

D. M. SMYTH.

Feeding-Mechanism for Sewing-Machines.

No. 130,325.

Fig. 1.

Patented Aug. 6, 1872.

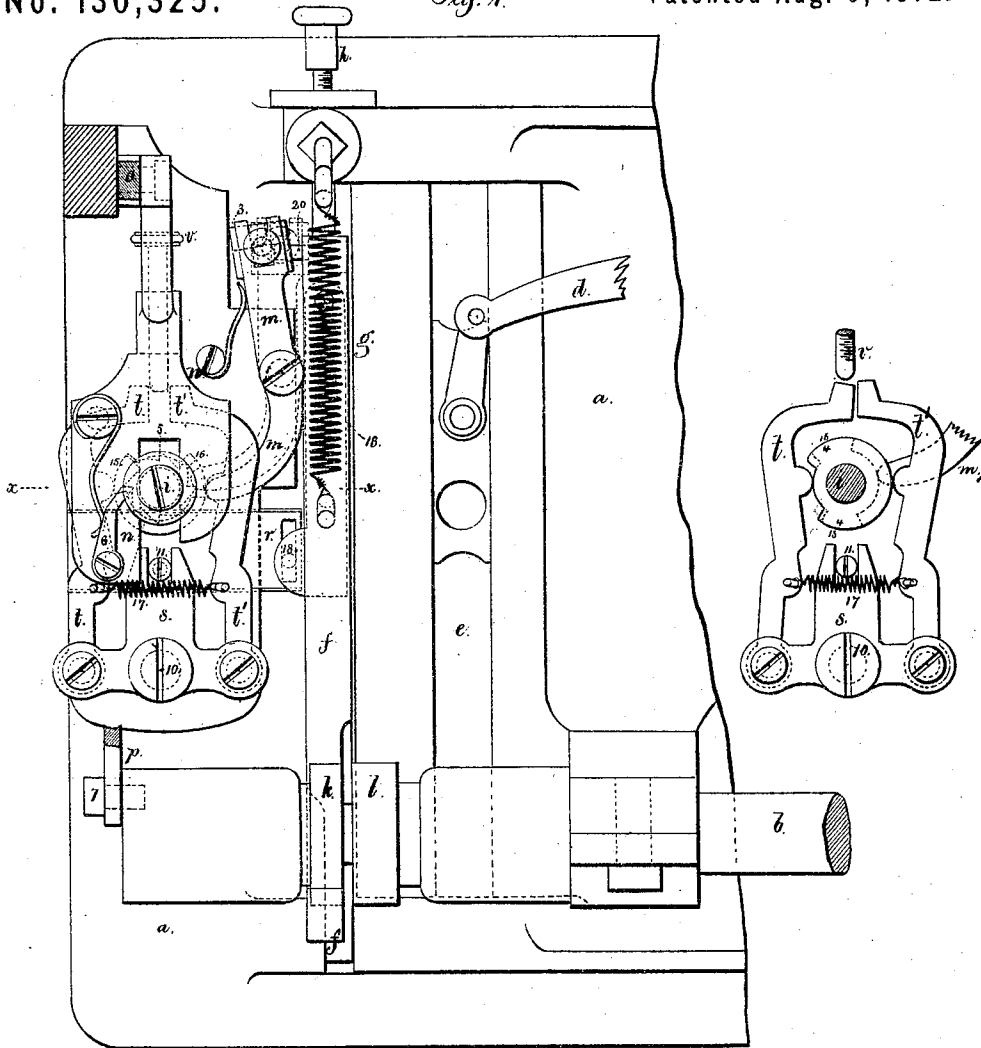


Fig. 4.

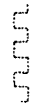


Fig. 5.

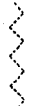
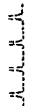


Fig. 6.



*Chas. Smith*  
*Geo. P. Pennington* Witnesses.

INVENTOR  
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 Per. *Lemuel W. Lovell* ATTY.

