

A. Whittemore. Sheet 1, 2 Sheets.
Sewing Mach. Treadle.

No. 89,104.

Patented Apr. 20, 1869.

Fig. 1.

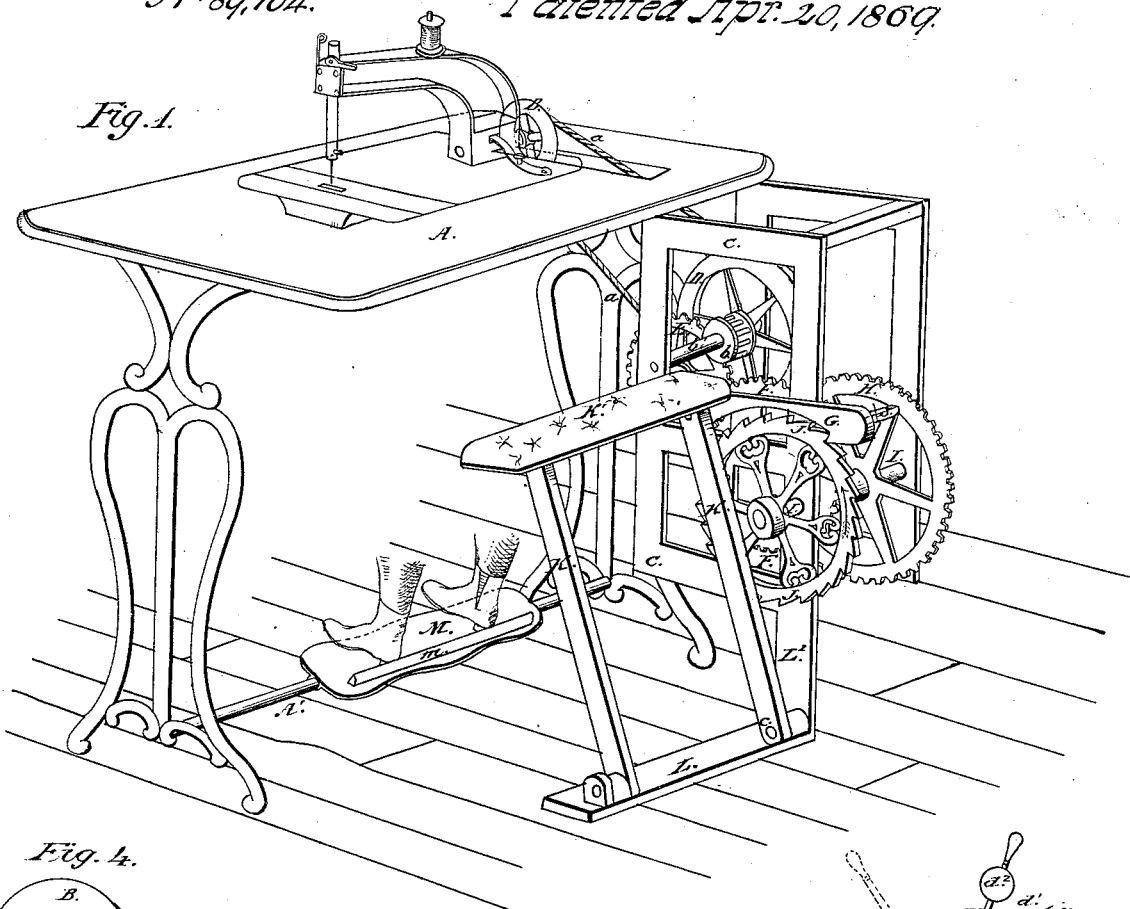


Fig. 4.

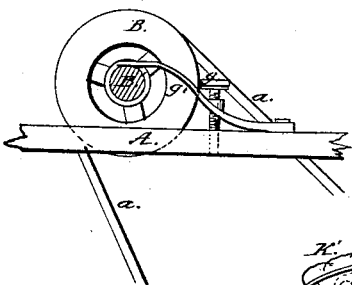


Fig. 5.

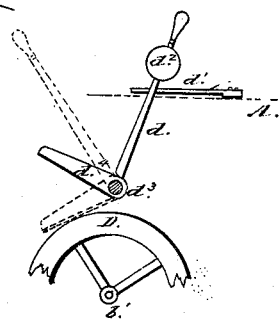


Fig. 2.

