

F. E. Mills,

Treadle.

No. 112,102.

Patented Feb. 28. 1871.

Fig. 2.

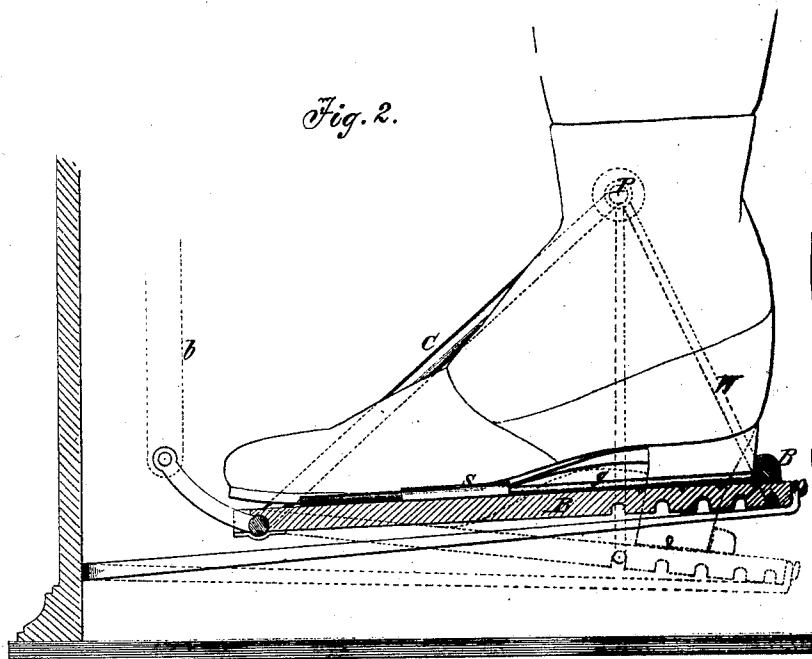


Fig. 1.

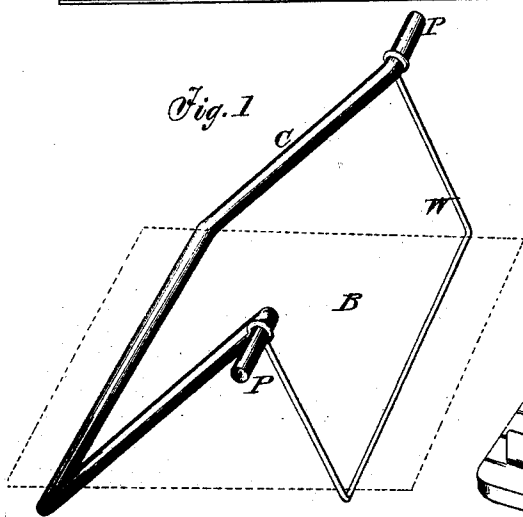
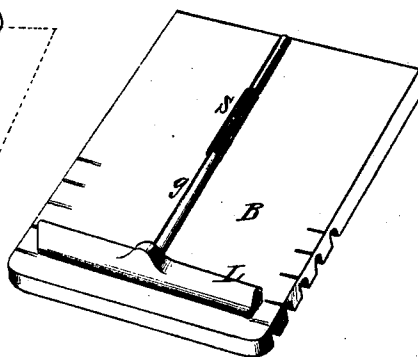


Fig. 3.



Witnesses:

Gustave Dietrich
George H. Mabee

Inventor:

F. E. Mills
PER *Mumford*
Attorneys.

UNITED STATES PATENT OFFICE.

FRANCIS E. MILLS, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN TREADLES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **112,162**, dated February 28, 1871.

Be it known that I, FRANCIS E. MILLS, of the city and county of San Francisco, in the State of California, have invented an Improvement in Sewing-Machine Treadles; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

In the accompanying drawing, B represents the bottom or foot-board of the treadle; P, the journals or pivots of the treadle; C, the larger pendulous rod, on which the forward part of the foot-board is hinged; W, the freely-swinging wire rod, supporting the back part of the foot-board; L, the ledge part of the heel-stop; *g*, the guide-rod of the heel-stop; S, the spring-clasp, holding the rod to its place; *a*, the working arm of the treadle, and *b* the balance-spring.

The nature of my invention consists in so constructing the foot-board and other parts of the treadle, relative to its axis, that the ankle-joint of the operator may always be placed in line with the center of motion of the treadle, and held there, thereby saving that unnecessary exertion and waste of power occasioned by the motion of the entire lower limbs whenever the ankle is in any other position.

