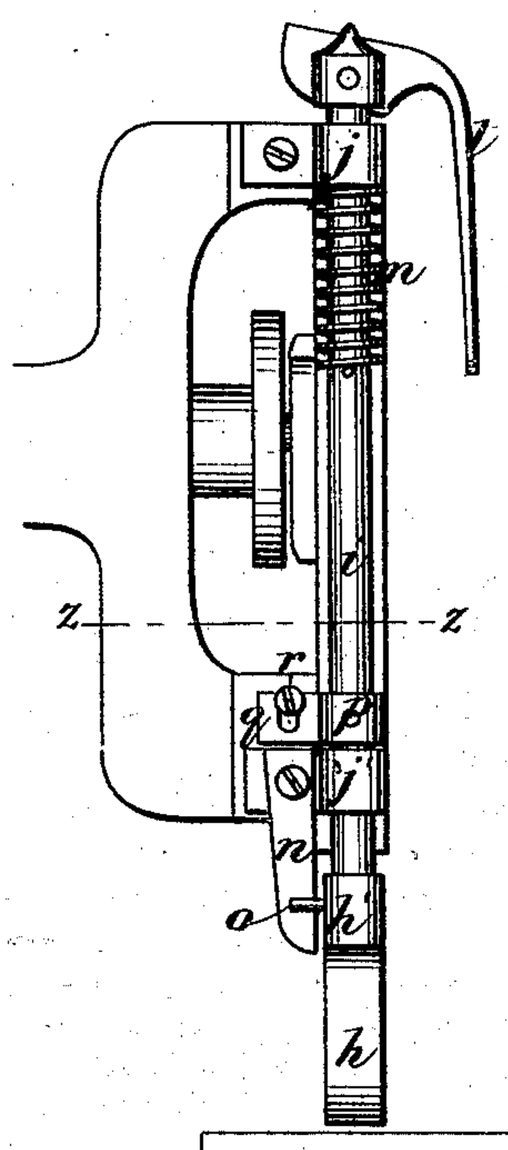


Fig. 4.

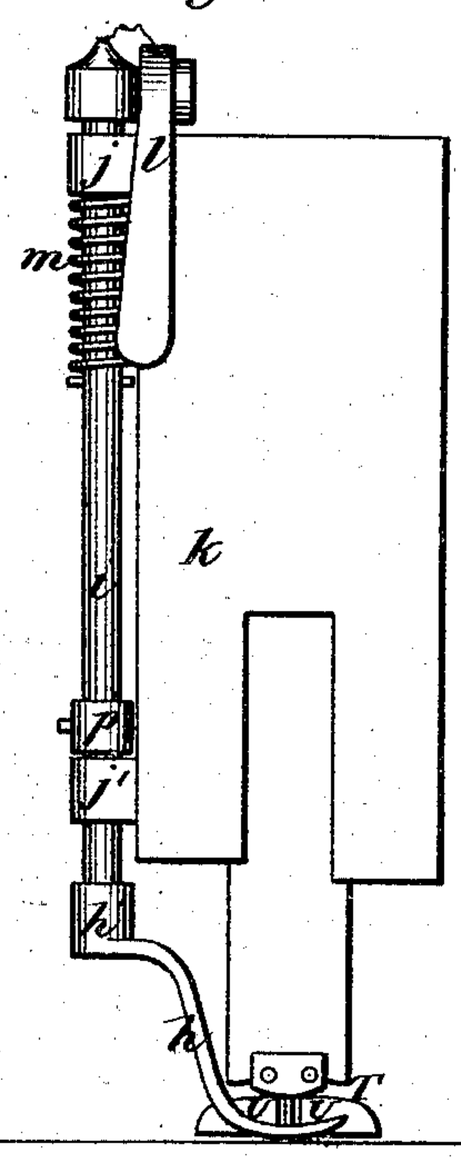


Fig. 9.

