

J. PALMER.
Sewing Machine.

No. 109,655.

Patented Nov. 29, 1870.

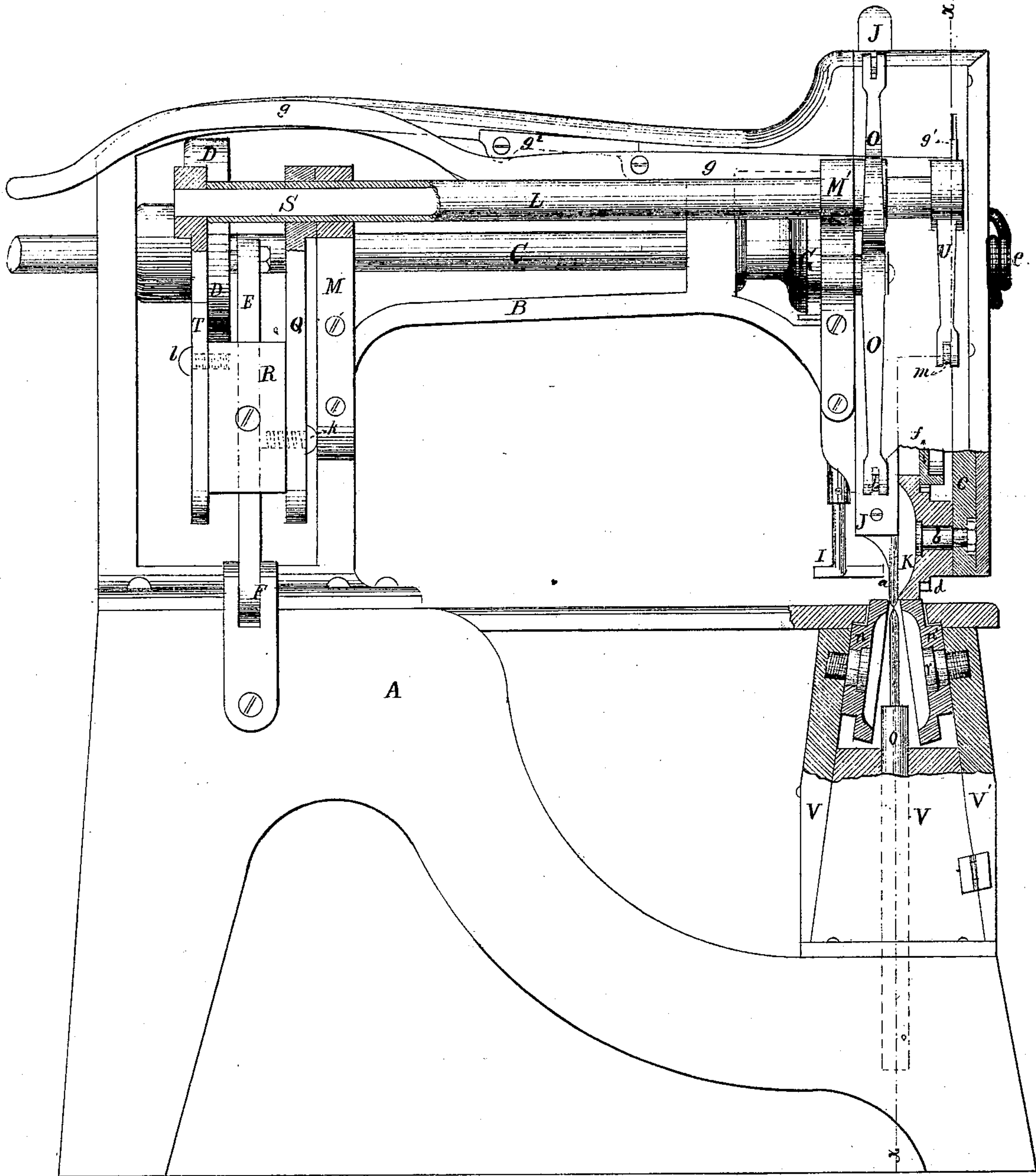


Fig. 1.

Witnesses.

J. A. Kimball
C. H. Porter

Inventor.

