(Model.) 3 Sheets—Sheet 1.

J. HOEFLER.

SEWING MACHINE.

No. 246,883. Patented Sept. 13, 1881.

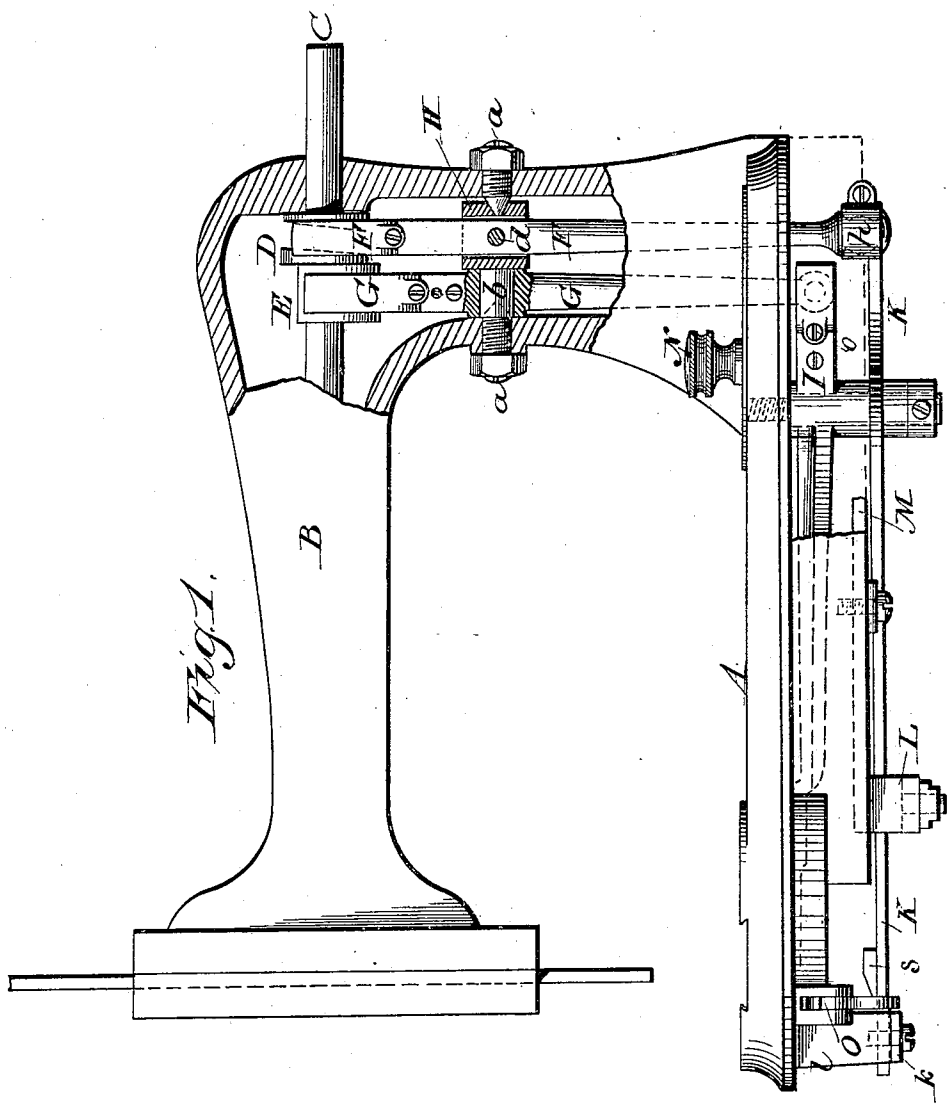


Fig. 1.

Witnesses.
Franck L. Ourand
Walter S. Dodge.

Inventor.
John Hoefler.
By P. S. Dodge
Atty.

N. PETERS. Photo-Lithographer. Washington, D. C.

(Model.)

3 Sheets—Sheet 2.

J. HOEFLER.

SEWING MACHINE.

No. 246,883. Patented Sept. 13, 1881.

Fig. 3.

