

(No Model.)

3 Sheets—Sheet 1.

R. WHITEHILL.

SEWING MACHINE.

No. 326,821.

Patented Sept. 22, 1885.

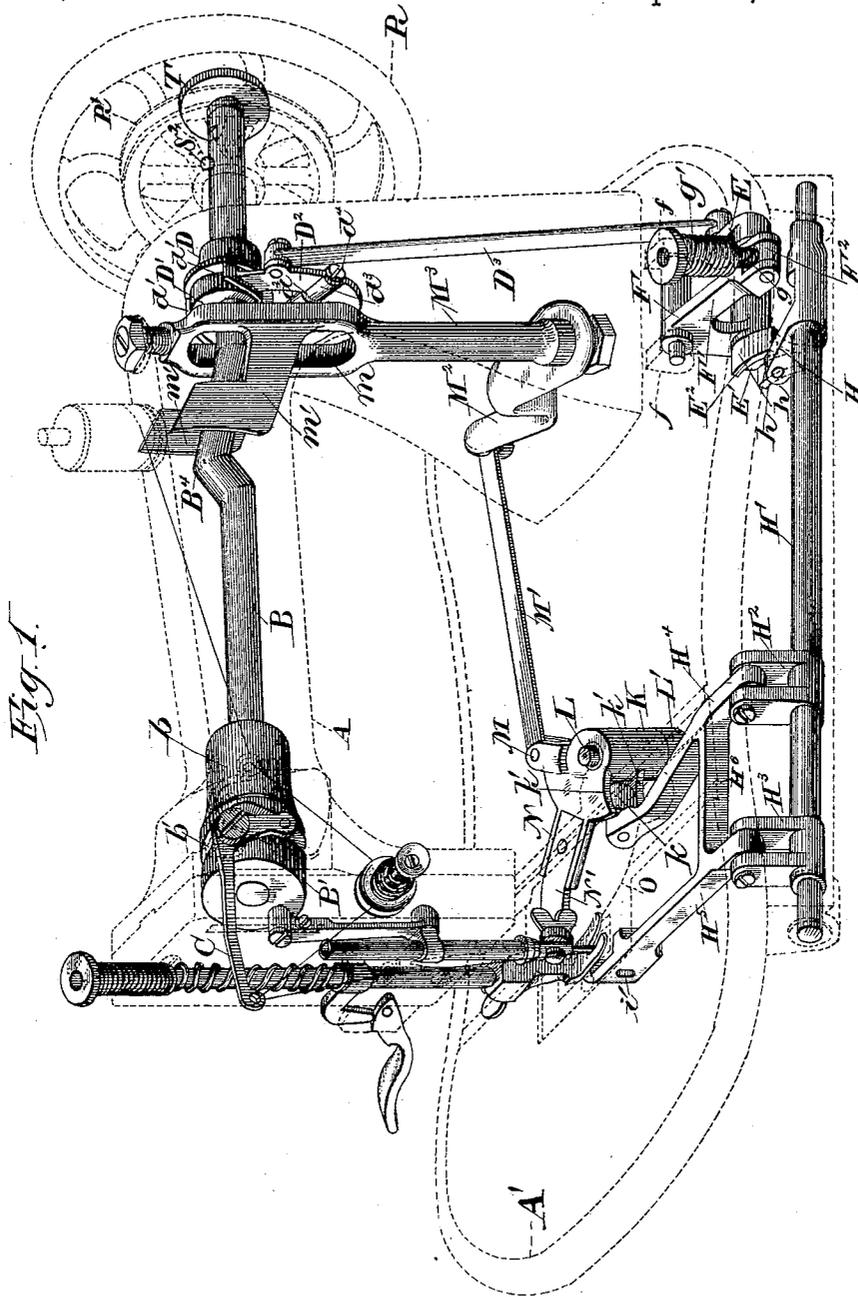


Fig. 1.

Witnesses:  
*E. G. G. G.*  
*R. Platz*

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 Robert Whitehill  
 By *Stout & Underwood*  
 Attorneys.

