

H. W. HADLEY.

Sewing Machine.

No. 67,752.

Patented Aug. 13, 1867.

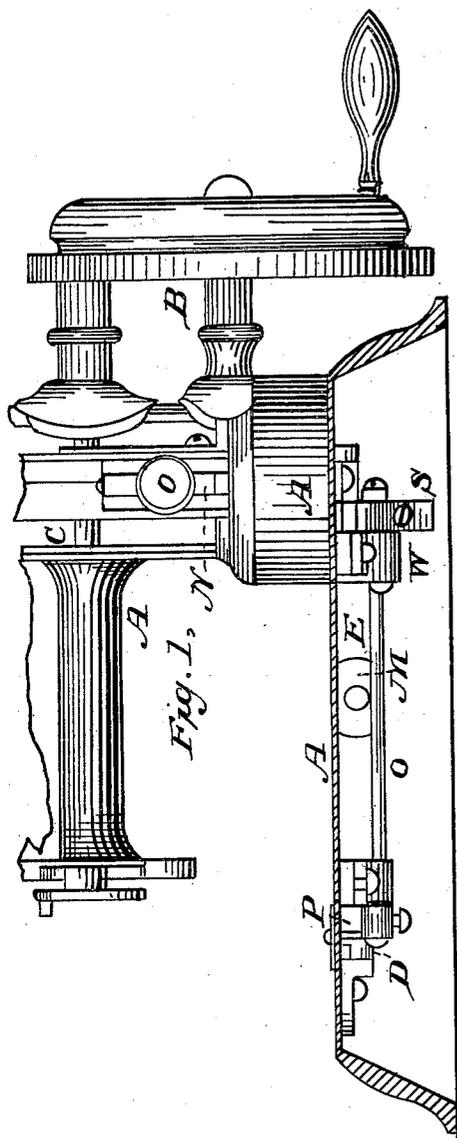


Fig. 3.

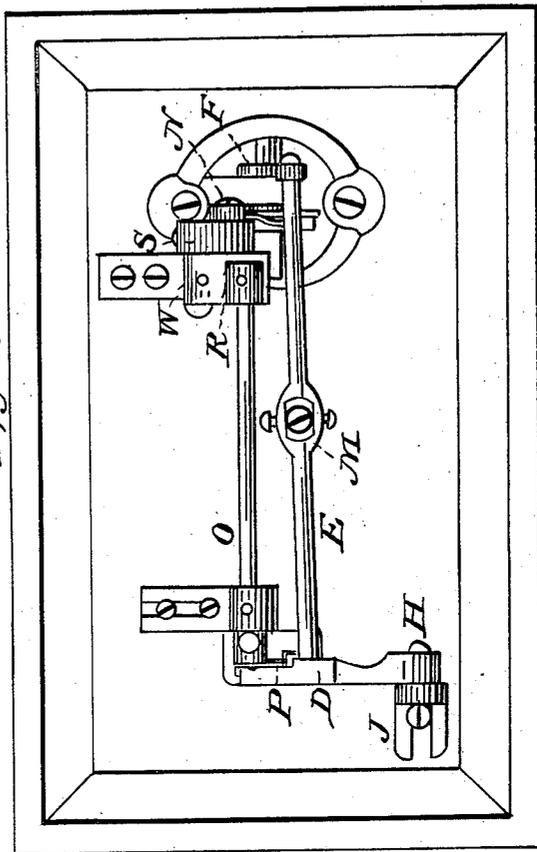


Fig. 4.

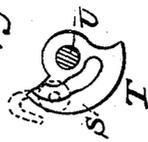
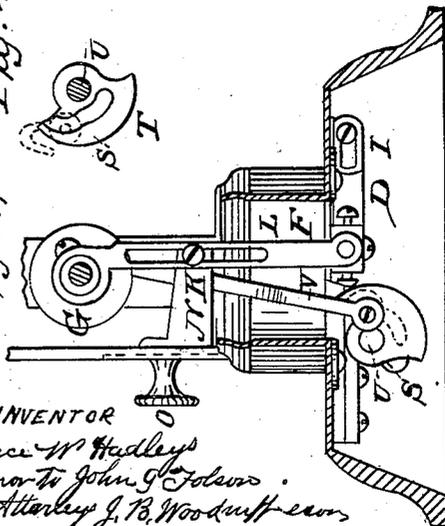


Fig. 2.