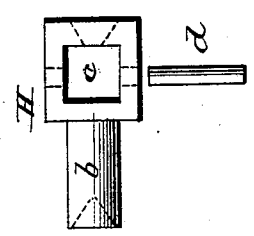
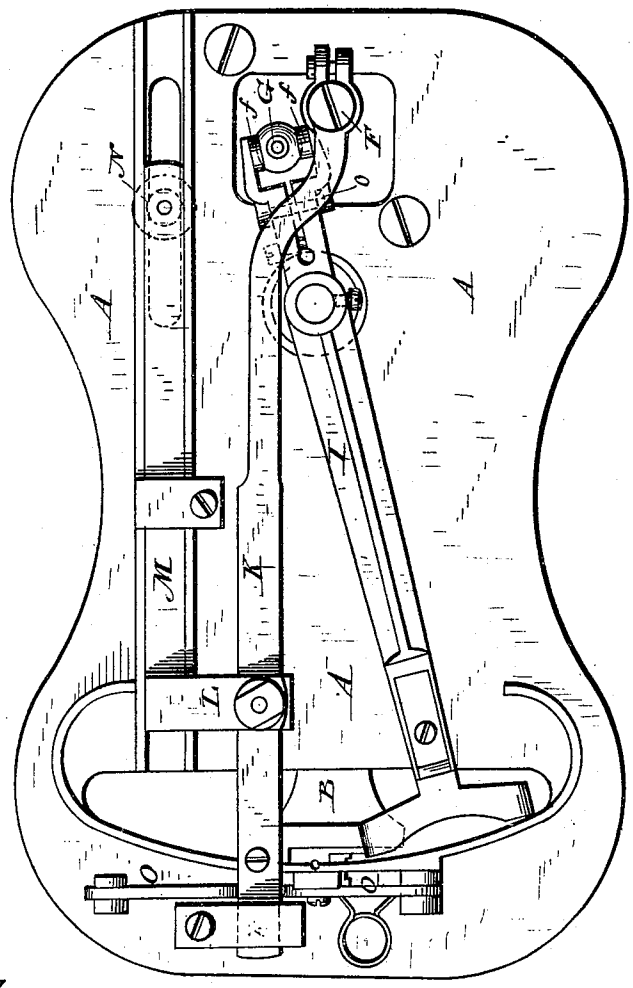


Fig. 2.



Witnesses.
Franck L. Durand
Walter S. Dodge

Inventor.
John Hoefler
By P. T. Dodge
Atty

N. PETERS. Photo-Lithographer. Washington, D. C.

(Model.)

3 Sheets—Sheet 3.

J. HOEFLER.

SEWING MACHINE.

No. 246,883. Patented Sept. 13, 1881.

Fig. 4.

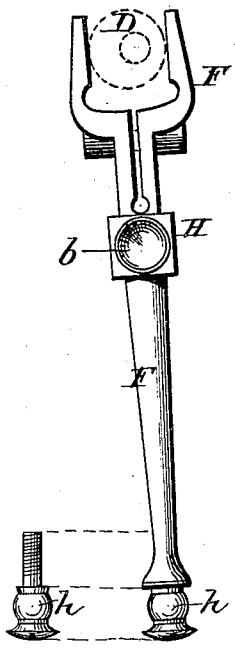


Fig. 5.

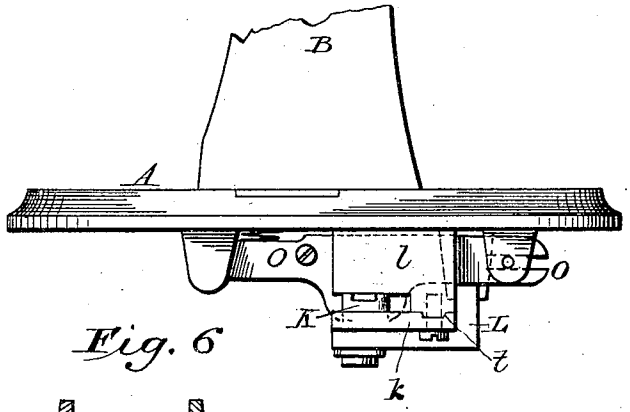


Fig. 6

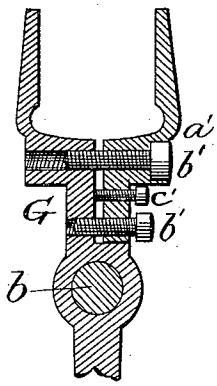
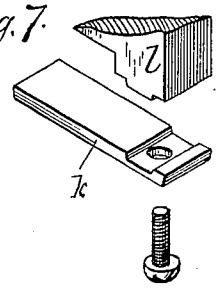


Fig. 7.