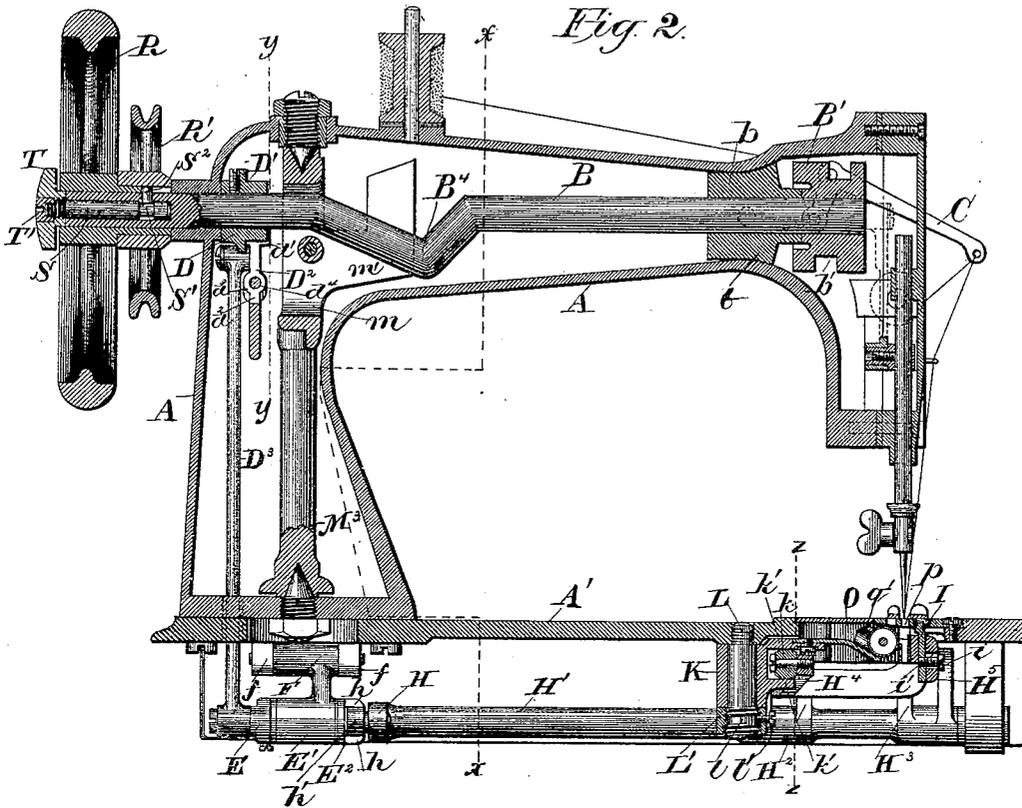
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R. WHITEHILL.  
SEWING MACHINE.

No. 326,821.

Patented Sept. 22, 1885.



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(No Model.)

3 Sheets—Sheet 3.

R. WHITEHILL.  
SEWING MACHINE.

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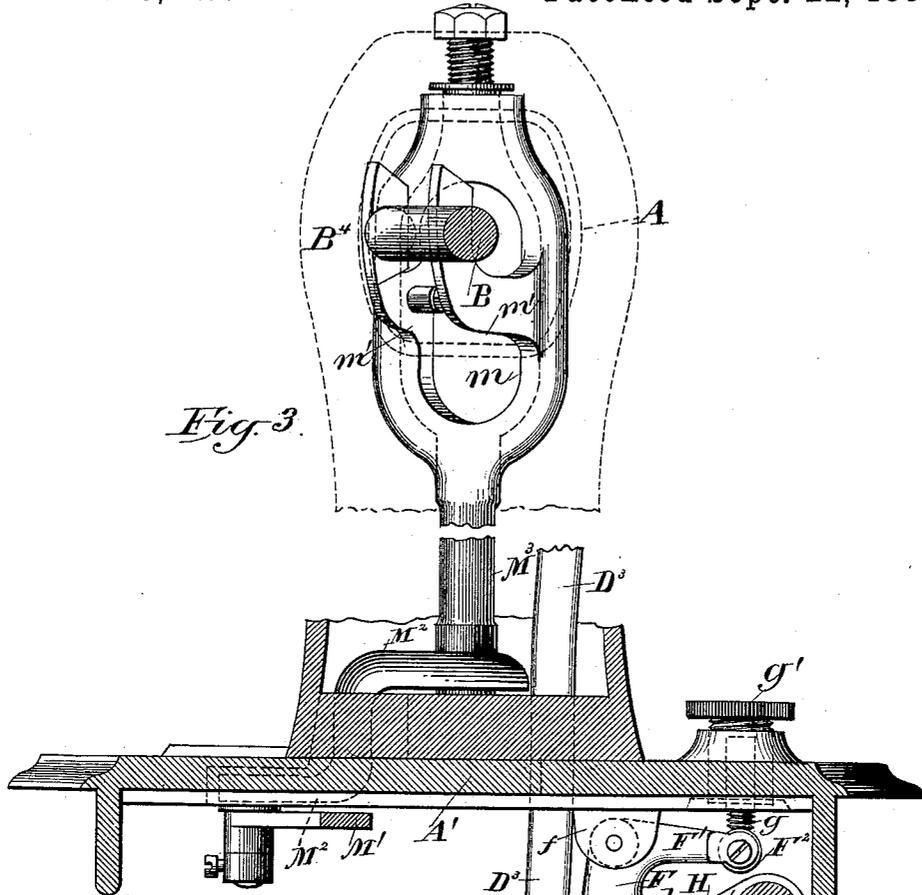