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2. Sheets--Sheet 2.

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Fig. 2.

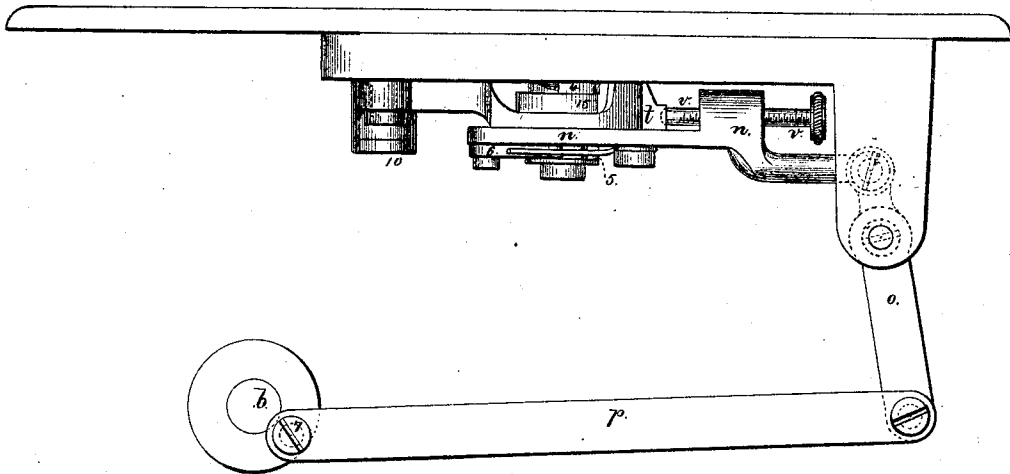
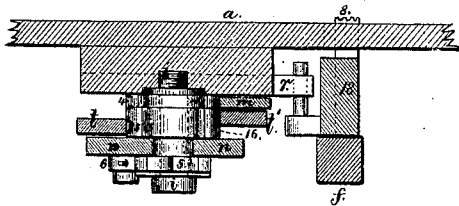


Fig. 3.



*Charles Smith*  
*Wm. G. Puckney*

Witnesses.

INVENTOR  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN FEEDING MECHANISMS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 130,325, dated August 6, 1872:

*To all whom it may concern:*

Be it known that I, DAVID M. SMYTH, of Orange, in the county of Essex and State of New Jersey, have invented an Improvement in Sewing-Machines; and the following is declared to be correct description of the same.

This invention is a modification of the device patented by me May 14, 1872, No. 126,844.

In my present improvement the feed-bar is mounted so as to be capable of six motions—that is to say, a rising-and-falling motion, to make and break contact with the material that is being operated upon; a forward-and-backward movement in the ordinary direction, to feed the fabric longitudinally; and a forward-and-backward lateral movement, to give motion to the fabric at right angles to the ordinary line of sewing.

My present improvements relate specially to mechanism that brings into action the lateral feed-motion and locks out of action the longitudinal motion, or brings into action the longitudinal feed and locks out of action the lateral feed, thereby sewing in a zigzag form, composed of broken parallel lines united alternately at their ends by short parallel lines; or, when desired, both longitudinal and lateral feeds are brought into action to perform diagonal sewing in alternate directions or zigzag, or to produce curved or compound curved and straight lines of sewing.

In the drawing, Figure 1 is an inverted plan of the sewing-machine, representing the mechanism that controls the feed-motions. Fig. 2 is a side view of the same, and Fig. 3 is a section at the line *x x*.

