

(No Model.)

2 Sheets—Sheet 1.

B. F. LANDIS.

SEWING MACHINE FEEDING AND CHANNELING DEVICE.

No. 305,937.

Patented Sept. 30, 1884.

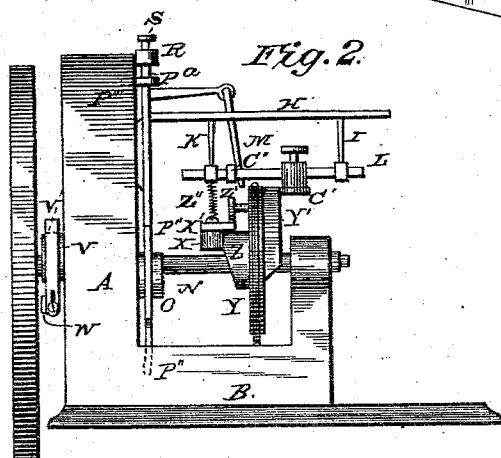
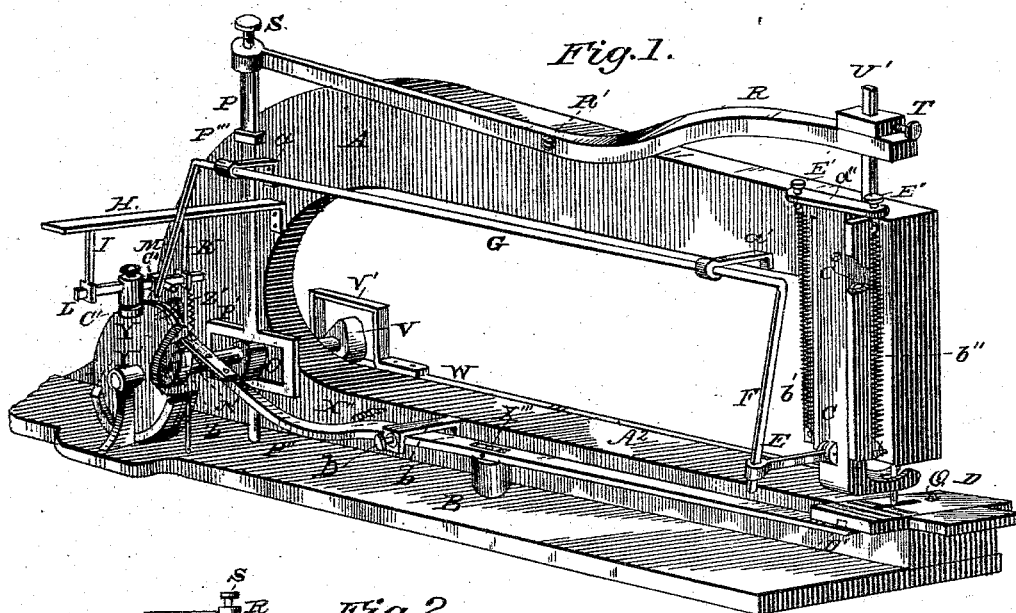
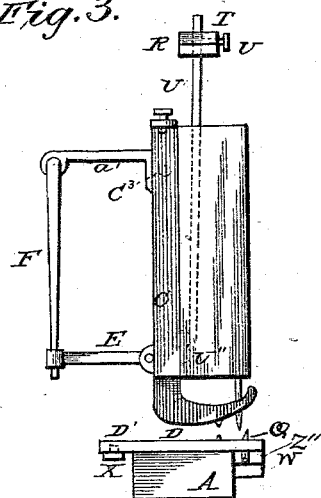


Fig. 3.



WITNESSES:

*Ed. G. Dieterich*  
*W. H. Stevens.*

INVENTOR:

*B. F. Landis*  
BY *Munn & Co.*

ATTORNEYS.

(No Model.)

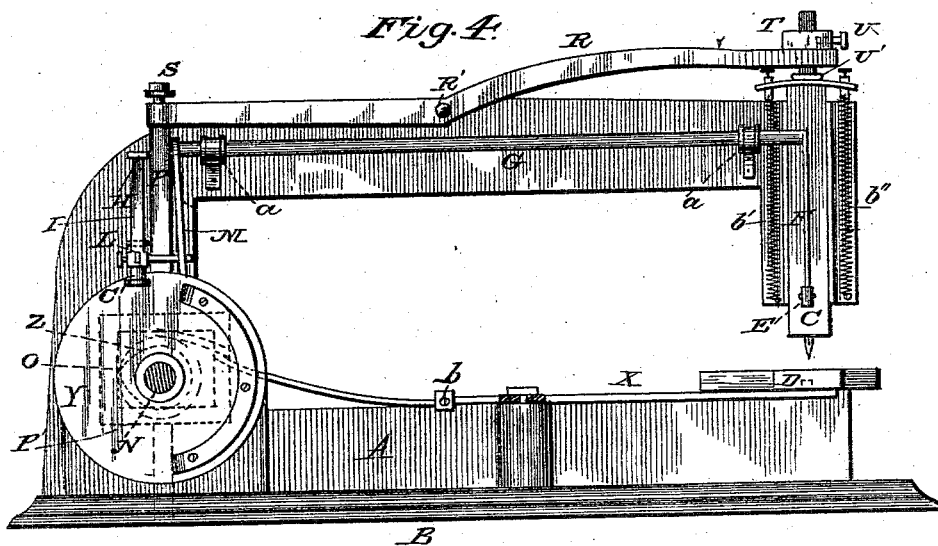
2 Sheets—Sheet 2.