Fig. 3.

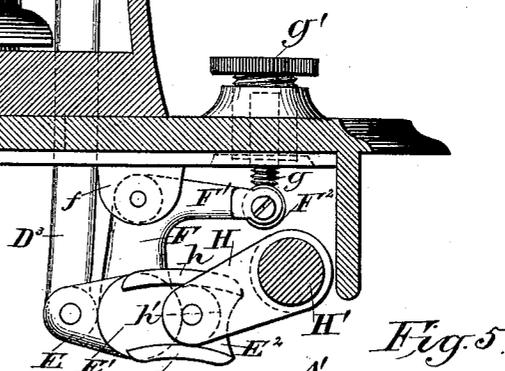


Fig. 5.

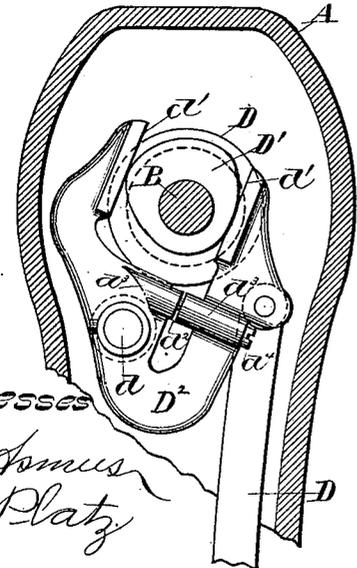
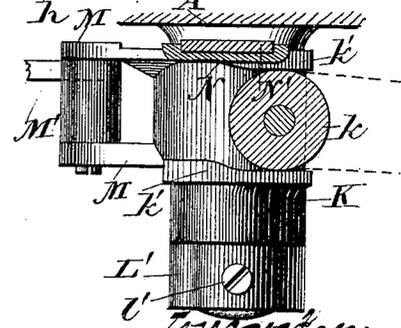


Fig. 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

ROBERT WHITEHILL, OF MILWAUKEE, WISCONSIN.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 326,821, dated September 22, 1885.

Application filed July 1, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT WHITEHILL, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to sewing-machines, and will be fully described hereinafter.

In the drawings, Figure 1 is a perspective view of the moving parts of a machine embodying my invention, with the casing or frame shown in dotted lines. Fig. 2 is a vertical longitudinal section through the center of the machine. Fig. 3 is a section on line *x x* of Fig. 2. Fig. 4 is a section on line *y y* of Fig. 2, looking toward the fly-wheel of the machine. Fig. 5 is a section on line *z z* of Fig. 2.

My improved machine is to be mounted on a stand or table, as machines usually are.

A is the frame, and B is the driving-shaft. This shaft B carries a cam-head, B', on the rear or inner head of which a journal, *b*, is formed, that the shaft may have a steady bearing in arm A.

C is a take-up lever of bell-crank shape. The elbow of this lever is pivoted to the upper part of the head of the frame, and its short arm carries a roller (shown in dotted lines of Fig. 2) that engages with the cam-groove *b'* of the head B', while the long arm has an eye through which the upper thread passes on its way from the "tension" to the needle.

Just inside of the rear elbow of the frame A the driving-shaft B is provided with a tight collar, D, (see Fig. 2,) that has a cam, D', formed on it, and this is straddled from below by a bracket-lever, D<sup>2</sup>, (see Figs. 1 and 4,) that is pivoted to the rear of the casing by a bolt, *d*. Each end of the lever D<sup>2</sup> is provided with a bearing-face, *d'*, and these faces are always in contact with the periphery of the cam D', so that the faces may be nicely adjusted to the cam. The said lever is slotted, as at *d''*, and each arm has a re-enforce, *d'''*, at the beginning of this slot, and these are bored and screw-threaded to receive an adjusting-screw, *d'''*, by which the arms may be made to approach each other, the metal being sufficiently elastic to permit this.

