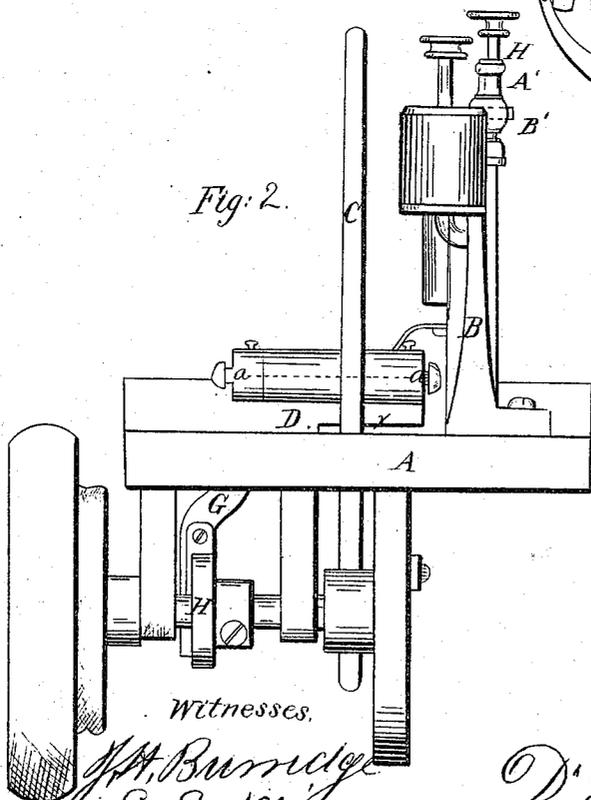
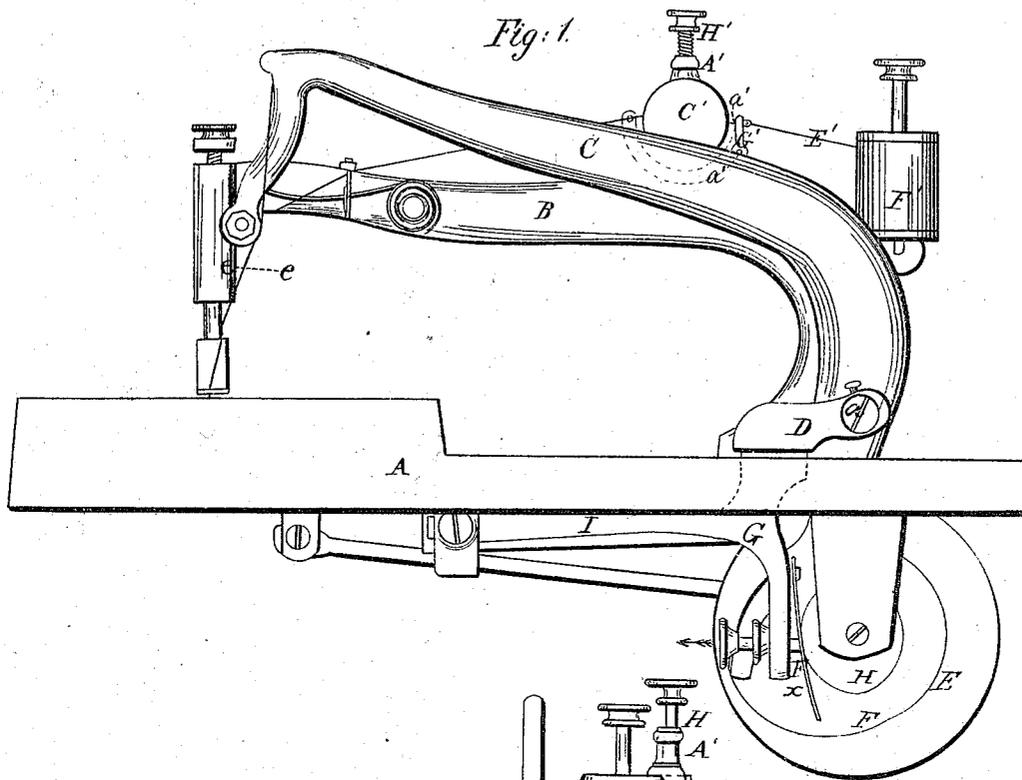


D'ARCY PORTER.
TENSION DEVICE FOR SEWING MACHINES.

No. 83,406.

Patented Oct. 27, 1868.