B. F. LANDIS.

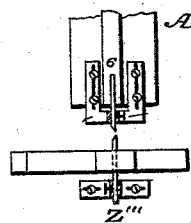
SEWING MACHINE FEEDING AND CHANNELING DEVICE.

No. 305,937.

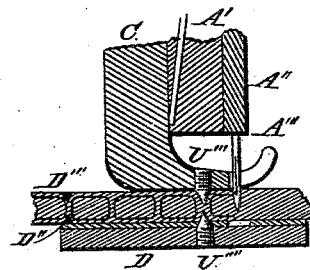
Patented Sept. 30, 1884.



*Fig. 5.*



*Fig. 6.*



WITNESSES:

*Fred. G. Dieterich*

*W. H. Stevens*

INVENTOR:

*B. F. Landis*

BY

*Munn & Co.*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

BENJAMIN F. LANDIS, OF ST. JOSEPH, MISSOURI.

## SEWING-MACHINE FEEDING AND CHANNELING DEVICE.

SPECIFICATION forming part of Letters Patent No. 305,937, dated September 30, 1884.

Application filed April 7, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. LANDIS, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Sewing-Machine Feeding and Channeling Devices, of which the following is a description.

The object of my invention is, first, to secure absolute certainty of feed on any kind of material; second, to feed the upper and lower parts of the work exactly alike, or to feed either part faster than the other; third, to avoid the friction consequent to feeding under a stationary presser-foot; fourth, to produce a channel in the act of sewing in which the stitches may be buried to any desired depth in the work.

To this end my invention consists in the construction and combination of parts hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a sewing-machine, showing my feeding and channeling devices. Fig. 2 is a rear view. Fig. 3 is a front view. Fig. 4 is a side elevation as viewed from the right. Fig. 5 is a detail view of the channeling-knife holders; and Fig. 6 is a transverse vertical section, part in elevation, of the feeding-spur attachments.

The body of the machine consists of the base  $A^2$ , having a fixed arm,  $A$ , raised over it, and a vertical race or slideway in a head,  $A'$ , at the end of said arm, for the needle-holder to reciprocate in.

$B$  is the table on which the machine rests.

$C$  is the presser-foot actuated by springs  $b'$   $b''$ , to hold the work down, as usual. A yoke,  $a'$ , bears on top of the bar of the presser-foot  $C$ , to which yoke the said springs are secured by screws  $E'$   $E''$ , whereby the pressure on the work may be regulated. This presser-foot also serves, in conjunction with the piece  $D$ , to firmly grasp the work to feed it to the needle. To this end each piece  $C$  and  $D$  is given the usual movements, known as the "four-motion feed." Each is actuated by mechanism independent of the other, yet the two are so related that they always advance together. Either feeder may be set to feed longer stitches than

the other when it is desired to full the work on that side, as in setting in coat-sleeves, &c.

Any usual method may be adopted for giving these two feeders the following four motions:

First, to press together upon any intermediate work; then to move forward, carrying said work; then to separate, and, finally, to retreat to the point of starting, leaving the work advanced the distance of one stitch. I herewith show one set of mechanism whereby the above may be accomplished. The first or downward movement of the upper feeder,  $C$ , is caused by the springs  $b'$   $b''$  when permitted to act by the descent of arm  $R$ , as hereinafter described.

The second movement—that is, the feed proper—is produced thus: The vertical bar of the presser-foot  $C$  is provided with trunnions  $C^3$ , which enter vertical grooves in the head  $A'$ . These trunnions rise and fall and rock in said grooves as the foot rises, falls, and rocks in the act of feeding.  $E$  is a rod connecting the foot  $C$  with one arm,  $F$ , of a rock-shaft,  $G$ , having another arm,  $M$ , which is engaged by a stud,  $C''$ , adjustably fixed on a rod,  $L$ . This rod is fitted to slide in hangers  $I$   $K$ , depending from a bracket-arm,  $H$ , which is secured to the body  $A$ .  $C'$  is a roller on a block adjustably secured on rod  $L$ , to engage an inclined segmental flange,  $Y'$ , on the driven pulley  $Y$ .

