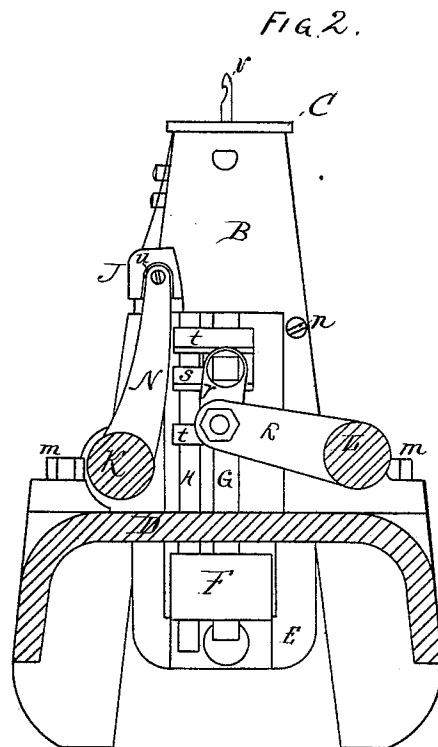
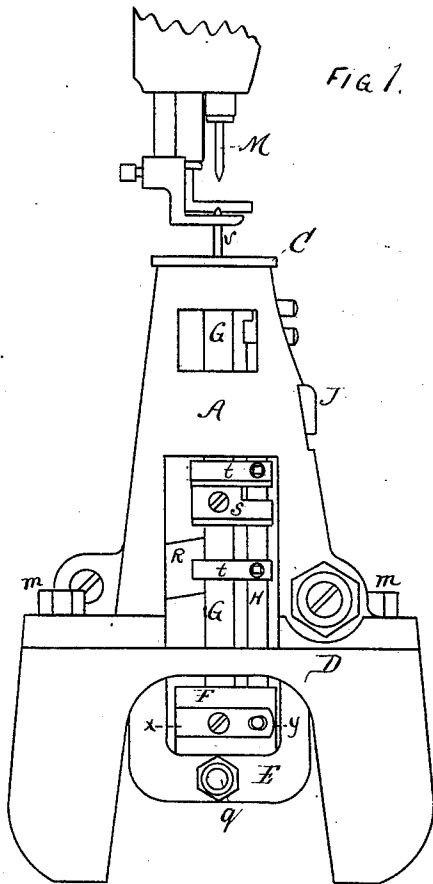


A. LEAVITT  
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No. 206,029.

Patented July 16, 1878.



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INVENTOR.  
Albert Leavitt,  
By Eugene Humphrey,  
his Attorney.

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FIG 3

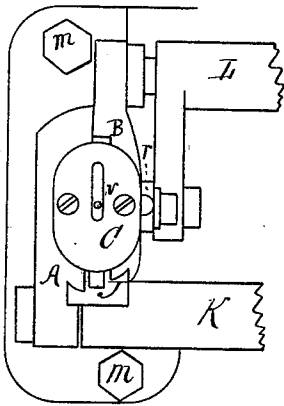


FIG 4

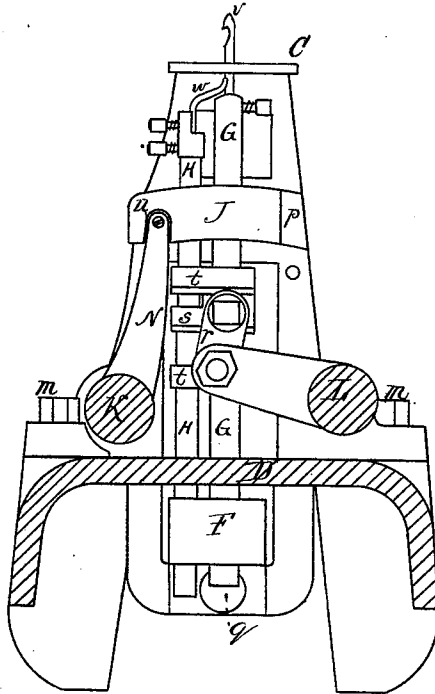
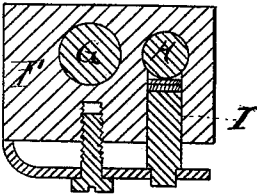


FIG 5



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# UNITED STATES PATENT OFFICE.

ALBERT LEAVITT, OF BOSTON, ASSIGNOR TO DAVID WHITTEMORE, OF QUINCY, MASSACHUSETTS.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 206,029, dated July 16, 1878; application filed May 9, 1878.

*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 a new and useful Improvement in Sewing-Machines, which invention is fully set forth in the following specification, reference being had to the accompanying drawing.

My invention relates to devices for feeding or causing the material to progress while being stitched on a machine which employs as a part of its stitch-forming mechanism a hook-needle and "cast-off," operated beneath the work-plate, the needle passing up through the material, and serving to feed the same in the process of stitching; and my invention consists in certain details of construction, combination, and arrangement of parts and devices for supporting the work and causing the same to progress by means of the needle, and constituting an improvement upon what is termed a "needle-feed."