Witnesses.
Franck L. Durand
Walter S. Dodge

Inventor.
John Hoefler
By P. F. Dodge
Atty.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOHN HOEFLER, OF ILION, NEW YORK.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 246,883, dated September 13, 1881.

Application filed April 27, 1881. (Model.)

To all whom it may concern:

Be it known that I, JOHN HOEFLER, of Ilion, in the county of Herkimer and State of New York, have invented certain Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to that class of sewing-machines in which reciprocating shuttle-carriers and the ordinary four-motion feed are employed, and more particularly in machines containing the peculiar feed-motion represented in my previous Letters Patent, No. 217,872, dated July 29, 1879, the object of the invention being to simplify and cheapen the mechanism for driving the shuttle-carrier and feeding devices.

The invention consists in mounting the shuttle-driving and feed-operating levers upon a single shaft, one being mounted around the same and the other pivoted within the same, so as to have an independent movement in a different plane; also, in combining with the two levers supported by a common shaft a single driving-shaft provided with suitably-shaped cams, which engage directly with the ends of the levers and move the same in different planes; in the peculiar construction of the rocking shaft with a journal on one end to receive the shuttle-driving lever and an opening or mortise in the opposite end to receive the feed-operating lever; in providing the lever with a flanged spherical end, made in a separate piece from the lever and attached thereto by a threaded stem or neck, whereby the ready detachment and adjustment of the spherical portion is permitted; and in other minor details, which will be hereinafter described.

Referring to the accompanying drawings, Figure 1 represents a side elevation of my improved machine, with portions broken away to show the interior construction. Fig. 2 is a bottom-plan view of the same. Fig. 3 is a view of my improved shaft, upon which the driving-levers are mounted. Fig. 4 is a side view of one of the driving-levers and its detachable spherical head; Fig. 5, an end view, showing the construction of the feeding mechanism; Fig. 6, a partial view of one of the levers. Fig. 7 is a fragmentary view, showing the manner in which the plate for supporting the feed-operating lever is secured to the bed-plate.

Referring to the drawings, A represents the body or cloth-plate of the machine, and B the overhanging rigid arm, constructed, as usual, to sustain the needle-bar, driving-shaft, and other parts.

C represents the main driving-shaft, mounted horizontally in the arm B, and provided at the rear end with the two cams D and E, which operate in the upper forked end of the levers F and G, respectively, the lever F serving to operate the feed mechanism, while the lever G operates the shuttle-carrying lever. The two levers F and G are sustained by a horizontal rock-shaft, H, such as shown in Figs. 1 and 2, the shaft being sustained at opposite ends by adjustable pivot-screws *a*. The lever G, requiring a vibratory movement in one direction only, is mounted upon a journal, *b*, formed on one end of the shaft H; but the lever F, requiring a movement in two directions, is inserted through a vertical mortise or opening, *c*, in the shaft, and sustained therein by a transverse pivot, *d*, the ends of which are seated in the shaft. The rocking motion of the shaft permits the lever F to vibrate in one direction, while the pivot *d* permits it to vibrate within and independently of the shaft in a path at right angles to its first-named movement. This method of mounting the lever permits its ends to receive a movement in a rectangular path, as is required for operating the feed-motion described in my previous patent.

The cam D, by which the four-motion movement is imparted to the lever F, is constructed and operates upon the lever in the same manner as in my previous patent, to which reference is made for a full and detailed description thereof.

The pivot-screws *a* are provided, as shown, with jam-nuts to secure them in place and prevent them from being loosened by the vibration of the machine.

The lever G is provided at its lower end with a spherical head or termination working within the forked end of a horizontal lever, I, pivoted to the under side of the bed-plate, and provided at its forward end with a shuttle-carrier.

The lower end of lever G, instead of operating directly against the lever I, is provided, as shown in Fig. 2, on opposite sides, with two small plates or disks, *f*, the inner faces of which

are made concave to fit the end of the lever, while their outer faces are flattened to bear against the flattened inner faces of the lever, within which they are free to slide, in order that the parts may accommodate themselves to their varying relative positions.