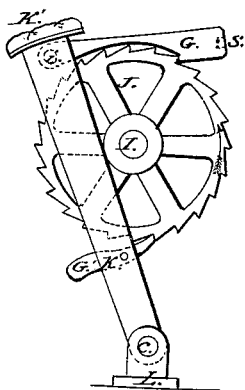
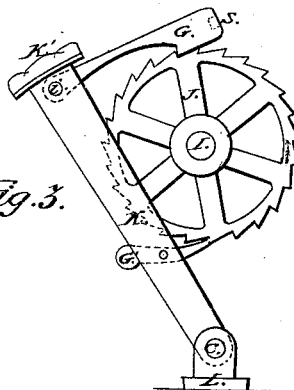


Fig. 3.



Witnesses;
R. T. Campbell
J. N. Campbell

Inventor;
A. Whittemore
by
Wm. Smith, Attorney

A. Whittemore. Sheets 2, 2 Sheets.
Sewing Mach. Treadle.

No. 89,104 Fig. 8.

Patented Apr. 20, 1869.
Fig. 7.

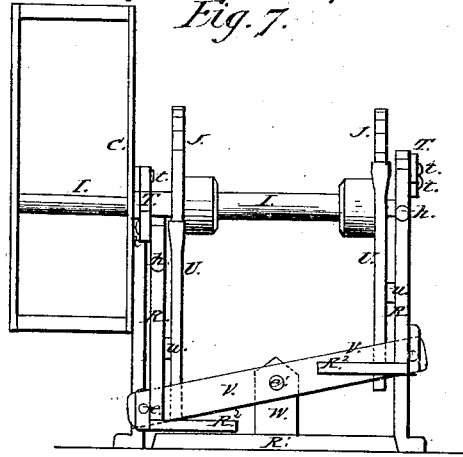
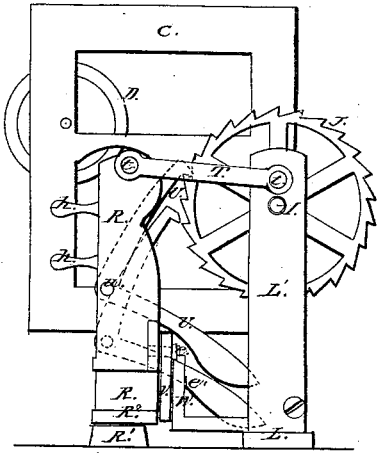
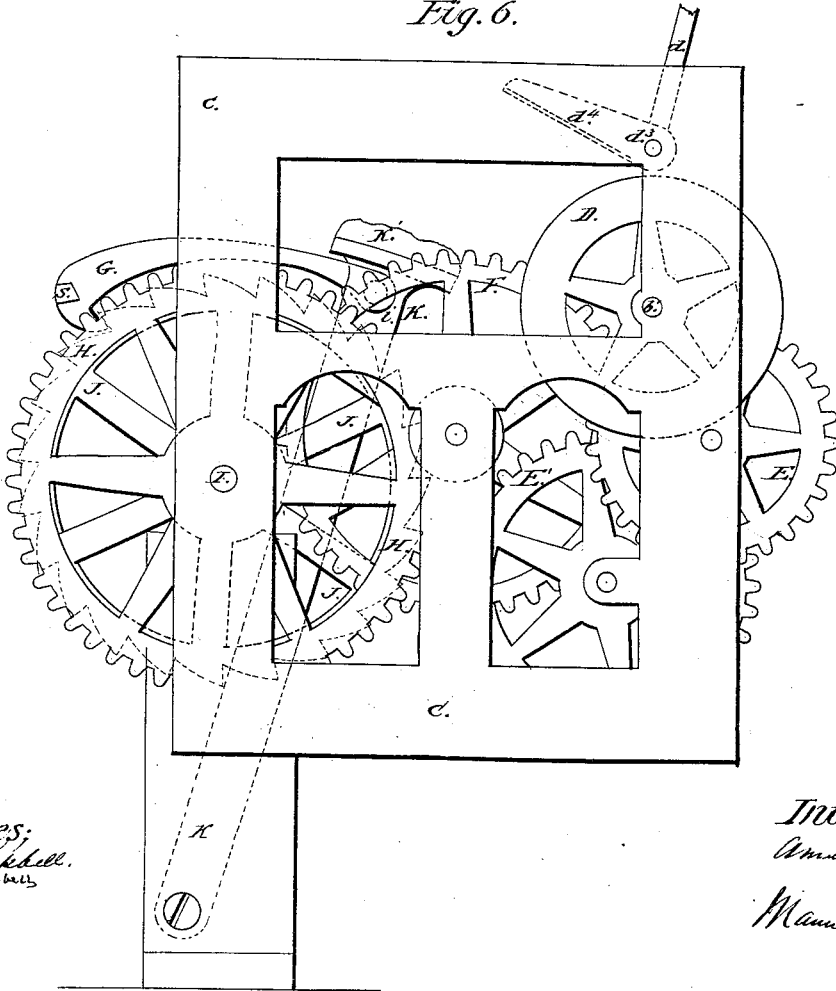