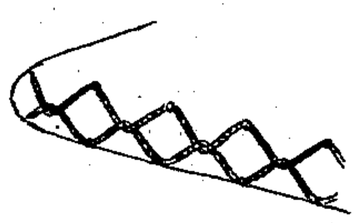
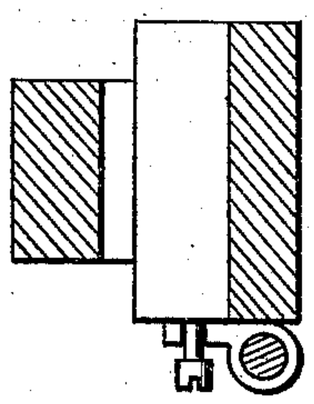


Fig. 6.



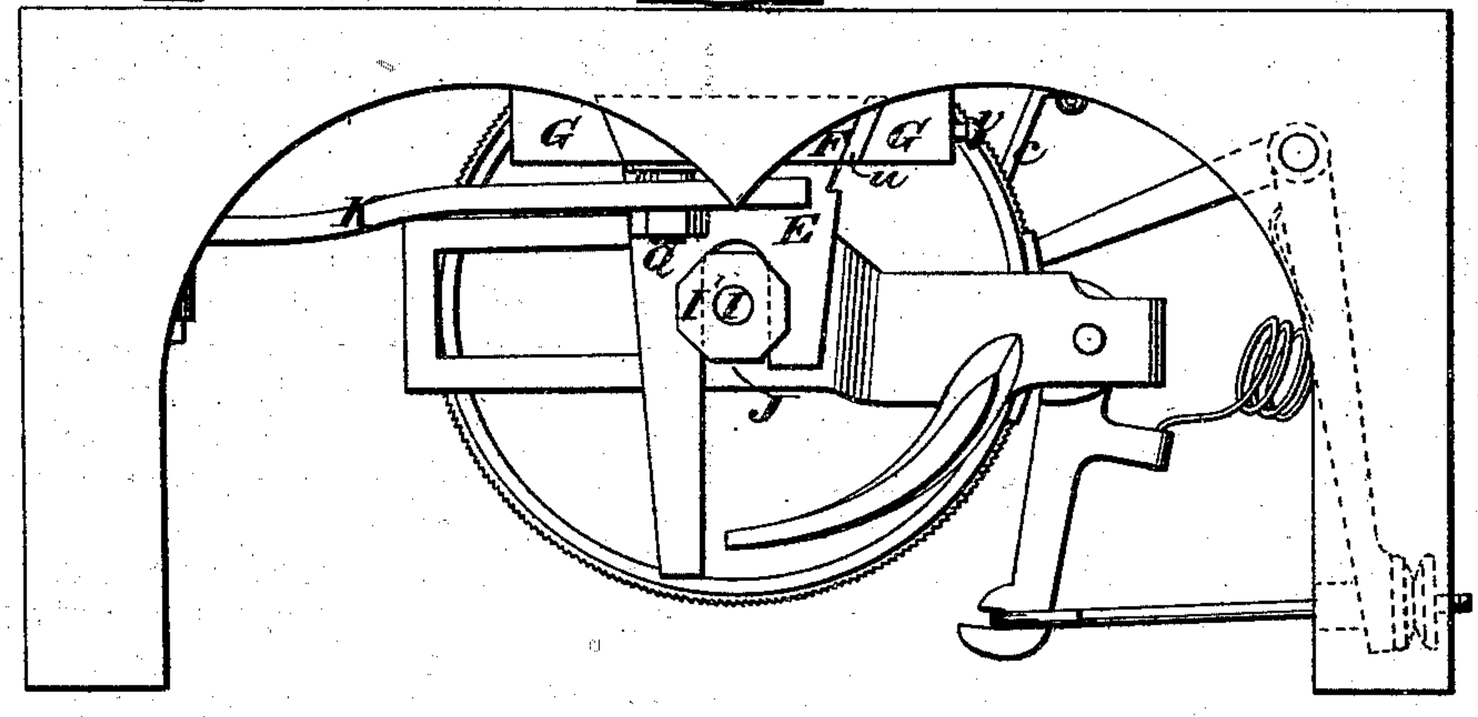


Fig. 7.

