

T. W. PEPPER.
SEWING MACHINE.

No. 105;123.

Patented July 5, 1870.

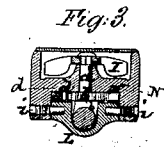
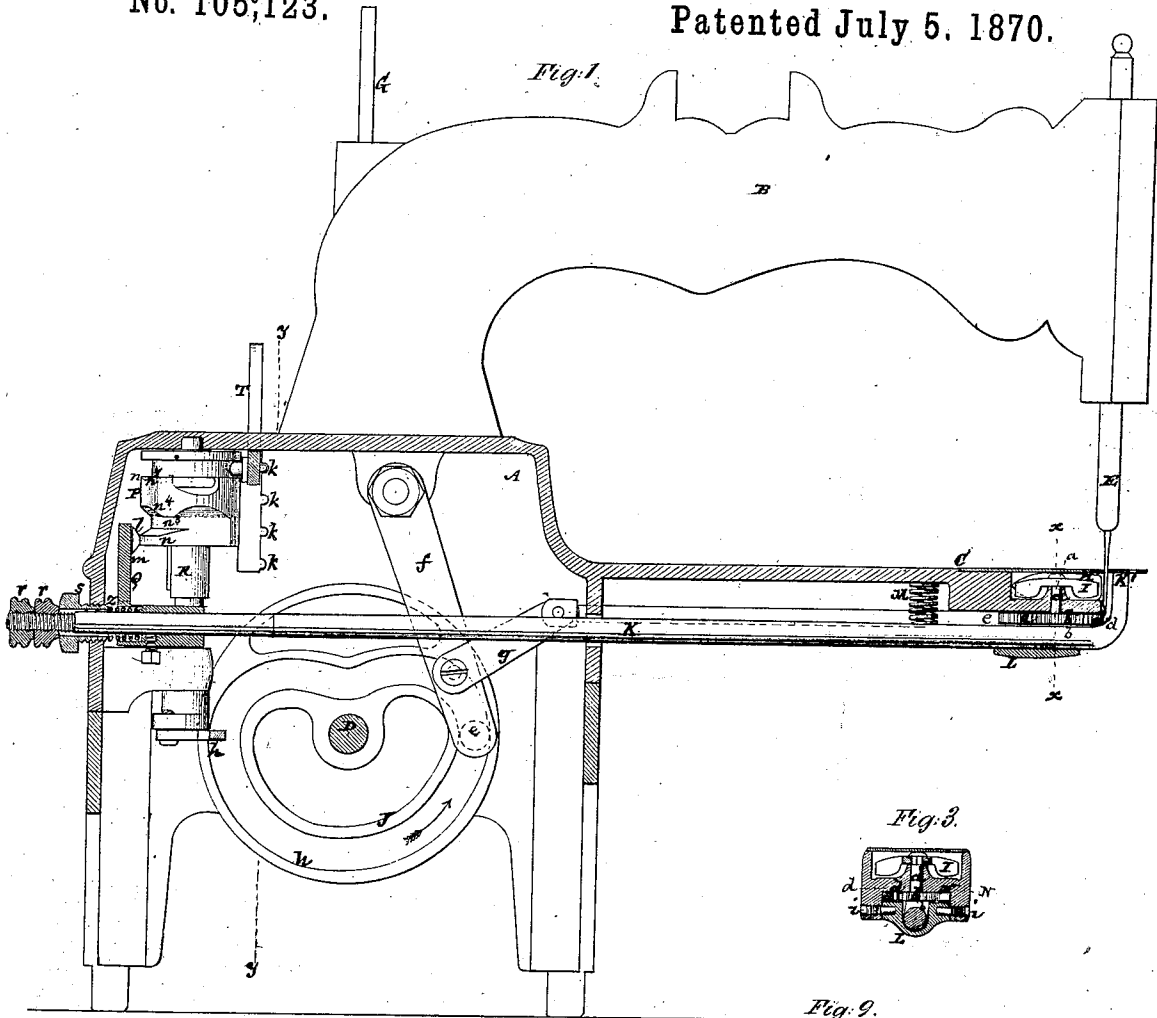


Fig. 9.