While one arm of lever D<sup>2</sup> is pivoted to the frame, as before stated, its other arm is jointed to a link, D<sup>3</sup>, that connects the lever D<sup>2</sup> with the crank-arm E of a rock-shaft, E', which latter has its bearing in a swinging bracket, F, that is hung from lugs *f f* to the bottom plate, A'. This bracket F has a horizontal arm, F', the outer end of which is bifurcated to receive a roller, F<sup>2</sup>, and this roller has a screw-bolt, *g*, projecting up from it into a female set-screw, *g'*, that projects down through a threaded opening in the bottom plate, A'.

On its end opposite the arm E the shaft E' is provided with an arm, E<sup>2</sup>, that is slightly curved; and this arm has curved flanges that form between them a guide for a roller, *k*, of an arm, H, that is secured upon or forms part of a shaft, H'. This shaft is journaled in lugs that depend one from each end of the frame, and carries two other arms, H<sup>2</sup> H<sup>3</sup>, respectively; and to the arms H<sup>2</sup> H<sup>3</sup> (see Fig. 1) the members H<sup>4</sup> and H<sup>5</sup>, respectively, of a feed-bar are pivoted. A bar, H<sup>6</sup>, connects the two members H<sup>4</sup> and H<sup>5</sup>, and the member H<sup>5</sup> has the feed-point I secured to it adjustably by means of a screw, *i*, that passes through a slot, *i'*, in the end of said member. The member H<sup>4</sup> carries on its end a roller, *k*, that projects between cam-flanges *k' k'* of a hollow swinging post, K, which post is suspended by a pivot, L, that depends from the plate A'.

L' is a nut which is secured on the lower end of pivot L, and forms a bearing for the lower end of swinging post K.

M is a bifurcated arm that extends from one side of the swinging post, and between the furcations of this arm M is pivoted one end of a link, M', the other end of which is pivoted by a stud to the under side of one end of an angle-lever, M<sup>2</sup>, the other end of which is keyed or otherwise secured to the lower end of an upright oscillating shaft or post, M<sup>3</sup>, that has suitable bearings at each of its ends in the rear of the frame A, as shown in Fig. 2 of the drawings. The upper portion of post M<sup>3</sup> is widened, and is provided with a slot or opening, *m*, through which the driving-shaft passes, and from each side of said slot on one face of the post are projected arms *m' m'*, that straddle the driving-shaft B and partially inclose it be-

tween the elbow B<sup>1</sup> in the same and the slot in post M<sup>2</sup>. The arms m' m' are inclined or tapered from the post to their front ends, so as to lie parallel to the portion of shaft B adjacent to them, and lie so close to the shaft that the latter is always in contact with both of them, and therefore as the shaft revolves its elbowed portion or crank B<sup>1</sup> will have a continuous and steady swaying action upon the post, which, continuing through lever M<sup>2</sup>, link M', and arm M, will impart a like action to post K.

In addition to arm M, swinging post K has another arm, N, and to this arm, arm N' of the shuttle-carrier is secured, so that as post K swings it will move the shuttle-carrier back and forth in the race at the same time that the lever D<sup>2</sup>, as it is vibrated by the cam D' through the mechanism before described, reciprocates the double lever H<sup>1</sup> H<sup>2</sup>, and as this lever reciprocates, the cam-plates k' k' on post K lift upon the member H<sup>1</sup> in time to carry the feed-point on the end of member H<sup>2</sup> up against the cloth at each return movement of the member. The shaft H' is rocked by means of the flanges h h on arm E<sup>2</sup>, and the throw of the lever H<sup>1</sup> H<sup>2</sup> is regulated by means of the screws g g'.

As the principal strain or wear of swing-post K must be borne by the nut L' on bolt L, and as it is absolutely necessary that the swing-post K shall fit snugly between the plate A' and the nut L', I divide the threads on the lower end of bolt L, so as to leave an annular groove, l, into which the point of a set-screw, l', projects, so that after the nut has been turned up sufficiently to take up all the lost motion the set-screw may be tightened against the bolt to prevent the nut from being turned by the vibration of the machine.