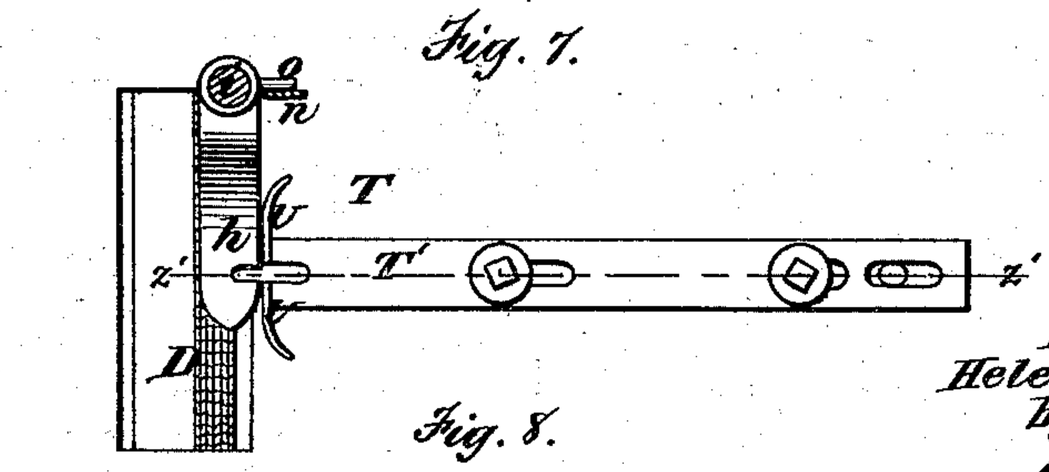
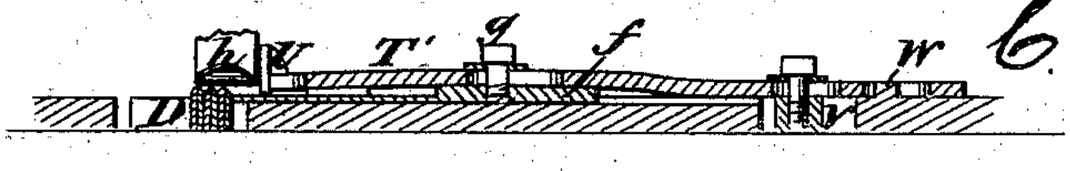


Fig. 8.



Witnesses.
C. F. Brown.
C. H. Kelley

Inventor
Helen A. Blanchard.
by her Atty.
C. D. Wright.

UNITED STATES PATENT OFFICE.

HELEN A. BLANCHARD, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **152,721**, dated July 7, 1874; application filed May 18, 1874.

To all whom it may concern:

Be it known that I, HELEN A. BLANCHARD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Sewing-Machines, of which the following is a specification:

The object of this invention is akin to that of my patent No. 141,987, dated August 19, 1873, viz., the production of a machine which shall be adapted to form an overstitch for either fine or coarse work, or perform the ordinary work of a sewing-machine.

My present invention relates, particularly, to that class of machines employing a rotary feed having a reciprocating motion at right angles to the direction of its rotation, in order to place the material so that the needle will descend through and then outside of the work, thus forming an over or button-hole stitch.

My invention consists in the means employed for effecting the reciprocation of the feed-wheel and varying the degree of its movement; also, in an adjustable gage adapted to conform to the movements of the feed-wheel, the gage being provided with a projection which is held in contact with the side of the feed-wheel by spring-pressure; and, also, in a presser-foot adapted to oscillate horizontally, so as to conform to the movements of the gage and feed-wheel, the presser-foot being held against the gage by a suitable spring, and provided with means for regulating the degree of its oscillation, all of which I will now proceed to describe.

In the drawings, Figure 1 is a bottom-plan view of my invention; Fig. 2, a section on line *x x*, Fig. 1; Fig. 3, a section on line *y y*, Fig. 1; Fig. 4, an end elevation; Fig. 5, a rear elevation of the presser-foot; Fig. 6, a section on line *z z*, Fig. 5; Fig. 7, a top-plan view of the cloth-gage, showing its position with relation to the presser-foot; Fig. 8, a section through line *z' z'*, Fig. 7; and Fig. 9, a view of the stitch.