John Palmer

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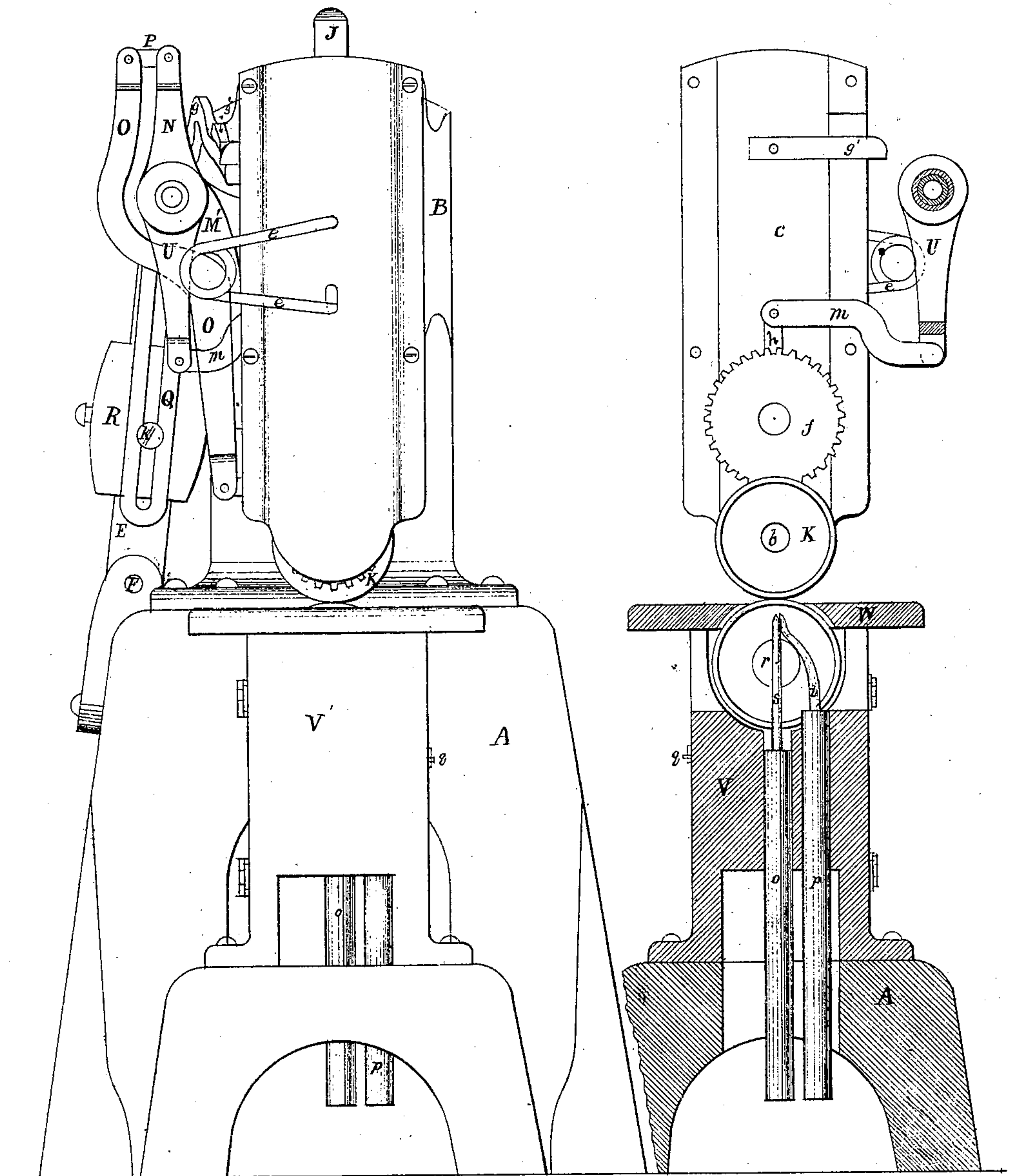


Fig. 2.

Fig. 3.

Witnesses.

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C. H. Porter.*

Inventor.

John Palmer

United States Patent Office.

JOHN PALMER, OF RANDOLPH, MASSACHUSETTS.

Letters Patent No. 109,655, dated November 29, 1870.