In the accompanying drawings, Figure 1 is a front elevation of the work-supporting frame and its needle and cast-off mechanism, with a portion of the overhanging works. Fig. 2 is a rear view of the same with the overhanging parts omitted. Fig. 3 is a top view of the same and a portion of the actuating-shafts which operate the needle and cast-off. Fig. 4 is a rear view with a part of the supporting-frame removed. Fig. 5 is a horizontal section on line *x y*, Fig. 1.

The work-supporting frame or post is constructed in two parts, A B, and capped with a small elliptical work-plate, C, screwed down upon and connecting said parts at their tops, as shown. Part A of said frame is screwed to the bed D at *m m*, and is formed with a part, E, pendent below said bed. Part B is secured to part A by screws, one of which is shown at *n*, Fig. 2. To part E is pivoted, at *g*, a block, F, which is properly bored out to receive the needle-bar G, which carries needle *v*, and cast-off bar H, which carries cast-off *w*, and also has a transverse hole, I, running into that of the cast-off bar, Fig. 5, for the purpose of containing a friction-pad arranged to be pressed against the cast-off bar to prevent it, when raised to its highest point, from falling by its

own gravity when the needle descends. The two parts A B are recessed, so as to form, when united, a curved slot, *p*, Fig. 4, the line of curvature of which is on a circle struck from pivot *g* as a center. Within this slot a correspondingly-curved block, J, reciprocates, and is bored through to receive the needle and cast-off bars, which are supported therein and receive lateral movement thereby.

A rock-shaft, K, suitably actuated by a cam on the driving-shaft in the neck of the machine through adjustable connections, imparts the required reciprocating movement to block J, and through that to the needle and cast-off bars. Another rock-shaft, L, having an arm, R, is properly actuated by said driving-shaft to impart the required vertical reciprocating movement to the needle. This latter shaft is connected by a link, *r*, to a block, *s*, secured to the needle-bar by a set-screw, in the usual manner; and this block *s* plays up and down between two adjustable plates, *t t*, through which the needle-bar freely operates, while they are secured to the cast-off by set-screws, as shown, and through them the proper movements of the cast-off are effected by the action of the needle-bar block *s* as it moves up and down between them.

An awl, M, above the work, descends and punctures the goods, and when it rises the needle *v* is caused to follow by the means described, and passes through such puncture in the goods to its highest point of ascent to receive its thread from above, in the usual manner, and then, before descending, is moved laterally, while in the goods, by means of the shaft K, acting through its arm N, which operates in slot *u* in the curved block J, and thus the needle produces the forward movement of the material to the extent of the length of a stitch. The needle, with its thread, is then drawn down by the action of shaft L, and is again caused to move laterally, while out of and beneath the goods, back into line with the awl movement, this latter movement of the needle being also produced by shaft K, operating through a reverse motion of block J.

Heretofore such needle-feeds have been so constructed and arranged as to make it necessary to move with the needle, in the operation

of feeding, a part of its supporting frame or post, thereby adding weight to, and consequently increasing the wear of, the feed mechanism, and requiring more power to operate it. Another form of such feed mechanism has been employed, (as shown in United States Patent No. 130,556,) wherein the needle-bar is operated in bearings attached to a rocker-plate, so that the center of oscillation of the needle is about midway of the length of the needle-bar, and consequently the circle in which the needle moves when feeding the stock is too small to work well practically.

By the construction, combination, and arrangement herein described, the above-enumerated difficulties are overcome and other practical advantages secured.

The operative feed mechanism, being comparatively very light, may be run more rapidly, with less power and wear, and with more satisfactory results. The pivot of motion of the needle, in its feed movement, being near the lowest extremity of the needle-bar, and at a long distance from the work-plate, the needle has but slight movement in the goods during its lateral movement the length of the stitch, and the requisite motion of the needle-bar block F on its pivotal bearing is so slight as to greatly diminish the liability of lost motion arising from wear at that point. Again, the needle-bar being well fitted in the

block J, and thereby operated so near the top of the bar, as described, its movement is rendered more rigid and positive, and any slight wear or looseness on said pivotal point will be counteracted in its effect upon the movement of the needle by the independently-supported concentric movement of the block J in its slot *p*. Thus greater durability, lightness, and positiveness of action is secured in such a needle-feed in an unusually simple, cheap, and effective manner.

What I claim as my invention is—

1. In a wax-thread sewing-machine employing an awl above and a hook-needle and cast-off below the work-plate, the supporting post or frame, composed of parts A B, forming, when united, the curved slot or slideway *p*, and connected at their tops by the plate C, all constructed, combined, and arranged as and for the purposes specified.

2. The combination of the work-support, constructed as described, with block J, needle-bar G, cast-off bar H, pivoted block F, and rock-shaft K, all constructed and arranged to operate together, substantially as and for the purposes specified.

ALBERT LEAVITT.

Witnesses:

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