To effect this object perfectly, three things are requisite in the treadle, to wit:

First, the treadle must be pivoted at the sides instead of under the bottom of the foot. This has already been done. But, owing to the varying heights of ankles, and more especially to the different heights of shoe-heels, a fixed and rigid foot-board will not answer the purpose I aim at. It might be right for one foot and one shoe-heel, but would be entirely wrong for another. Hence,

Second, I make the foot-board, particularly the heel portion, adjustable vertically, so that the ankle may always be brought quickly to the center of motion whether the heel worn be high or low. In a treadle of this character the foot is inclined to slip from its position. If the treadle is hung well forward in the frame of the machine, the foot tends to slip backward. If the treadle hangs toward the back part of the machine, (nearer the operator,) the foot will slip forward; and it becomes necessary to

place a ledge or stop, either just back or just forward of the heel, to secure it in its place.

A fixed heel-stop does not effect the object; for, while some shoe-heels (like slippers) are broad, and set under the true heel of the foot, others are small, and stand forward toward the center of the foot; and in order to preserve the proper position of the ankle with all the various styles and sizes of shoe-heels, I make,

Third, a movable heel-stop, capable of being set quickly at any point desired.

That portion of the treadle forward of the axis, including the working arm, usually preponderates considerably in weight over the back portion, and when the ankle is in the center of motion this preponderance throws an undue proportion of work upon the heel.

This disproportion is greatly increased when the shoe worn has a small fashionable heel.

In order to correct this inequality without increasing the weight and inertia of the treadle, I attach a balancing-spring to some convenient portion of the frame of the machine, connecting the other end of the spring with the treadle in such a manner as to act against the superior weight of the forward part and assist the heel to that extent.

Construction.

To secure lightness and ease of adjustment, I generally construct my treadle in the following manner: I suspend the bottom or foot-board of the treadle on two pendulous crank-formed rods, shaped and coupled together in the manner shown in Fig. 1 in the accompanying drawing. The larger of these two crank-shaped rods may be made of cast-iron. The projecting ends form the journals or pivots of the treadle, and are hung in boxes or bearings in the frame of the sewing-machine, about six and one-half inches from the floor. The working arm of the treadle is also attached to some portion of this larger rod.

The smaller rod is made of a large strong wire, bent around the projecting journals of the larger one close to the sides, so as to swing freely and independently on the same center.

The forward end of the foot-board is hinged to the bottom or horizontal part of the large rod, while the back end or heel portion rests

loosely on the horizontal part of the wire rod. (This foot-piece I generally make of hard wood. It may be made of metal if preferred.)

On the under side of the foot-board, from the back end toward the center, I cut grooves or make projections at short intervals apart, to hold the wire rod from slipping when placed in the position desired.

Vertical Adjustment.

By lifting the heel end of the foot-board and swinging the wire rod backward or forward, it is quickly adjusted vertically, and the ankle brought opposite the center of motion with any height of heel used, as shown in Fig. 2 of the accompanying drawing.

Adjustable Heel-Stop.

To prevent the foot from slipping back when properly adjusted, I make a metal heel-stop in the form of a T, as shown in Fig. 3 in the accompanying drawing.

At right angles to the ledge part L, which rests against the back of the heel, a guide-rod, *g*, extends forward on the foot-board six or eight inches. This guide-rod slides in a long spring-clasp fastened longitudinally in the center of the foot-board, the tension of the spring being made sufficiently strong to hold the rod by its friction wherever the ledge may be placed; or, if preferred, the guide-rod may be held by a set-screw.

The balance-spring may be made of rubber or coiled wire, and may be attached to such

part of the frame and the treadle, respectively, as shall be found most convenient in the particular machine used. It should be so attached as to act only against the last half of the downstroke of the forward part of the treadle, and impart the force of its tension in favor of the heel on the return-stroke.

Claims.

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

1. In combination with a sewing-machine treadle, pivoted at the sides, making that portion of the foot-board on which the heel rests adjustable to different heights relative to the pivot.

2. In combination with a sewing-machine treadle, pivoted at the sides, a foot-board with its forward part hinged to the oscillating frame and its back part resting on a pendulous rod or some other movable support, capable of being raised or lowered with reference to the axis of the treadle, substantially as and for the purpose described.

3. In a sewing-machine treadle, pivoted at the sides, the sliding heel-stop, substantially as described, or any other equivalent device for holding a movable ledge against the heel.

FRANCIS E. MILLS.

Witnesses:

ASA HODGE,
GEORGE REIM.