The forked end of the lever I is provided, as shown in Figs. 1 and 2, with a transverse screw, *o*, by means of which its arms may be drawn together to compensate for wear and maintain a close fit between the parts.

The lever F is provided at its lower end with a spherical enlargement or head, *h*, seated in the end of a horizontal lever, K, to which it imparts both a sliding and a vibratory movement for the purpose of operating the feed, the construction and movement of this lever and its action upon the feed-dog being essentially the same as in my orignal patent. The spherical head *h*, instead of being formed upon an integral part of the lever, as usual, is made in a separate piece and provided with a threaded stem or neck screwed into the lever, as shown, this construction permitting the head to be adjusted or to be removed and replaced by a new one in case of its becoming unduly worn. As this spherical head receives a great amount of wear and is more rapidly destroyed than other parts of the machine, its detachability is a matter of very considerable importance, since it avoids the expense of renewing the entire lever.

As shown in the drawings, the detachable head or ball is formed with an enlargement or flange at its lower end to retain the lever in place and prevent it from falling therefrom.

The length of movement of the feeding devices is regulated by shifting the fulcrum or bar of the lever K, as heretofore. In the present case the lever has its bearing in a block, L, pivoted upon an arm projecting laterally from a sliding plate, M, mounted in a grooved rib on the under side of the bed-plate, and secured in place by means of a threaded neck extending upward through a slot in the bed-plate, and provided on the upper end with a thumb-screw, N.

The cloth-feeding plate O receives its four-motion movement, as in my previous machine, from the end of lever K, which is provided with a wedge, *s*, to ride thereunder, as shown in Fig. 1, the end of the lever being sustained by means of a plate, *k*, screwed at one end to a lug, *l*, on the under side of the bed-plate. Much trouble having been experienced in holding the plate *k* in position against the friction of wedge *s*, which tended to swing it sidewise, I provide the plate *k* with a transverse groove, *t*, in its upper side, and form a corresponding projection on the under side of lug *l*, to enter said groove. By arranging the parts to interlock in this manner the plate *k* is held securely in place.

While it is preferred to construct the shaft H in the form shown in the drawings, it may be modified to some extent without departing from the limits of my invention.

In order to compensate for wear, I propose to construct the forked levers G, and also the ends of the other forked levers, if desired, in the manner represented in Fig. 6, one arm or side, *a'*, being made in a separate piece and secured by means of two screws, *b'*, and an intermediate screw, *c'*. The screws *b'* serve to draw the two parts of the lever together, while the intermediate screw serves to limit their movement toward each other. This construction permits the width of the slot to be varied at will, and the parallelism of its sides to be maintained, although the wear may not be uniform.

I am aware that it is old in sewing-machines to mount upon a common axis two levers which vibrate in parallel planes.

My invention is limited to an arrangement wherein the two levers mounted upon a common axis move in planes which are not parallel with each other.

The action of the cam within the forked end of the lever causes the latter to wear unequally, rendering the opening wider at one point than at another. By the peculiar arrangement of parts represented in Fig. 6 all difficulty from this source is overcome.

Having thus described my invention, what I claim is—

1. The combination of the shaft H, the two levers F and G, the former having a compound movement and the latter a movement only at right angles to the axis of said shaft, and means for imparting such movement to the levers, substantially as described.

2. In combination with the rock-shaft H, the lever G, journaled around the same, and the lever F, pivoted transversely within the same.

3. The rock-shaft H, provided with the journals *b* and with the mortise or opening *c*.

4. The combination, in a sewing-machine, of the feed-driving lever and the shuttle-driving lever, both sustained by one and the same shaft, and the two driving-cams, constructed and arranged substantially as shown, to impart to one lever a vibratory motion in one plane and to the other a compound vibratory motion or motion in different planes, substantially as described.

5. In combination with the driving and the driven levers F K, the spherical neck provided with an enlarged head or flange on the outer side and attached to one of the levers by a threaded connection, as shown.

6. In combination with the operating-cam, the forked lever having one arm or side secured to the other by means of the several screws acting respectively to draw the parts together and to hold them apart, as described, whereby provision is made for compensating for the wear and for maintaining the parallelism of the inner working-faces of the lever.

JOHN HOEFLER.

Witnesses:
D. LEWIS,
GEO. RICHARDSON.