IMPROVEMENT IN SEWING-MACHINES.

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

I, JOHN PALMER, of Randolph, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Wax-Thread Sewing-Machines, of which the following, taken in connection with the accompanying drawing, is a specification.

Nature and Objects of the Invention.

My invention relates, in the first place, to the mechanism by which the material to be sewed is fed through the machine, and to the pressure-foot for holding the goods firmly in place during the passage of the awl or needle through the same, and it has for its object the production of a feed-mechanism which shall be smooth in its action, and not liable to jump and thereby displace the work, as is the case with the machines now in use, and

It consists, first, in the use of a wheel pressure-foot, so arranged and applied to the head of the goose-neck that it may be readily raised for inserting the material to be sewed, and thus perform all the functions of a pressure-foot for holding the work in place, while, at the same time, it has an intermittent rotary motion given to it about its own axis, by suitable mechanism, so arranged that the length of movement of said wheel at each revolution of the driving-shaft may be varied at the will of the operator, for the purpose of lengthening or shortening the stitch, when said pressure-foot feed-wheel is used in combination with an awl or needle, to which a lateral movement is given while it is inserted in the material, so as to move in unison with said material when it is fed forward by the rotation of the feed-wheel.

It also consists in the use of two rocker-shafts for operating the feed-wheel and giving the lateral motion to the awl, said shafts being so arranged that they may both receive their motion from a single vibrating lever operated by a cam upon the driving-shaft, and also so that the lateral movement of the awl, and the movement of the feed-wheel may be varied at the same time, and by a single adjustment, as will be more fully described.

My invention relates, in the second place, to the throat, or that part of the table through which the needle and awl pass, and upon which the material to be sewed rests, and to the construction of the standard for supporting the same, and

It consists in the use of a rotary throat-plate, consisting of two conical wheels mounted upon independent axes, placed at such an angle to each other that the bottoms of said wheels shall be sufficiently far apart to allow the needle-bar and cast-off bar to pass between them, while their upper sides shall be only so far apart as will allow the needle and awl to pass freely between them; and

It consists, also, in constructing the standard which supports the outer end of the table and the throat-wheels in two parts, one of which is secured firmly to the bed of the machine, and supports the inner throat-wheel and the bearings of the needle and cast-off bars, while the other part carries the outer throat-wheel, and is hinged to the fixed portion of the stand by one of its edges, so that it may be readily swung around out of the way when it becomes necessary to put in a new needle or cast-off, or to adjust either of them.

Description of the Drawing.

Figure 1 is a sectional elevation of the back side of a machine embodying my improvements;

Figure 2 is an elevation looking at the needle-end of the machine; and

Figure 3 is a vertical transverse section on line *xx* on fig. 1, looking from the pulley-end of the machine.

General Description.

A is the bed of the machine.

B the goose-neck or arm which carries the upper portion of the sewing mechanism, and in which are formed the bearings for the driving-shaft C.

D is a path-cam, firmly secured to the driving-shaft C, for operating the feed mechanism.

E is a lever, having its fulcrum at F, and carrying, at its upper end, a cam-truck, fitted to the path in the cam D.

G is a cylinder-cam, secured to the driving-shaft C, the path in which gives motion to the looper I, and it also carries, on its outer face, a crank-pin, not shown in the drawing, which gives motion to the awl-bar J in a vertical direction.

The awl-bar J carries, at its lower end, the awl *a*, and has its bearing in a plate or bar, which is pivoted to the head of the goose-neck B, and inclosed therein in such a manner that while the awl-bar is being moved up and down in its bearing by the crank-pin in the face of the cam G, its lower end may be made to vibrate, and thus give a lateral motion to the awl while in the goods, exactly coinciding with the movement of the feed-wheel, all of the above being constructed and operating substantially the same as in machines now in use.

K is the feed-wheel and pressure-foot, combined in one, mounted upon a pin, *b*, secured in the lower end of the bar *c*.

The wheel K has a spur-gear, *d*, upon its outer face, into which the teeth, cut upon the periphery of the friction-wheel *f*, mesh.

The wheel *f* has an intermittent rotary motion given to it by friction-pawls, (not shown in the drawing,) which are operated by the lever *h* in a well-known manner.