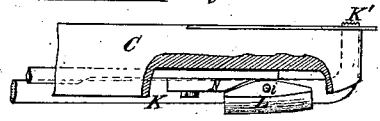
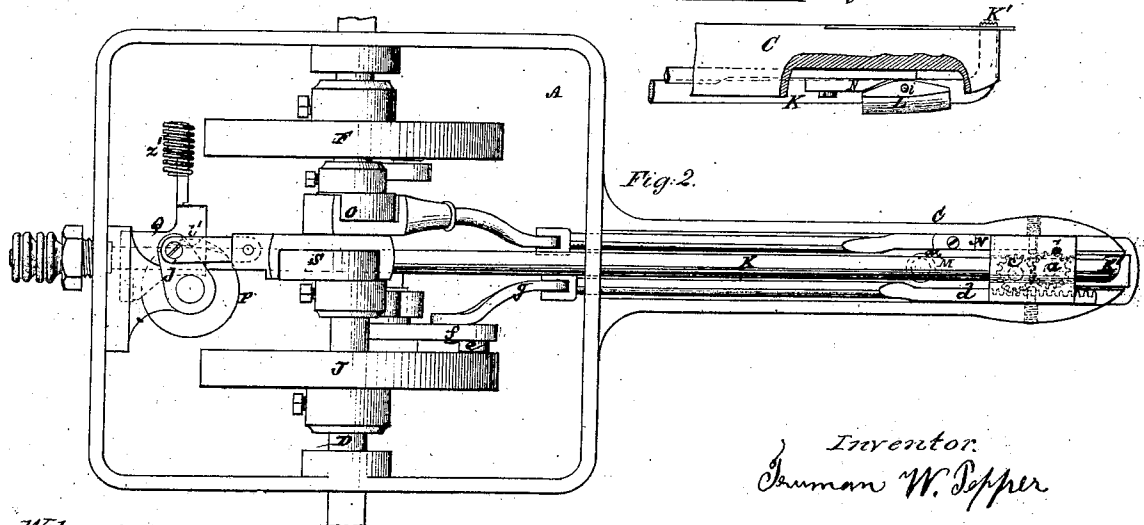


Fig. 2.



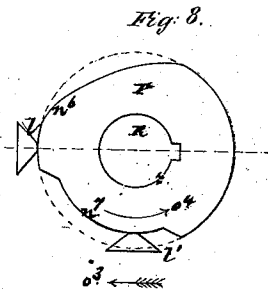
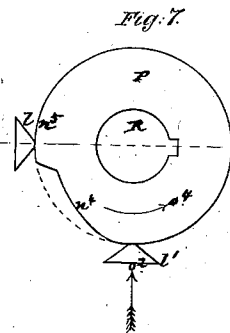
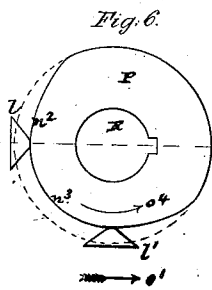
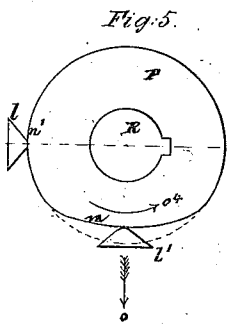
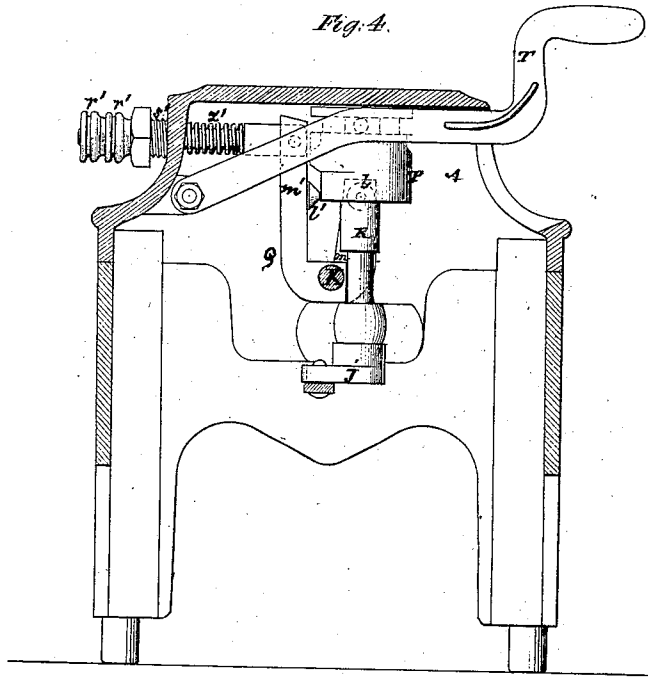
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SEWING MACHINE.