Fig. 6.



Witnesses:
H. A. Campbell.
J. N. Campbell.

Inventor:
Anna Whittemore
by
M. M. French, Clerk.

United States Patent Office.

AMOS WHITTEMORE, OF CAMBRIDGEPORT, MASSACHUSETTS.

Letters Patent No. 89,104, dated April 20, 1869.

MECHANISM FOR OPERATING 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, AMOS WHITTEMORE, of Cambridgeport, in the county of Middlesex, and State of Massachusetts, have invented a new and improved Mechanical Movement, for Operating Sewing-Machines, Watchmakers' Lathes, and other light machinery; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, sheet 1, is a perspective view of one form of my improved mechanical movement applied to a sewing-machine, and adapted for driving such machine by a person sitting thereat.

Figures 2 and 3, sheet 1, are side elevations of the seat in two positions.

Figure 4, sheet 1, is a friction-regulator, for reducing or increasing the speed of the machine.

Figure 5, sheet 1, is a friction-brake, for stopping the machine without removing the weight from the seat.

Figure 6, sheet 2, is an enlarged side elevation of a train of wheels adapted for receiving rotary motion from a movable support, and transmitting motion to a sewing-machine, lathe, or other light machine.

Figure 7, sheet 2, is a front elevation of movable supports, adapted for transmitting motion to a sewing-machine, lathe, or other light machine, by the weight of a person standing thereat.

Figure 8, sheet 2, is a side elevation of fig. 7.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists, first, in a novel arrangement and combination of a seat-frame, having a curvilinear vibrating movement, with a pawl, a ratchet, or other toothed wheel, an intermediate system of gear-wheels, and a driving-shaft of a sewing-machine, or other small machine, which is to be driven by force of gravitation, whereby a person sitting on the seat in a steady posture is enabled, by his weight alone, to keep the machine in operation for a considerable length of time, and then, by a momentary application of muscular power, can instantly readjust the seat for another run of the machine.

My invention consists, second, in the combination of a friction-brake with the curvilinear vibrating seat, ratchet and pawl, intermediate gearing, and sewing-machine shaft, or other shaft, whereby the sewing-machine, or other small machine, can be stopped while the weight of the operator is still acting upon the seat.

Third, my invention consists in the combination of the device for equalizing the speed of the machine driven, with the seat, ratchet, and pawl, and intermediate gearing, whereby the machine may be run regularly by persons of different weights.

My invention consists, fourth, in the combination of the pawl and ratchet of the vibrating seat, and the ratchet and pawls of the vertically-moving feet-stands,

with the intermediate mechanism and driving-shaft of a sewing-machine, or other small machine, whereby the operator can, at will, operate the machine to be driven by his weight, either in a sitting or a standing posture.

My invention consists, fifth, in locating the axis of the seat-frame below and in line, or nearly so, with the axis of the ratchet-wheel, in combination with the applying of the pawl, near the upper end of the seat-frame, so that the seat-frame, by being adjusted to a nearly upright position, will move the pawl some distance back of the centre of the ratchet, and thus insure action upon a large number of the ratchet-teeth before the weight of the operator is required to be withdrawn from the seat, in order to commence a new run of the machine, and also a long leverage for readjusting the seat is obtained. Thus, without the use of a spring as a retainer of power, and also without the necessity of resorting to a straight or vertical movement, in connection with the direct application of the weight of the operator, I am enabled to drive the machine without muscular power being brought into play, other than for readjusting the seat.

