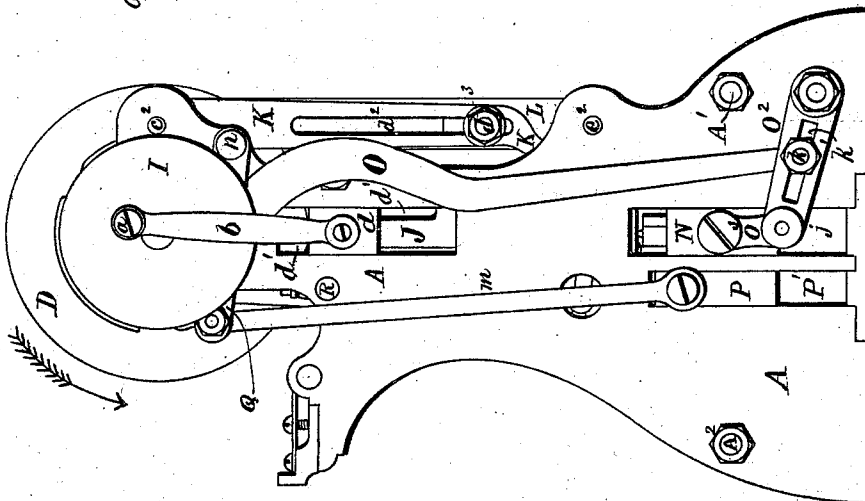
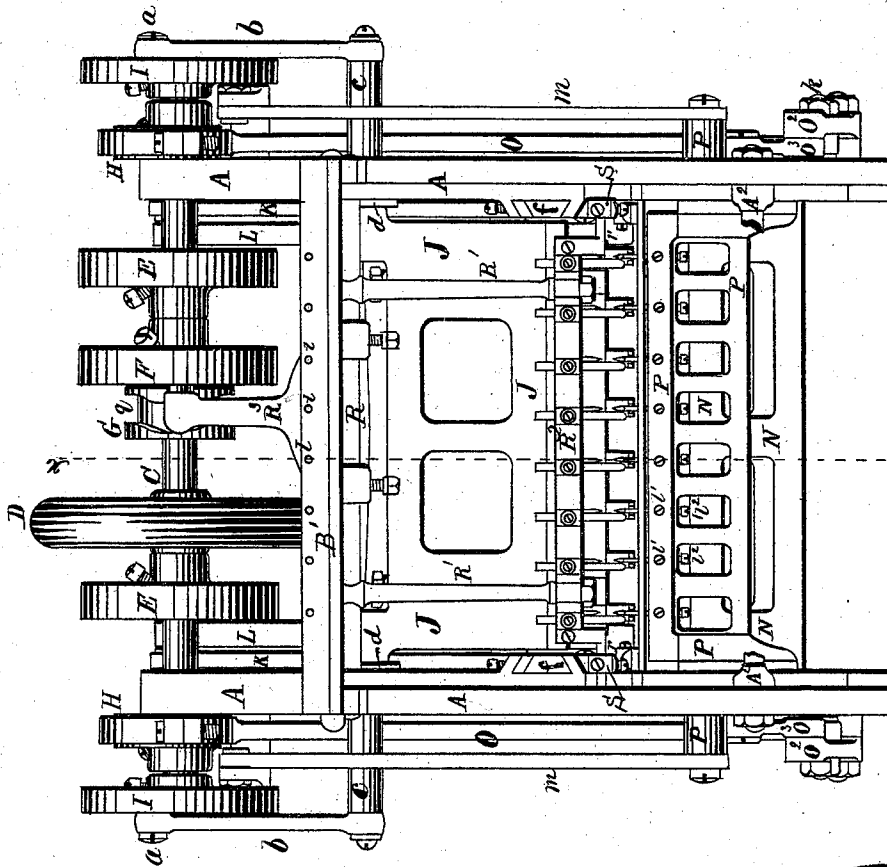


A. LEAVITT.

WAX-THREAD SEWING-MACHINE.

No. 171,147.

Patented Dec. 14, 1875.



Witnesses.

N. C. Lombard
E. A. Hemmenway.

Inventor.