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TRUMAN W. PEPPER, OF NEW YORK, N. Y.

Letters Patent No. 105,123, dated July 5, 1870.

IMPROVEMENT IN 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, TRUMAN W. PEPPER, of the city, county, and State of New York, have invented a new and useful Improvement in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a longitudinal vertical section of a sewing-machine, with my improvements applied thereto;

Figure 2, an inverted plan of the same;

Figure 3, a transverse section, taken as indicated by the line *z z* in fig. 1;

Figure 4, a transverse section, taken as indicated by the line *y y*; and

Figures 5, 6, 7, and 8, diagrams in illustration of the four-motion feed employed by the machine.

Figure 9 is a view of the wedge and rocking-block through which the feed-bar works.

Similar letters of reference indicate corresponding parts.

This invention is designed as an improvement upon the sewing-machine secured to me by Letters Patent, No. 76,807, issued April 14th, 1868, and, like it, is more particularly intended to be used on or with a narrow sewing-table, such as employed in the manufacture of boots and shoes, various tubular and other work, but which invention, or portions of it, is or are also applicable to other descriptions of sewing-machines. It will suffice here, however, to describe the invention as applied to a sewing-machine of the description shown in the patent hereinbefore referred to.

Like such previous machine, the one here represented has a feed operating in four distinct directions, at will, as required; but the changes in the feed are effected by different means, and irrespective of any motion to the presser-foot, which may be stationary.

The changes in the direction of the feed are effected by a sliding and variously-formed cam made to operate on a peculiarly-shaped lever, fast to the feed-bar, and operating in conjunction with springs, also provided with teats or studs, which, according as the cam is raised or lowered, serve to give either a forward, a backward, a right-hand, or a left-hand cross-feeding stroke to the bar, which carries the feeder, while a rocking bearing, in which said bar works, and which is actuated by a sliding-wedge, operating in conjunction with a spring, secures to the feeder its necessary up-and-down motion, thus dispensing with all up-and-down movement to the presser-foot.

In the accompanying drawing—

A is the frame or box-portion of the machine;

B, its goose-neck; and

C, a narrow or arm-like sewing-table.

D is the driving-shaft, which is made to revolve by any suitable means, and

E the needle-bar or holder, with needle attached, actuated by a bell-cranked arm or lever, by a cam-wheel, F, on the driving-shaft J.

G is the holder for the spool, from which the needle-thread is drawn, and

H is the curvilinearly reciprocating shuttle for carrying the locking-thread and passing it through the loop of the needle-thread.

I is the shuttle-driver, hung on a vertical shaft or axis, *a*, and

b and *c* the pinions by which motion is communicated to the shuttle through a rack, *d*, reciprocated by a grooved cam, J, fast on the driving-shaft D. This cam is represented as operating the rack-bar by a stud, *e*, on a lever, *f*, connected to the rack-bar by a link, *g*.

The cam-groove in which the stud *e* works is not simply shaped to give a reciprocating movement to the rack *d*, but is made of concentric form for a portion of its length, as from *h* to *h*, and said grooved cam so set in relation with the needle that the shuttle, as operated by the rack *d*, remains stationary at the termination of its forward stroke, and its thread kept straight or tight until after the point of the needle has passed below the shuttle-thread, which prevents any defect in the stitch, by rendering it impossible for the needle, in its repeated descents, to pass on different sides of the shuttle-thread. This pause is given to the shuttle by the concentric portion *h h* in the grooved cam J.

The machine is provided with any suitable presser-foot, which, however, when work is being done, need not have any up-and-down movement to aid the feeder in its operation on the material. This is avoided by causing the bar K, which carries the feeder K', to rest at or near its forward end in a bearing-block, L, hung to rock on side pivots *i i*, the bar K being free to turn in said bearing-block, also to work through it, to accommodate different directions of feed.

This rocking-bearing L provides for an up-and-down motion to the feeder K', to make it take hold on the material during its feeding-stroke, and to release hold of the same during its back stroke, by the combined action of a spring, M, and a wedge, N, the former serving to depress the feeder, and the wedge N operating to raise it. To accomplish this the wedge N is arranged to work over the back end of the rocking bearing-block L, between it and the table, and so that, on being projected forward over said back end or portion of the block, it throws up the feeder K', and in the back-stroke of the wedge the spring M acts in a reverse direction.