A represents the bed-plate of a sewing-machine, on the under side of which are the bearings of the driving-shaft B, the latter being operated and operating the shuttle-carrier C in the usual manner. D is the feed-wheel, which is rotated by any suitable mechanism, and is journaled in a frame or bracket, E, the latter being provided with a dovetailed portion, F, which slides in dovetailed guides G attached to the under side of the bed-plate, the said guides being parallel with the axis of the feed-wheel, and consequently adapting the latter to slide at right angles with the direction of its rotation. The feed-wheel is attached to bracket E by means of a bolt, I, which constitutes its axis, and passes through a vertical slot, J, in the bracket, by means of which it is adapted to be adjusted vertically, or readily removed when it is desired to substitute a finer or coarser feed for lighter or heavier work, the bolt being provided with suitable clamping-nuts I'. K represents a lever pivoted, at L, to the under side of the bed-plate, near one edge thereof, as shown in Fig. 1. The lever K is provided with a long curved arm, K^1, which is connected to the dovetailed portion F of the sliding bracket E and a short arm, K^2, which engages with a cam-groove, M, in the periphery of the disk N, the latter being located on a shaft, O, that is geared to and receives motion from the driving-shaft B.

It will be seen that the rotation of the disk N, by the operation of the machine, causes a vibratory motion of the lever K, the long arm of the latter imparting a reciprocating motion to the bracket E and feed-wheel D, this reciprocation being parallel with the axis of the feed-wheel, and at right angles with the direction of its rotation.

The long arm K^1 is parallel, at its outer end, with the short arm K^2, and is provided with a longitudinal slot, P, through which passes a vertical bolt, Q. The latter projects from a block, R, in a slot, S, in the under side of the dovetailed portion F of the bracket E. The slot S extends at right angles with the line of motion of the sliding bracket and parallel with the outer end of the arm K^1; hence, by moving the block R and its bolt Q along the slot the point of attachment of the arm K^1 to the bracket E may be adjusted toward or from the lever K, and the throw of the bracket regulated accordingly. T represents the cloth-gage, composed of a slotted plate, T', located on the upper side of the bed-plate, and provided with curved flanges U at its outer end. The plate T' is secured to a block, V, which is located in a slot, W, in the bed-plate, and passes through

the latter, as shown in Fig. 2. To the under side of the block V is attached the curved arm *a* of a bar, *b*, which slides in the brackets *c c'* attached to the under side of the bed-plate. The bar *b* is parallel with the axis of the feed-wheel, and is provided with an adjustable collar, *d*, between which and the bracket *c'* is interposed a spiral spring, *e*, the latter holding the bar *b* in yielding contact with the side of the feed-wheel, as shown in Fig. 1. The plate T' is curved upward slightly, as shown in Fig. 8, and a plate, *f*, is placed under it, the latter being located in a groove in the upper surface of the bed-plate, and serving to prevent the plate T' from being displaced laterally, the two plates being connected by a bolt, *g*.

The plate *f* may project sufficiently far to bear against the side of the feed-wheel, as shown, although this prolongation is not necessary. The plate T' and bar *b* being adapted to slide together and held in yielding contact with the feed-wheel by the spring *e*, it naturally follows that they will conform to the reciprocating motion of the feed-wheel. *h* represents the presser-foot, located on the lower end of a vertical cylindrical rod, *i*, which has its bearings in guides or brackets *j j'* on the face-plate *k*.