My invention consists, sixth, in the combination of the foot-rest *M m* with the seat-frame, arranged as described, and connected with the driving-shaft of a sewing-machine, or other small machine, by intermediate gearing.

My invention consists, seventh, in the combination of the stop *S* with the pawl and with the seat-frame, which operates as described.

To enable others skilled in the art to understand my invention, I will describe the best means known to me for carrying it into effect.

In the accompanying drawings, *A* represents the table of a sewing-machine, and *B* the balance-wheel or pulley applied to the driving-shaft of such machine, which shaft is driven by means of a belt, *a*, passed around said wheel, and also around a large balance or fly-wheel, *D*, shown in fig. 1.

The fly-wheel *D* is applied to a shaft, *b*, which has its bearings in a frame, *C*, that may be secured permanently to the table *A*, in any suitable manner, or it may be constructed so as to have an independent support, with means for readily attaching it to or detaching it from said table.

The frame *C* is designed for containing and supporting a train of large and small gear-wheels, which will communicate a fast rotary motion to the fly-wheel *D*, from a comparatively slow rotary motion given to the horizontal shaft *l*.

The drawings, figs. 1 and 2, represent a train of eight wheels geared together, so as to communicate a very rapid rotary motion to the fly-wheel *D*, but a greater or less number of wheels may be used in the train.

The main spur-wheel *H* of this train is keyed upon the horizontal shaft *l*, which I shall term the main driving-shaft, and which carries on one end, outside of

frame C, a ratchet-wheel, J, the teeth of which are engaged by a gravitating pawl, or dog, G, that is pivoted, at *i*, to one of two vibrating arms K, upon which a seat, K', for the operator of the machine, is supported.

The two seat-arms K K are pivoted, at their lower ends, at *c c*, to a base-support, L, so that they can vibrate in vertical planes.

The pawl, or dog G is arranged on top of the ratchet-wheel J, and provided with an arm, S, extending from one side of it, so as to check the seat K' and free ends of arms K K, when they have descended as far as required.

The seat-carrying arms are pivoted in, or nearly in, a vertical plane intersecting the axis of the shaft I, and these arms rise on that side of shaft I nearest the table A, so that the weight of a person sitting on the seat K' will be transferred to the wheel J, through pawl G, in such manner as will cause this wheel to turn slowly in the direction indicated by the arrows in figs. 1, 2, and 3, and as this wheel turns by the weight of the person upon seat K', this seat will slowly descend, and at the same time move forward toward table A, until the stop S comes in contact with the frame C.

Fig. 2 represents the seat at its highest point, and fig. 3 shows the seat when checked at its lowest point.

In practice, the movement of the seat K', toward and from the table A, need not exceed twelve inches, which will not be found inconvenient to the operation, inasmuch as the forward motion will be very slow and regular.

M represents a rest for the feet of the operator, which may be secured permanently to a fixed cross-bar, A', of the table A, in such relation to the seat K' that a person sitting at the table can conveniently rest the feet.

This foot-rest M is provided with a heel-piece, *m*, shown, which will afford a purchase for the heels of the operator in the descent of the seat K', while the rest M will afford a purchase for the legs in the act of raising the seat or pushing it back, after every descending stroke.

During the descent of K', by the weight of the operator upon it, a very rapid rotary motion will be communicated to the fly-wheel D during the ascending, as well as the descending strokes of the seat K'.

A pawl, or dog, G', may be pivoted to one of the seat-arms K, so as to act upon wheel J during the backward strokes of the seat, and turn it in the same direction as when the pawl, or dog G is acting upon it.

I do not confine myself to the use of two pawls, or dogs for acting upon wheel J, as the pawl, or dog G, acting alone by the weight of the operator upon seat K', will give a regular motion to the wheel D, if this wheel is properly balanced or loaded.

It is obvious that the wheel J may be dispensed with, and the spurred wheel H of the train arranged so as to be directly acted upon by either one or both of the dogs, thus dispensing with one wheel.

The frame C and its train may be enclosed within a box, or closet, so as to be out of sight and out of the way.

As the weight of different persons operating the same machine will vary considerably, I have provided for maintaining a given rate of speed, or for increasing or diminishing the speed of the machine at pleasure, also for stopping the machine, when required, without rising from the seat.