The wheel K has its inner surface cupped out, as shown in fig. 1, to admit of the requisite movement of the looper I.

The feed-wheel K is held down upon the work by the spring *e*, in a well-known manner, and is raised therefrom by means of the lever *g* acting upon the arm *g*¹, secured to the bar *e*, and acted upon by the cam-lever *g*², also in a well-known manner.

By this arrangement I am enabled to obtain a perfectly smooth and steady feed of the material through the machine without any jumping or unevenness of motion, the wheel K performing all the functions of a feed-wheel and a pressure-foot, in a perfectly obvious manner.

L is a hollow or tubular shaft, having its bearings in stands M and M', and carrying at one end the lever N, the upper end of which is connected to the upper end of the lever O by the link P.

The lever O is pivoted near its middle to the stand M', or to an ear cast upon the goose-neck, by the fulcrum-pin *i*, and its lower end is connected by the link *j* to the lower end of the pivoted bar in which the awl-bar J has its bearings.

The shaft L also carries, at its rear end, the slotted lever Q, in the slot of which fits the pin *k*, which is set in the side of the adjustable block R, secured to the lever E in such a manner that the vibratory motion imparted to the lever E by the cam D is transmitted to the rocker-shaft L, and through it and the levers N and O, to the awl-bar J.

S is a rocker-shaft, which receives its motion from the vibrating lever E by means of the pin *l*, set in the block R, and fitting into a slot in the lever T, firmly secured to the rear end of the shaft S.

The shaft S passes through the center of the sleeve-shaft L, and has its bearings therein, and carries at its forward end the lever U, which is connected by the link *m* to the top of the lever *h*, through which the motion of the rocker-shaft S is transmitted to the friction-pawls, and through them to the feed-wheel K.

The shafts L and S may be arranged side by side in separate bearings if desired, without affecting the principles of action.

V is the stand which supports the outer end of the removable table W, and the throat-wheel *n*, and in which are formed the bearings for the needle and cast-off bars *o* and *p*.

The stand V is firmly secured to the bed A of the machine, and has the plate V' hinged to it by one of its edges, and secured at its other edge by the hasp *q*, or by any other suitable locking device.

The throat-wheel *n*' is mounted upon the pin *r*, set in the plate V', and moves with said plate when it is

swung upon its hinges, thus giving free access to the needle *s* and the cast-off *t*.

The mechanism for operating the needle and cast-off are the same as in common use, and are not shown in the drawing.

The operation of my improved machine may be clearly understood from the foregoing summary and description, without further explanation.

The advantages of using my improvements, are greater smoothness of action and more ready adjustment.

Although my improvements are more especially designed for wax-thread sewing-machines, they may be applied to other sewing-machines to advantage, and, therefore, I do not wish to be understood as confining myself to the use of my improvements when applied to wax-thread machines only, or to a particular class of wax-thread machines, for my improvements are applicable to awl-feed or needle-feed machines.

I do not claim the use of a combined pressure-foot feed-wheel broadly, or a wheel-pressure foot, and a rotary feed-wheel, when used separately, for I am aware that these devices have been used before; but

What I claim as new, and desire to secure by Letters Patent of the United States, is as follows, viz:

Claims.

1. The pressure-foot feed-wheel K, when used in combination with an awl or needle to which a lateral motion is given coinciding with the feed of material while passing through the same, substantially as described.
2. The rotary throat-wheels *n* and *n*', arranged and operating as set forth, when used in combination with a pressure-foot feed-wheel, substantially as described.
3. The throat-wheel *n*' mounted upon the hinged plate V', substantially as described.
4. The adjustable sliding block R upon the lever E, and carrying upon opposite sides thereof the pins *k* and *l*, when used in combination with the levers Q and T, the rocker-shafts L and S, and the feed-wheel K and awl-bar J, in such a manner that the movement of the block R upon the lever E shall adjust both the movement of the feed-wheel K, and the lateral motion of the awl-bar J, whether said rocker-shafts pass one through the other, as shown, or are arranged in separate bearings, substantially as described.

Executed at Boston, this 13th day of September, 1870.

JOHN PALMER.

Witnesses:

N. C. LOMBARD,
G. E. WHITNEY.