Albert Leavitt

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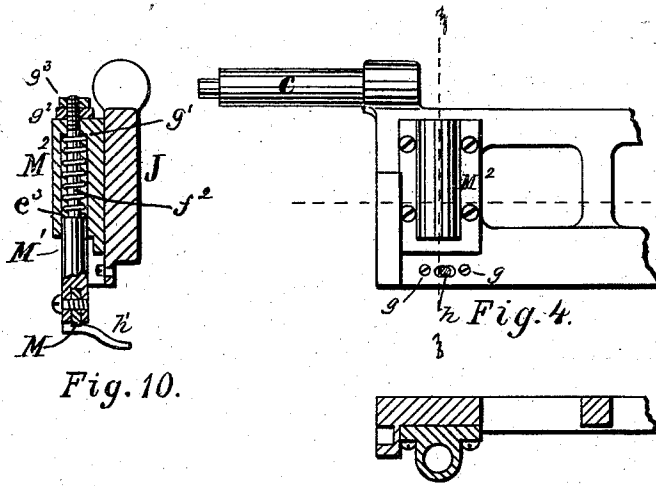


Fig. 10.

Fig. 6.

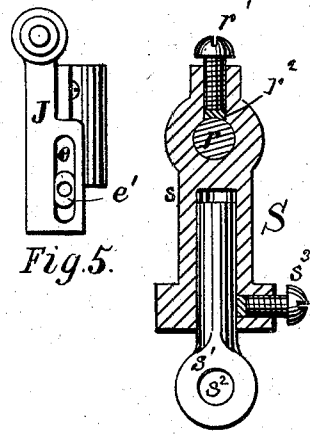
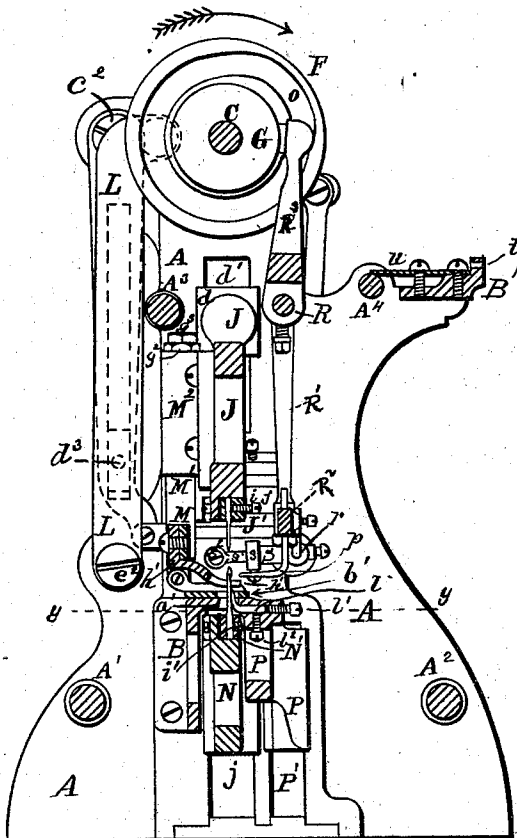


Fig. 5.

Fig. 9.



Witnesses. Fig. 3.

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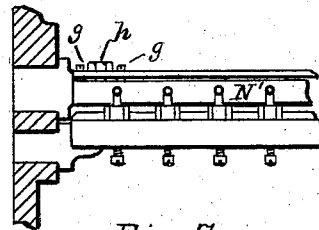


Fig. 7.

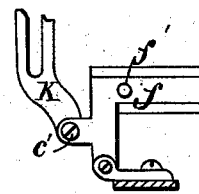


Fig. 8.

Inventor.

Albert Leavitt

UNITED STATES PATENT OFFICE.

ALBERT LEAVITT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO MICHAEL H. SIMPSON, OF SAME PLACE.

IMPROVEMENT IN WAX-THREAD SEWING-MACHINES.

Specification forming part of Letters Patent No. 171,147, dated December 14, 1875; application filed August 20, 1875.