Said wedge N is operated by an eccentric, O, on the

driving-shaft D. The means are the same, and a like up-and-down motion of the feeder takes place in all four directions of the feed, and the eccentric O is suitably set to produce the same in proper or timely relation with the other motions or parts.

The feeder K' is not only a four-motion one in any direction of the feed, but is also made capable of feeding the material in any one of four different directions, that is to say, either forward in direction of the length of the table, or backward thereon, or across the table to the right and to the left.

All of these several feeds are produced by a single cam, P, and lever, Q, acting in conjunction with springs $z z'$.

The cam P is arranged on a vertical shaft, R, so as to vibrate therewith, and yet be capable of longitudinally sliding on the same.

It is vibrated by a crank, j, on the shaft R, actuated by an eccentric, S, on the driving-shaft D, and is raised or lowered, as required, to change the feed, by a lever, T, made to lock by a spline on its side, into any one of a series of notches, k, at the side of a slot in which said lever plays, and which determines the attitude of the cam for any particular feed.

Said cam P is made with a series of inclines and concentric surfaces, arranged in a succession of planes or lines, the one above the other, for teats, l l', on the lever Q, to bear against.

This lever Q is secured to the feed-bar K, and is made with two legs, m m', arranged to stand so that the teats l l' point in directions at right angles to each other, that is, the one bears against the cam P in a direction parallel with the feed-bar, while the other teat bears on said cam in a crosswise direction thereto.

The teat l serves to give forward or backward feed to the feeder K' in direction of the table, while the teat l' operates to produce feed crosswise of the table, to the right or to the left, accordingly as the cam P is raised or lowered, to bring its different inclines and concentric surfaces opposite their respective teats, and these surfaces are so disposed that when the one teat, l, is being operated by an incline on the cam, to give longitudinal motion to the feed-bar K, the other teat, l', is bearing on a concentric surface, and *vice versa*, that is, when the teat l' is being operated on by an incline, to rock the feed-bar for either cross-feed, the other teat, l, is free from action by bearing on a concentric surface.

To produce the four different feeds, there are consequently four incline and four concentric surfaces on the cam, suitably disposed, or set on or around two faces

of it lying at right angles to each other, there being an inclined and concentric surface for each of the vertically adjustable positions of the cam.

Thus, referring more particularly to the diagrams, figs. 5, 6, 7, and 8, of the drawing, a lower incline, n , and concentric surface, n' , on the cam, serves, when the latter is adjusted, to make such the working-surfaces, to produce action on the teat l', to cause a cross-feed in the direction indicated by the arrow o.

When said cam, P, is lowered a notch, then an upper incline, n'' , and concentric surface, n''' , is brought in contact with the teats l l' to produce forward feed, as indicated by the arrow o'. When lowered a further notch, then the cam, by an incline, n''' , in conjunction with the spring z' and concentric surface n'''' , allows of movement to the teat l, and relieves the teat l' of action to give a reverse cross-feed in direction of the arrow o'', and, when still further depressed, an incline, n'''' , operates in conjunction with the spring z , on the teat l, to produce a backward feed, as shown by the arrow o''', the other teat, l', resting on a concentric surface, n'''' .

The direction in which the vibrating-cam travels while performing its feeding-stroke is represented by the arrow o' in each of the diagrams, figs. 5, 6, 7, and 8.

The length of the feed in any particular direction is determined by the adjustment of the teats l l' relatively to the cam, so as to bring them sooner or later into contact with the inclines on the cam, and this is effected in the one instance by nuts, r r, acting in conjunction with the spring z against a screw-collar, s, and made to fit the end of the feed-bar, while the cross-feed is similarly adjusted, as regards the length of the stitch, by similar devices, r' r' s', and spring z', operating against or in connection with the longer leg of the lever Q.

What is here claimed and desired to be secured by Letters Patent, is—

1. The combination of the vibrating and adjustable-cam P, formed with inclined and concentric surfaces, as described, the lever Q, with its teats l l', the springs $z z'$, and the feed-bar K, hung so as to be capable of rocking, as well as a longitudinal movement, substantially as specified.

2. The combination of the wedge N and spring M, with the rocking bearing-block L and feed-bar K.

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Witnesses:

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