Witnesses.

J. H. Burridge
E. E. White

Inventor:

D'Arcy Porter

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Fig. 3.

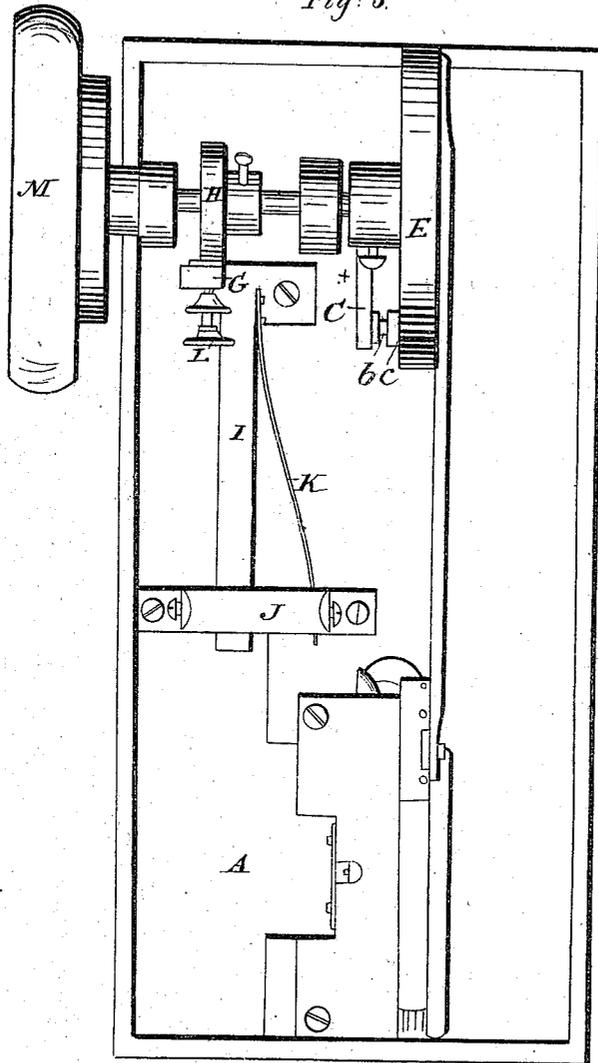


Fig. 4.

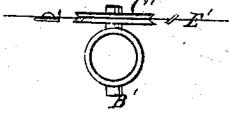


Fig. 5.

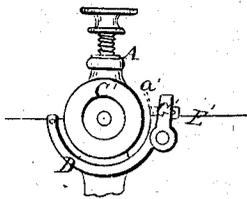


Fig. 6.

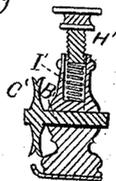


Fig. 7.



Witnesses

J. M. Burridge

E. E. Waite

Inventor:

D'Arcy Porter



D'ARCY PORTER, OF CLEVELAND, OHIO, ASSIGNOR TO HIMSELF
AND THOMAS H. WHITE, OF SAME PLACE.

Letters Patent No. 83,406, dated October 27, 1868.

IMPROVEMENT IN TENSION-DEVICE FOR SEWING-MACHINE.

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, D'ARCY PORTER, of Cleveland, in the county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full and complete description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of the machine.

Figure 2, a view of the end.

Figure 3, a view of the under side.

Figures 4, 5, 6, and 7, detached sections.

Like letters of reference refer to like parts in the views.

The object of this invention is to improve the ordinary sewing-machine, by attaching thereto a new means of controlling the tension of the thread, and it consists of a specific arrangement of devices, hereinafter particularly specified, that operate together to produce the desired effect.

In fig. 1, A represents the bed of the machine, on which is secured the rigid arm, B, for supporting the spool-tension device and cloth-presser. C is the middle arm, pivoted in the stay D, and in which it vibrates at the axial points *a*. Said arm, C, depends below the axial line, and is connected to the cam-wheel E by a pin, *b*, fig. 3, on which is secured a friction-roller, *c*. Said roller engages in a cam, F, sunk in the side of the wheel, and whereby the arm is vibrated in the practice of sewing.