WITNESSES

*D. E. Leas*  
*W. A. Bennett*

INVENTOR

*Horse W. Hadley*  
*assignor to John G. Tolson*  
*By Attorney J. B. Woodruff*

# United States Patent Office.

HORACE W. HADLEY, OF WINCHENDON, MASSACHUSETTS, ASSIGNOR TO  
JOHN G. FOLSOM, OF SAME PLACE.

Letters Patent No. 67,752, dated August 13, 1867.

## IMPROVEMENT IN SEWING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, HORACE W. HADLEY, of Winchendon, in the county of Worcester, and State of Massachusetts, have invented a new and useful Improvement in Sewing Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of a machine, partly in section, showing my improvements.

Figure 2 is a vertical transverse section of the same.

Figure 3 is a bottom plan, showing the operation of my improvements.

My invention consists in improved devices to produce a noiseless and easy oscillation of the looper-hook, and also in new and improved means to produce the desired movements of the feeding-dog, and in regulating and controlling the length of the stitch.

That others may understand the construction and operation of my improvement, I will particularly describe it.

A is the bed and framework of my sewing machine. B is the driving-wheel, and C the main driving-shaft. The wheel B is provided with an ordinary gear, which meshes with a proper pinion upon the end of the shaft C. D is the feeding-dog, which moves in the manner known as "four-motion," and is actuated by the vibrating lever E, and the vibrating eccentric-rod F, which receives its motion from the driving-shaft C and eccentric G. The feeding-dog D is pivoted, and also reciprocates, upon the pin H, as a centre and guide. The pin H passes through a slot, I, in the end of the feeding-dog, (see fig. 2,) clamping it loosely against the face of the adjustable stud J, so that while it is free to move back and forth, or rise and fall, upon the pin H, as a centre, the face of J retains it in line, and compels it to move always in the same vertical plane. The eccentric-rod F has its reciprocating movement due to the eccentricity of G, and it has also an oscillatory movement upon an axis, K, which is a pin passing through a slot, L, in the eccentric-rod. The result of this joint operation is an elliptical movement of the lower end of the eccentric-rod, and this elliptical movement is communicated to the feeding-dog D by the vibrating lever E, which is connected, by ball joints at its ends, to the rod F and dog D, and by a "universal" joint at its centre to the stationary stud M, which forms its fulcrum.

From the above description it will appear evident that if the position of the centre of oscillation of either the lever E or rod F be shifted the length of the reciprocation of the feeding-dog will be changed, because the length of said reciprocation depends directly upon the proportion existing between the two arms of either of the levers E or F. I therefore make one of these centres movable, so that by changing the proportionate length of the arms of one of these levers I may change and control the length of the reciprocation of the feeding-dog, and therefore the length of the stitch.

For convenience I prefer to make the fulcrum of the rod F movable, and accomplish the same by attaching said fulcrum or axis-pin K to the sliding-block N, which moves in a guide-way formed for it in the frame of the machine. The set-screw O secures the sliding-block at any desired point. As the block N is raised, the lower arm of the lever F is lengthened, and the movement of the feeding-dog is increased, and *vice versa*. The looper-hook P is mounted upon the end of the crank-shaft Q, the crank R being upon the other end of the same shaft. The crank is operated by the oscillating cam S, which has upon its side face the irregular groove T, fig. 4, into which the end of the crank R is inserted. The cam S is caused to oscillate upon its axis U, in the bearing W, by the eccentric-rod V, which is connected to the main shaft C by an eccentric-wheel of proper throw. As the rod V reciprocates, the cam groove T passes over the end of the crank R, successively bringing it nearer or pushing it further from the centre of V, and causing the shaft Q and hook P to oscillate upon their axis of motion at the time and to the extent desired.

Having described my invention and its operation, what I claim as new, and desire to secure by Letters Patent, is—

1. The adjustable fulcrum-block N, in combination with the lever F and the feeding-dog D, substantially as and for the purpose set forth.
2. The feeding-dog D, in combination with and operated by the lever E, and slotted rod F, and eccentric G, substantially as and for the purpose set forth.
3. I claim the pivoted oscillating groove cam S, with the oscillating looper-shaft Q, and the looper, arranged and operating substantially as described.

HORACE W. HADLEY.

Witnesses:

L. W. PIERCE,  
H. A. CROCKER.