The bed *a* of the sewing-machine, the actuating-shaft *b* and its cam, shuttle-lever *d*, and its race-way *e* are of any usual character. The feed-bar *f* is provided with a diagonal spring, *g*, to draw the said bar toward the adjusting-screw *h*, and, also, to move the same toward the cam *l*, that gives the feeding-surface an up-and-down movement, and the cam *k* gives an end movement to the said bar *f*, except when it is locked by the spring-lever *m*. This lever *m* has a projection, 3, that takes against a pin, 20, upon the bar 18, and arrests the endwise movement of said feed-bar *f* at the time the cam *l* has given the extreme movement; thereby the projection 3 prevents the return

of the lever toward the cam *l*. The lever *m* is brought into action periodically by a revolving cam, 4, that is upon a stud or shaft, *i*, and is operated by a ratchet-wheel, 5, pawl 6, and sliding or swinging bar *n*. This bar *n* is moved by the lever *o* and connecting-rod *p* to the crank-pin 7 on the end of the shaft *b*. The roughened surface 8 of the feed is upon a bar, 18, that is carried by the lever *f*, and this bar allows the feed to be moved laterally without regard to the longitudinal feed movement derived from the cam *k*. A pin upon a projection from 18 enters a slot in a transverse slide, *r*, that is operated by the rocking lever *s*, that vibrates upon the center 10, and has a slot for the pin 11 upon said slide *r*. The bar 18 vibrates upon the lever *f*, and the slide *r* is provided with springs that bring the parts to a central or normal position when not otherwise operated upon. The rocking lever *s* is jointed at its ends to the two fingers *t t'* that are drawn toward each other and toward the cams 15 and 16 by a spring, 17. The cams 15 and 16 are connected with and revolved by the ratchet-wheel 5, and these cams are revolved once during the proper number of stitches of the sewing mechanism, the wheel 5 being moved one tooth each stitch. The cams 15, 16, and 4 are shaped in such a way as to bring into action the finger *t* or *t'* or the lever *m* at the proper time. Upon the sliding bar *n* is a set-screw, *v*, that moves with said bar *n* and gives motion to either the finger *t* or *t'*, and through it to the rocking lever *s*, slide *r*, bar 18, and roughened feed-surface 8. The cams 15 and 16 in their revolution may open the fingers *t t'*, so that the end of the screw *v* passes in between them and does not move either, in which case the ordinary longitudinal feed movement only is given from the bar *f* and cam *k*. If, however, the cam 15 or 16 allows the finger *t* to be moved by the spring 17 into the path of the screw *v*, (see Fig. 5,) an end movement will be given that produces a lateral feed in one direction; or, if the screw *v* comes into contact with the finger *t'*, the lateral feed will be in the opposite direction. If the lateral feed is operative at the same time as the longitudinal from the bar *f* and cam *k*, the sewing will be in a diagonal line, and the inclination will be either one way or the other, and when al-

ternated produces a zigzag. If the cam 4 releases the lever *m* so as to lock the longitudinal feed *f k* out of action, the lateral feed will alone be operative, and, by shaping and arranging the cams 15, 16, and 4, the sewing may be made in a variety of patterns, and the length of the stitches may be varied by adjusting the screws *v* and *h*. The cams 15, 16, and 4 may be made to produce stitching in a curved zigzag line, or the line of stitching may be a compound of straight and curved lines.

Figs. 4, 5, and 6 show samples of stitching performed by this machine.

I claim as my invention—

1. The lever *f* with the roughened surface 8 connected thereto by the bar 18, in combination with the rocking lever *s*, slide *r*, and fingers *t t'*, substantially as and for the purposes set forth.

2. The sliding plate *n* and pawl 6, in com-

bination with the revolving cams 15 and 16, adjusting-screw *v*, and fingers *t t'* for moving the rocking lever *s* and lateral slide *r* periodically, substantially as set forth.

3. The cams 15, 16, and 4 revolved progressively during a defined number of stitches by the sewing mechanism, in combination with a feed bar or surface capable of longitudinal and lateral motion, and mechanism, substantially as specified, to lock out of action the longitudinal feed and bring into action the lateral feeding movement, substantially as set forth.

Signed by me this 2d day of July, A. D. 1872.

D. M. SMYTH.

Witnesses:

NATHAN M. HAWKES,  
SAML. A. JOHNSON.