On the driving-shaft B is the usual fly-wheel, R, and on a hub or sleeve of the latter is the sheave or pulley R', and to properly key these to the driving or needle shaft I propose to bore the fly-wheel end of the latter to form a socket for a bolt, S, which has an eccentric groove, S', near its inner end, and when it is in place this eccentric groove lies just under a short bolt, S<sup>2</sup>, that passes loosely down through a slot, m, the hub of the fly-wheel and a hole in the needle or driving shaft.

Near its outer end the bolt S is threaded to receive the hub of a milled nut, T, and its extreme outer end is reduced and threaded to take a small jam-nut, T', that fits in a depression in the face of nut T. This jam-nut serves to secure nut T tightly on bolt S, so that it cannot turn independently of bolt S. As shown in Fig. 2, the shallowest portion of groove S' is uppermost, and therefore the highest portion of the eccentric formed by groove S' has wedged the bolt S<sup>2</sup> out against the inner periphery of the hub of pulley R', and has made it practically integral with the hub of the fly-wheel and the needle or driving shaft, and the two will turn together; but when it is desired to disconnect the sheave from the driving or needle shaft and connect it (the sheave)

with the bobbin-winder the milled nut is turned until the deepest part of the eccentric groove in bolt S comes under the bolt S', when the latter drops down out of engagement with the hub of the sheave and connection is broken.

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

1. In a sewing-machine, the combination, with a driving-shaft having a crank or elbow, of a vertical oscillating shaft or post provided with arms embracing said crank or elbow, and having an inclosed opening through which said driving-shaft passes, pivots for said vertical shaft or post arranged centrally in the vertical plane of the driving-shaft, a shuttle-carrier, and connections between the latter and the said oscillating shaft or post, substantially as set forth.

2. In a sewing-machine, the combination, with a driving-shaft having a crank or elbow, of a vertical oscillating shaft or post provided with arms embracing said crank or elbow, and an arm at its lower end, and having an inclosed slot or opening through which said driving-shaft passes, pivot-pins for said vertical shaft or post arranged centrally in the vertical plane of the driving-shaft, a second oscillating shaft or post, a shuttle-carrier connected therewith, and a link serving as a connection between the arms of the said oscillating shaft or post, substantially as set forth.

3. The swing-post K and its cam-flanges, mechanism connecting it with the driving-shaft, and the feed-bar having a member, one end of which engages between the cam-flanges of swing-post K, in combination with a rock-shaft, H', the driving-shaft, and connecting mechanism.

4. The combination of oscillating shaft or post M<sup>2</sup> and its arms, the elbowed driving-shaft, lever M<sup>2</sup>, link M', swing-post K, the shuttle-carrier, cam-flanges, feed-bar, and mechanism, substantially as described, for reciprocating the feed-bar, all timed to operate substantially as described.

5. The combination of the driving-shaft, its rear cam, lever D<sup>2</sup>, connection D<sup>3</sup>, rock-shaft E', having flanges h h, with the swinging and adjustable hanger, rock-shaft H', and the feed-bar, as and for the purpose set forth.

6. The connecting rock-shaft E', its swinging bearing, and mechanism for adjusting said bearing, in combination with the rock-shaft H' and feed-bar, whereby the stroke of the feed-point is regulated, as set forth.

7. The driving-shaft and its cam D', in combination with the lever D<sup>2</sup>, pivoted at one side thereof to the frame of the machine, and having arms embracing said cam, a link jointed to the other side of said lever, and a feeding mechanism connected with said link, substantially as set forth.

8. The driving-shaft and its cam D', in combination with the slotted or split lever D<sup>2</sup>, pivoted at one side to the frame of the machine, and provided with arms embracing said

cam, a link jointed to the side of said lever  
opposite its fulcrum or pivotal point, a set  
screw or bolt for drawing said arms toward  
each other, and a feeding mechanism con-  
5 nected with said link, substantially as set  
forth.

9. In a sewing-machine, the combination,  
with a feed-bar and a shuttle-carrier, of an  
oscillating shaft or post having an arm to  
10 which said carrier is connected, and also pro-  
vided with a cam for imparting positive ver-

tical movements to said feed-bar, substantially  
as set forth.

In testimony that I claim the foregoing I  
have hereunto set my hand, at Milwaukee, in 15  
the county of Milwaukee and State of Wis-  
consin, in the presence of two witnesses.

ROBERT WHITEHILL.

Witnesses:

S. S. STOUT,

H. G. UNDERWOOD.