The presser-foot is operated vertically by an ordinary cam-lever, *l*, and spiral spring *m*, and is adapted to oscillate horizontally the rod *i* turning in its bearings. *n* represents a flat spring, preferably attached at one side of the bracket *j'* to the frame, as shown in Fig. 5, the spring projecting downward, and bearing against a pin, *o*, projecting laterally from the collar *h'* of the presser-foot *h*, or from the rod *i*, if desired. The function of the spring *n* is to hold the presser-foot in yielding contact with the flanges U of the gage T, as shown in Figs. 4, 7, and 8; hence the reciprocating motion of the gage produces a horizontal oscillating motion of the presser-foot, the latter being held in close contact with the gage by the spring *n*, as above stated. *p* represents a collar located on the rod *i*, said collar having a slotted flange, *q*, which rests against the frame when the presser-foot is in its normal position, as shown in Fig. 6. *r* is a screw which passes through the slot of the flange *q* into the frame-work of the machine. The head of the said screw, being wider than the slot of the flange *q*, restricts the motion of the latter when the presser-foot is swung outward, and thus limits its oscillation.

In the formation of the stitch represented in Fig. 9 the needle is first allowed to pass through the work and withdraw from the same. On the next descent of the needle the lever K is oscillated in such manner as to move the feed-wheel outward or away from the needle, so that, when the latter reaches the presser-foot, the work is moved outward to such an extent that the needle passes by its edge instead of through it, as before, its loop being locked by the shuttle-thread, forming an over-stitch, which may be varied in depth by adjusting the point of attachment of the arm K to the bracket E, and, consequently, regulating the throw of the feed-wheel. The end of the plate T' is provided with a slot, *t*, which permits the passage of the needle when the gage is moved outward. It will be borne in mind that the feed-wheel, gage, and presser-foot move in unison, the gage being operated by the feed-wheel, and the presser-foot by the gage, as before stated.

A herring-bone or pointed stitch may be formed by my improvements by feeding the cloth back and forth, so that the needle does not pass outside of it.

The machine can be readily adapted to the performance of the ordinary machine-stitch by removing the lever K. When this is done, the bracket E is secured and made stationary by means of a clamping-plate, *u*, which is interposed between one of the dovetailed guides G and the portion F of the bracket, as shown in Fig. 3. The plate *u* is forced against the portion F by means of screws *v*, and the bracket and feed-wheel are thus securely held from moving laterally.

The manner of detachably connecting the feed-wheel to the bracket admits of the removal of the wheel, and the substitution of another having finer or coarser teeth, thus adapting the feed to various kinds of work.

I claim as my invention—

1. In combination with a rotary feed, having a horizontally-reciprocating motion at right angles with the direction of its rotation, a cloth-gage, held in yielding contact with the feed-wheel by spring-pressure, and adapted to conform to the reciprocating motion of the feed, substantially as described, for the purpose specified.

2. In combination with a feed and cloth gage, having a reciprocating motion, as described, a presser-foot, held in yielding contact with the gage, and adapted to vibrate horizontally in such manner as to conform to the reciprocating motion of the feed and gage, substantially as described, for the purpose specified.

3. The sliding bracket E, having the vertical slot J containing the axis of the feed-wheel, and the horizontal dovetailed portion F sliding between the guides G, in combination with the pivoted lever K, having arms K^1 K^2, substantially as described, for the purpose specified.

4. The bracket E, having the horizontal portion F provided with the slot S, and adjustable block R, in combination with the oscillating lever K, having the slotted arm K^1, substantially as described, for the purpose specified.

5. The gage T, having the plate T', arm *a*, bar *b*, and spring *e*, in combination with the wheel D, all arranged and operating substantially as specified.

6. The gage-plate T', in combination with the interposed plate *f*, the latter sliding in a groove in the bed-plate of the machine, and

guiding the gage in its movements, substantially as specified.

7. The presser-foot *h*, located on the rod *i*, and held in yielding contact with the gage T by means of the spring *n*, substantially as described, for the purpose specified.

8. The collar *p*, having the slotted flange *q*, in combination with the screw *v* or its equivalent, for the purpose of limiting the degree of oscillation of the presser-foot, substantially as described.

9. The clamping-plate *u*, interposed between the part F of the sliding bracket and one of the guides G, and adjusted by the screws *v*, so as to secure and and render stationary the bracket E, substantially as described, for the purpose specified.

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

HELEN A. BLANCHARD.

Witnesses:

CARROLL D. WRIGHT,

C. F. BROWN.