To all whom it may concern:

Be it known that I, ALBERT LEAVITT, of Boston, in the county of Suffolk 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 drawings, is a specification:

My invention relates to that class of wax-thread sewing-machines in which two or more needles are used, and which sew two or more seams at one and the same time; and it consists in certain details of construction, which will be best understood and more readily explained in connection with the general description of the drawings, in which—

Figure 1 is a front elevation of a machine embodying my invention. Fig. 2 is an end elevation of the same. Fig. 3 is a vertical section on line *x x* on Fig. 1. Figs. 4, 5, and 6 are respectively a side elevation, end elevation, and horizontal section, of a portion of the awl-carrier. Fig. 7 is a section of a portion of the frame on line *y y*, and showing, in plan, a portion of the needle and cast-off bars. Fig. 8 is a detail illustrating the manner of operating the throat-plate, and Fig. 9 is a longitudinal section of the frictional connection for controlling the motion of the thread guide or looper, drawn to an enlarged scale, and Fig. 10 is a vertical section of the awl-carrier on line *z z* of Fig. 4, and showing the manner of hanging and operating the presser-foot bar.

A A are the side frames of the machine, connected together by the tie-rods A¹, A², A³, and A⁴, and the girts B and B'. C is the main driving-shaft, mounted in suitable bearings on the frames A A, and having mounted thereon between the frames A A the hand-wheel D, a suitable driving-pulley, (not shown in the drawings,) and the cams E E, F, and G. The shaft C also has mounted upon each end thereof outside of the frames A A an eccentric, H, and cam I. The cams I have set in their outer faces the crank-pins *a a*, which are embraced by the upper ends of the connecting-rods *b b*, the lower ends of which are connected to the projecting journals *c c* of the awl-carrier J. The awl-carrier J is journaled at each end in

the boxes *d d* fitted to slide vertically in the slots *d'* formed in the frames A A, and has formed in each of its end faces, below the journals *c c*, a slot, *e*, in which is fitted the box *e'* mounted upon a pin, *f*¹, set in the inner face of the dovetailed slide *f*. The lower edge of the awl-carrier J is rabbeted, and has secured thereto, so as to be adjustable longitudinally and transversely by means of the set-screws *g g* and binding-bolts *h h*, the awl-bar J', in which are set a series of awls the required distance apart and secured in position by the set-screws *i i*. The tie-girt B is provided with the rib *a'*, in the edge of which are cut a series of slots, *c*, corresponding in position and number with the awls and needles, and through which said awls and needles pass during the operation of sewing. The upper edge of the girt B and surface of the rib *a'* are planed to a smooth level surface, upon which rests the throat-plate *b'*, made preferably of sheet-steel. This throat-plate has cut through it a series of slots for the passage of the needles and awls, and is connected at each end with an arm projecting downward from the dovetailed slide *f*, as shown in Fig. 8. The slides *f* are fitted to dovetailed bearings in the inner faces of the frames A A, and are each connected at *c'* to the lower end of one of the levers K pivoted at *c*² to the inner face of the frame A. The levers K are provided with the slots *d*², extending longitudinally thereof, in which are adjustably secured the pins *d*³, which project from the inner faces of said levers, and have mounted thereon rectangular blocks of metal fitted to slide in slots formed in the contiguous faces of the levers L L.

The levers L L are pivoted to the inner faces of the frames A A at *e*², and have mounted upon pins set in their upper ends cam-trucks, which work in the side paths formed in the cams E E. M is the presser-foot bar, extending across the machine, and provided at each end with a vertical rod, M¹, fitted to a suitable bearing in the stand M², secured to the back side of the awl-carrier J. Each of the rods M¹ are made with a shoulder, *e*³, against which the lower end of the spiral spring *f*² rests, the upper end of which bears against the shoulder *g*¹, formed in the stand M², said

springs serving to force the bar M downward. The upper ends of the rods M¹ are each provided with a stop-nut, g², and check-nut, g³, to regulate the lift of the bar M and the presser-feet by the movement of the awl-carrier J.

The bar M has a series of presser-feet, h' h', attached thereto, the bearing ends of which are forked, so as to bear upon the goods to be sewed upon both sides of the needle. The goods to be sewed rest upon the throat-plate b', and when the awl-carrier descends the presser-feet h' h', descending with it, press upon the upper surface of the goods before the points of the awls reach it, and, as the awl-carrier continues to descend, the springs f² are compressed, thus increasing the pressure of the presser-feet upon the material.