The third and fourth or return and rising movements of the feeding-foot  $C$  are produced thus: Arm  $R$  is actuated to raise the feed-foot  $C$  by means of a connecting-rod,  $U'$ , pivoted to said foot at  $U''$ .  $T$  is a block securable at any point desired upon rod  $U'$  by means of a set-screw,  $U$ , to hang rod  $U'$  high or low on arm  $R$ , to accommodate work of different thicknesses. The lever  $R$  and the point  $U''$ , at which rod  $U'$  is attached to feed-foot  $C$  both being at the rear side of the trunnions  $C^3$ , the rod  $U'$ , in raising the feed-foot, also swings it back to the rear position ready to start again. The rising motion of lever  $R$  is caused by the drive-shaft  $N$ , on which is mounted a cam,  $O$ , to work in a parallel-sided yoke,  $P'$ , on a rod,  $P$ , which is connected with the opposite arm of lever  $R$  by a block and set-screw,  $S$ . The upper portion of rod  $P$  slides vertically in a bracket,

P''', fixed to body A, and the lower end of the same rod passes through a guide-hole at P'' in the frame.

The lower feed, D, is actuated as follows:

5 Z' is a roller pivoted on one face of wheel Y, to act at each revolution upon a projecting plate, X', secured to lever X to depress it. Lever X being horizontally pivoted at X''', its opposite end and the lower feeder, D, pivoted  
10 thereon at D', is raised thereby into contact with the work, which, being at the same time pressed by the upper feeder, C, is rigidly held between said two feeders. At this time a cam, Z, secured to the main shaft N, acts  
15 against the edge of lever X, which is vertically as well as horizontally pivoted at X''', to draw forward feeder D.

b is a set-screw, against which lever X is thrown by a spring, X'', as soon as cam Z dis-  
20 engages the lever, which occurs immediately after roller Z' disengages plate X', leaving lever X free to be raised at its rear end by a spring, Z''. Thus the lower feeder, D, is depressed by spring Z'' and then returned to the  
25 starting-point by spring X''.

Cam Z causes feeder D to advance to the same point always, whatever be the length of the stitch, said length being regulated by set-  
30 screw b, allowing lever X to be drawn more or less backward. On the contrary, the upper feeder is always retracted to a fixed point; but by means of the roller C', adjustable on  
rod L, it may be given more or less positive throw by cam Y'.

35 To assist in feeding thick work—like harness-leather—I provide one or both feeders with spurs U''' and U''', to project into the work directly in the path of the stitches. At the same time I make these spurs somewhat  
40 blunt and space them relative to the needle, so that they shall enter each stitch-hole, thereby pressing the stitches into better form and evening their apparent length. The feeders  
45 recede upward and downward, respectively, enough to free these spurs from the work before they recede to take another stitch. The spurs may be screwed or otherwise adjustably  
secured in the feeder.

Q represents my channel-cutter, which is a  
50 sharp blade rigidly fixed by means of an adjusting-clamp, Z''', to project from the body of the machine through the feeder to any extent required. To force the work upon such  
a fixed blade is one of the necessities for my  
55 strong clamp-feed, without which it could not be accomplished.

I am aware that a lower feed and an upper feed similar to mine have each been used sepa-  
60 ratedly; but I do not know that both have been used together to clamp firmly on the work, and then both advance together to feed the work along.

What I claim as my invention, and wish to secure by Letters Patent, is—

1. The combination, with an upper and a 65 lower feeder, and means for clamping them intermittently upon the work, of a cutting-blade fixed in the path of the stitches, substantially as described, whereby a channel will be cut for the stitches to bury in.

2. The combination, with the feed-foot C, having trunnions C' on its sides, of the head A', having a vertical slot for the body of feeder C, and vertical side slots for trunnions C' to reciprocate in, and means, substantially 75 as described, for reciprocating said feed-foot both vertically and horizontally, as shown and described, whereby the foot may swing upon its trunnions in said slots and give the same amount of feed at any height to which it may 80 be raised.

3. The combination, with the vertically-slotted head A' and the feed-foot C, having trunnions C' to engage said slots, of the yoke a'', engaging said feed-foot, the springs b' and b'', 85 secured at one end to head A' and at the other end to said yoke a'', and the adjusting-screws E' E'', substantially as shown and described.

4. The combination, with the feed-foot C, having trunnions C', the slotted head A', the 90 yoke a'', the springs b' b'', and the set-screws E' E'', of the rock-shaft G, having arms F M, the connecting-rod E, the slide-bar L, the stud and block C'', the roller and adjustable block C', the wheel Y, having the cam Y', and the 95 shaft N, as and for the purpose specified.

5. The combination, with the feed-foot C, having trunnions C', the slotted head A', and the means described for depressing and horizontally reciprocating said feed-foot, of the lever R, connecting-rod U', the rod P, provided 100 with yoke P', and the cam O on shaft N, as shown and described.

6. The combination, with the feed-foot C, the head A', the lever R, and the means de- 105 scribed for operating said feed-foot and said lever, of the rod U', connecting said feed-foot and said lever, and the block T and set-screw U, substantially as described, whereby the feed-foot may be adjusted to any given height, 110 and then go through all the movements to their full extent, for the purpose specified.

7. The combination, with the base-piece A<sup>2</sup> and the lower feeder, D, of the lever X, provided with both horizontal and vertical pivots at 115 X''', the pivot D', and the plate X', the wheel Y on shaft N, the roller Z', the cam Z, spring X'', and set-screw b, as shown and described.

BENJAMIN F. LANDIS.

Witnesses:

FRANCIS W. BRADLEY,  
WILLIAM D. SICELUFF.