It will be observed that the stay D is not secured rigidly to the bed, but that it is pivoted to the same at the point *x*, fig. 2, and that an arm, G, depends from the under side of said stay, through the bed, down to and in contact with the cam-wheel H, when the major diameter of said wheel is in a right line to the dependent arm, but does not engage the cam when the minor diameter approaches it, except by the intervention of the spring F'. I, figs. 1 and 2, is also an arm, proceeding horizontally from the arm G, immediately under the bed. The free end of said horizontal arm is received in a stay, J, and held pressed against the side of the same by the spring K. L is an adjusting-screw, the purpose of which will hereinafter be shown.

Having thus described the construction and arrangement of the feed-works of the machine, the practical operation of the same is as follows:

On turning the drive-wheel M, motion is given to the cam-wheel E, thereby vibrating the needle-arm, carrying the needle *s* and thread through the work in the ordinary way. The work is moved along by a side action of the needle, given to it by the cam H, which, as it revolves, impinges upon the dependent arm G, thereby pushing it forward in direction of the arrow, fig. 1, the result of which movement will be to cause a horizontal vibration to the stay D, in which the needle-arm is pivoted, and, as a consequence, is given, at the same time, a corresponding movement to the arm and needle, whereby the arm is moved forward, the return

of the arm and needle being made by the spring K, immediately on the needle leaving the cloth, thereby establishing an intermitting action of the needle; thus in one direction forward, by the action of the cam and lever, and the return-action of the spring K, immediately as the needle leaves the cloth. As before said, by this means the work is fed regularly and with a certainty for the stitch, the length of which being governed by the adjusting-screw L, the joint of which, on being approached near to the cam, will increase the length of the vibration of the arm, hence giving greater length to the stitch. On the contrary, by receding the point of the adjusting-screw from the cam, the stitch will be shorter, or the vibration will be more or less shortened, for the cam engages the point of the screw, not at all times, but only at intervals, as the cam revolves, or when the longest radius of the cam turns toward the arm. Should the adjusting-screw be in contact with the cam during the entire revolution, then the vibration of the arm and needle would be equal to the stroke of the cam, which would make the stitch an undesirable length.

It will be obvious that by this device, the length of the stitch may be graduated to the nicest degree, as the nature of the work may require.

An improvement is made in this machine by the introduction of a new tension-device, whereby the thread is at all times kept uniformly taut, and any degree of tension given to the same, as the nature of the work may demand.

The construction and operation of said device are as follows, viz:

To the arm B is secured a standard, A', fig. 2, and of which fig. 6 is a detached view. Transversely in said standard is journaled a shaft, B', to the inner end of which is keyed a grooved wheel, C'. Under said wheel, and partially surrounding the same, is a stay, D', fig. 5. In the extreme ends of the stay is a hole, through which the thread E' is drawn from the spool F', and made to pass in its way to the needle in the groove of the wheel, and through the hole in the opposite end of the stay, as shown in figs. 1 and 5. G' is a spring, attached to the side of the stay, and which is so adjusted as to press lightly upon the thread as it runs from the hole in the stay D', and under the lip *a'* to the wheel, thereby restraining it from running too freely from the spool, and thus giving more or less tension to the thread between the spring and needle.

It will be obvious that the tension thus given to the thread will be uniform, whatever the kind of work may be sewing. It is often found necessary to vary the tension, according to the different kinds of work. In order to do this, the shaft B' is restrained from turning by the box or cap *c'*, fig. 7, which is introduced into the standard and dropped upon the shaft B', and pressed down upon the same by adjusting-screw H', between the end of which and the cap or box is interposed a spring, I'. By this means it will be obvious that in proportion to

the pressure exerted upon the box, the shaft and wheel will be turned with more or less ease by the thread in passing over it. Thus, should the shaft be relieved entirely of the pressure of the screw, the wheel will revolve with facility, and thereby add nothing to the tension of the thread given to it by being drawn through the holes of the stay, and the pressure of the spring. On the contrary, by so adjusting the screw as to cause a pressure on the shaft, it will turn with less facility, and thus add to the tension of the thread between it and the needle, as the thread will be drawn over the wheel, or slip upon it more or less, as the pressure upon the shaft may be.

In the specification, all parts of a sewing-machine

are described as I prefer to use them, and I lay no claim to the devices so described singly; but

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

The tension-device, consisting of the grooved wheel C, shaft B, cap or box c, spring I, screw H, stay D, and spring G, all arranged upon standard A, and with relation to each other and to the thread E, and so as to operate substantially in the manner and for the purpose described.

D'ARCY PORTER.

Witnesses:

W. H. BURRIDGE,

J. H. BURRIDGE.