When the awl-carrier has reached the extreme of its downward motion the cams E E, acting upon the levers L L, and through them and the pins d³ upon the levers K K, will cause the throat-plate b' and the lower edge of the awl-carrier, with the awls and the presser-feet, to be moved transversely of the machine, from the front toward the rear, a distance equal to the length of the desired stitch, the stitch being regulated by moving the pins d³ up or down in the slots d² in the lever K.

N is the needle-carrier, extending across the machine from side to side, with its ends projecting through and fitted to slide in the vertical slots j in the frames A A, and having adjustably connected thereto, and resting in a suitable rabbet formed for the purpose in its upper edge, the needle-bar N'.

The bar N' may be adjusted longitudinally or transversely by means of binding-bolts and set-screws, applied in the same manner as described, in connection with the description of the awl-bar, in both cases the hole through the bar which holds the awls or needles being slotted in the direction of the length of said bar to admit of an endwise motion of the same. In the bar N' are set a series of barbed needles, with their points upward, and secured in position by the set-screws i.

A reciprocating motion in a vertical direction is imparted to the needles by means of the eccentrics H H, eccentric rods O O, levers O² O², and links O³ O³, in an obvious manner, the length of said reciprocation being varied to suit the work in hand by adjusting the wrist-pins k k, which connect the eccentric rods O O to the levers O² O² to different positions in the slots k' k'.

P is the cast-off bar placed just in front of the needle-carrier N, and having mounted in its upper edge a series of cast-offs, l l, fitted thereto, so as to be adjustable by the set-screws l' l', and held firmly in position by the set-screws l' l'. The ends of the bar P extend through, and are fitted to slide up and down in, the slots P' P' formed in the frames A A, near to, and parallel with, the slots j j, in which the needle-carrier N has its bearings,

and to each end of the bar P is pivoted the lower end of a connecting-rod, m, the upper end of which is adjustably connected to the lever Q, which in turn is pivoted at n to the frame A, and has mounted upon a suitable stud set therein a truck, which fits into a cam-path formed in the inner side of the cam-disk I. The cams I I impart an intermittent vertical reciprocating motion to the cast-off bar. R is a rocker-shaft mounted in suitable bearings in the frames A in such a manner that it may be rotated or moved endwise therein. R¹ R¹ are two depending arms firmly secured to the shaft R, and having secured to their lower ends the horizontal bar R², in which are set a series of thread guides or loopers, p, corresponding in number and distance apart to the awls and needles. R³ is a lever firmly secured to the shaft R, and extending upward therefrom, and having mounted upon suitable pins set in its upper end, with their axes at right angles to each other, two steel trucks, one of which is fitted to the cam-path o formed in the side of the cam-disk F, which serves to impart an oscillating motion to the thread-guides p in a direction transversely of the machine, and the other truck is fitted to and revolves in the cam-path q formed in the periphery of the cylinder-cam G, which serves to impart to the shaft R and its adjuncts a reciprocating motion in a direction longitudinally of the machine. The combination of the two motions imparted by the cams F and G causes the eye in the end of the thread-guides p p to move in a path approximating to a circle around the line of the path of the needle. To each end of the horizontal bar R² are secured the journal r forming an extension of said bar, and fitted to slide in an eye formed for the purpose in the front end of the link S, made in two parts, s s¹, fitted one within the other, as shown in Fig. 9. The rear end of the part s¹ is pivoted at s² to the frame A in such a position that the part s will be moved endwise upon the part s¹, when the thread-guides and their supporting-frame are moved transversely of the machine, or in the direction in which the material to be sewed is fed through the machine. A friction is obtained between the two parts s and s¹ by means of the set-screw s³, and a disk of leather or other suitable material interposed between the points of said set-screw and the part s¹. A similar friction is obtained between the part s and the journal r by means of the set-screw r¹ and leather washer r².

The links S as a whole serve the purpose of friction-brakes, to prevent undue vibration of the thread-guides, caused by the momentum of the bar R² when the machine is running at the necessary working speed, and are very effective for that purpose.