In fig. 4, B' represents the driving-shaft of a sewing-machine, to which I apply a spring, *g*, which is secured to the cloth-bed, and provided with an adjusting-screw, *g*, that is tapped into the cloth-bed, and adapted for acting upon spring *g*, so as to press its free end with more or less force upon the shaft B'.

By regulating the pressure of spring *g* on shaft B',

this shaft may be more or less restrained, and its speed regulated to a nicety.

For stopping the movement of the machine at any moment, I employ a friction-stop, shown in fig. 5, consisting of a vibrating arm, *d*', and a loaded arm, *d*.

The arm *d*' has a friction-surface applied to its lower edge, and this arm, together with the loaded arm *d*, is fastened to a shaft, *d*², and so arranged and supported, in relation to the fly-wheel D, that when arm *d* is adjusted in the position indicated by red lines in fig. 5, its weight *d*² will press the arm *d*' upon the periphery of said wheel, and stop its motion.

In figs. 7 and 8, sheet 2, I have represented another mode of transmitting rotary motion to the driving-shaft *i*, by the weight of a person upon a vertically-movable support.

This arrangement is especially adapted for a standing-position, and, if desired, it may be employed in combination with the vertically-movable seat K, so that, should an operator become fatigued by sitting, he can communicate motion to the machine while standing.

Under this arrangement I employ two ratchet-wheels J J, keyed on shaft I, and support the outer end of this shaft by a standard, L', rising from the base L.

Wheels J J are arranged a proper distance apart, and acted upon alternately by two gravitating pawls, or dogs, U U, which are applied, respectively, to two standards R R, rising perpendicularly from horizontal foot-rests R² R².

The standards R R are pivoted, at *e e*, to the extremities of a vertically-vibrating lever, V, having its fulcrum, *e*', upon a bracket, or standard, W, rising from and secured to the base L, in a position centrally between the two wheels J J, as shown in fig. 7.

The upper ends of standards R R are guided and held in proper position, in their vertical movements, by means of vibrating arms T T, which are pivoted at *t t*.

R is a base-piece, upon which the foot-rests R² R² are alternately arrested in their descent.

A person standing with his feet upon the two rests R² R², and alternately transferring his weight from one rest to another, can conveniently communicate a continuous rotary motion to the shaft I.

Having described two practical modes for enabling the operator of a sewing-machine, lathe, or other light machinery, to utilize the weight of his body, as a power for driving such machinery, I do not desire to be understood as confining myself to the precise mechanical devices herein employed, as other means, equivalent thereto, may be adopted for effecting a similar result.

What I claim, is—

1. The arrangement and combination of the seat-frame K K, pawl G, ratchet, or other equivalent toothed wheel J, an intermediate train of gearing, and the driving-shaft B' of a machine which is to be operated by force of gravitation, all substantially as described.

2. The combination of the friction-brake *d d*', or its equivalent, with the seat-frame K, pawl G, ratchet J, or other equivalent wheel, an intermediate train of gearing, and the driving-shaft B', of a machine which is to be driven by force of gravitation, substantially as described.

3. The combination of the speed-equalizer *g g*, or its equivalent, with the shaft B', and with the seat-frame K K, pawl G, ratchet J, or its equivalent, and an intermediate train of gearing, substantially as described.

4. The combination of the pawl K and ratchet J of the seat-frame, and the ratchets J J and pawls U U of the movable foot-stands R² R², or their equivalents, an intermediate train of gearing, and the shaft B', substantially as described.

5. The combination of the lever V, vertically-moving foot-stands R² R², pawls U U, and ratchets J J, all substantially as and for the purpose described.

6. In a mechanical movement, for operating small machines by the weight of the operator, locating the axis of the seat-frame K K below and in line, or nearly so, with the shaft I, in combination with the arranging of the pawl G, near the upper end of the seat-frame, substantially as described.

7. The combination of the foot-rest M m with the

seat-frame K K, substantially as and for the purpose described.

8. The combination of the stop S, pawl G, and curvilinear-moving seat-frame, substantially as and for the purpose described.

AMOS WHITTEMORE.

Witnesses:

R. T. CAMPBELL,
J. N. CAMPBELL.