The girt B' has a raised rib on its front edge, through which are made a series of small holes, t t, and said girt also has secured to its upper side a series of leaf-springs, u u, the movable ends of which rest upon the tie-rod-

A⁴, and have formed therein small holes for the passage of the thread.

The holes *t t* and springs *u u* correspond in number with the needles and awls, and a thread is passed from the bobbin (not shown in the drawing) through each of the holes *t*, and through the hole formed in the end of each of the springs *u*, and between the spring *u* and rod A⁴, and thence to the needle.

I claim—

1. The combination of a series of barbed needles, set in or mounted on, and operated by, a single horizontal bar or carrier, adapted to be reciprocated in a vertical direction by mechanism acting upon each end thereof, and a series of cast-offs, also mounted in or on a single horizontal bar, arranged to be reciprocated in a vertical direction by mechanism acting upon each end thereof, and automatically-operating mechanism, adapted to intermittently feed the goods to be sewed in a right line, and at right angles to the motion of the needles, substantially as herein set forth and described.

2. The combination of a series of barbed needles, set in or mounted upon a single horizontal bar or carrier, adapted to be reciprocated in a vertical direction, as set forth, a series of cast-offs, also set in or mounted upon a single horizontal bar, adapted to be reciprocated in a vertical direction, as described, a series of thread guides or loopers set in or attached to a single horizontal bar, adapted to vibrate about an axis, and to be moved endwise to carry the thread in each of said thread-guides around the line of the path of one of said needles, and automatically-operating mechanism, adapted to intermittently feed the material to be sewed in a right line, and at right angles to the motion of the needles, substantially as described.

3. The awl-carrier J, provided with a journal at either end thereof, in combination with the boxes *d d* fitted to, and adapted to slide vertically in, slots *d'*, and mechanism substantially as described, for imparting to said carrier a vibratory motion about said journals, and a reciprocating motion in a vertical direction, as and for the purposes set forth.

4. A series of awls, set in or secured to a single horizontal bar or carrier, adapted to be vibrated about an axis, and reciprocated in a vertical direction, as set forth, in combination with a series of barbed needles set in or mounted upon a single horizontal bar, and a series of cast-offs, also set in and operated by

a single horizontal bar, when said needle and cast-off bars are operated by mechanism acting upon each end thereof, substantially as described.

5. In combination with a series of barbed needles, cast-offs, and awls, each series attached to and operated by a single horizontal bar driven by mechanism acting upon each end thereof, a series of presser-feet attached to a single horizontal bar connected with and operated by the awl bar or carrier, substantially as described.

6. The combination of the cast-off bar P, having secured thereto a series of cast-offs, *l l*, the connecting-rod *m*, lever Q, and cam I, all arranged and adapted to operate as and for the purposes described.

7. The combination, in a machine for sewing two or more seams at the same time, of the awl-bar carrier J, awl-bar J', holding-bolts *h h*, and set-screws *g g*, all adapted to operate as and for the purposes described.

8. The combination, in a machine for sewing two or more seams at the same time, of the carrier-bar N, needle-bar N', holding-bolts *h h*, and set-screws *g g*, all adapted to operate as and for the purposes described.

9. The combination of the cams E E, levers L L and K K, slides *f f* provided with the pins *f' f'*, awl-carrier J provided at each end with a journal, about which it may be vibrated, and a slot, *e*, by means of which, and box *e'*, it is connected to the slide *f*, substantially as described.

10. The combination of the cam disk F, provided with the path *o*, formed in its side, the cylinder-cam G, having the path *q* formed therein, lever R³ carrying at its upper end two cam-trucks, with their axes at right angles to each other, rocker-shaft R mounted in bearings in which it may be rotated and moved endwise, the depending-arms R¹ R¹, horizontal bar R, and a series of thread guides or loopers, *p*, all arranged to operate as and for the purposes described.

11. In combination with a vibrating and reciprocating frame or bar, carrying a series of thread-guides, as set forth, one or more friction-brakes, S, applied thereto, and arranged to operate substantially as described.

Executed at Boston, Massachusetts, this 17th day of August, 1875.

ALBERT LEAVITT.

Witnesses:

N. C. LOMBARD,
E. A. HEMMENWAY.