R. WHITEHILL.

Sewing-Machine.

No. 166,172. Patented July 27, 1875.

Fig. 1.

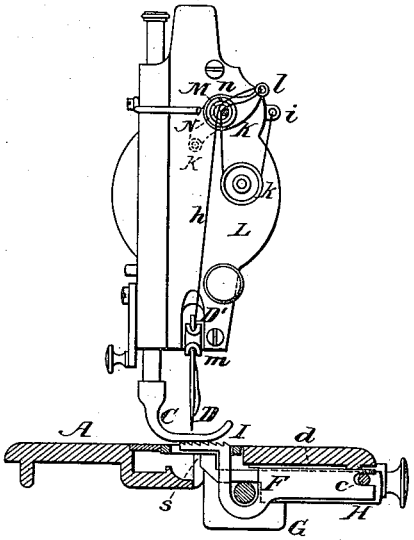

Fig. 3.

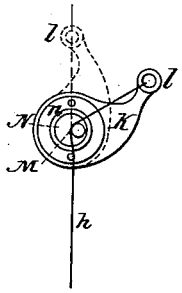

Fig. 2.

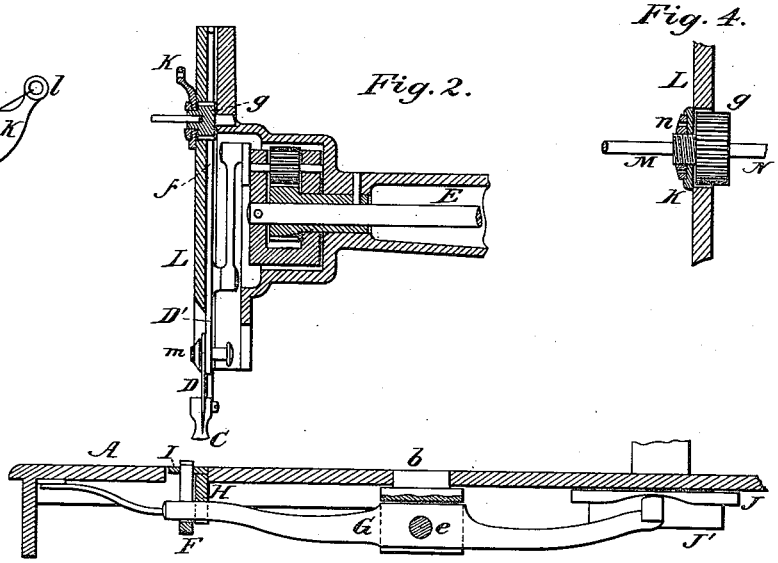

Fig. 4.

Witnesses.
Michael Ryan.
Fred Haynes.

Inventor.
Robert Whitehill
by his Attorneys,
Brown & Allen.

UNITED STATES PATENT OFFICE.

ROBERT WHITEHILL, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 166,172, dated July 27, 1875; application filed July 10, 1873.

To all whom it may concern:

Be it known that I, ROBERT WHITEHILL, of the city, county, and State of New York, have invented certain Improvements in Sewing-Machines, of which the following is a specification:

The invention consists in a novel construction of an oscillating needle-thread controller or take-up, operating to provide for delivery of the thread at a proper time and in suitable amount without forming unnecessary slack, and so that the needle-thread is drawn tightest when the stitch is formed, to which ends, and to provide for sewing different thicknesses of material, the bar of the controller over which the thread is drawn is arranged so that its acting surface is in line with the center of the controller, and the latter made adjustable around its axis.

In the accompanying drawing, Figure 1 represents a partly-sectional front view of a sewing-machine with my improvement. Fig. 2 is a vertical section at right angles to Fig. 1. Fig. 3 is a face view of the thread-controller on a larger scale than Figs. 1 and 2. Fig. 4 is a section of the thread-controller at right angles to Fig. 3, and on a corresponding scale.

Similar letters of reference indicate corresponding parts in the several figures.

A is the cloth bed or table of the machine. D is the reciprocating needle, the carrying-bar D′ of which may be moved up and down by a crank-movement derived from an upper horizontal shaft, E, or by other known or suitable means. K is a curvilinearly-reciprocating needle-thread controller or take-up arranged in front of the needle-bar D′ on the frame or upright L, and with its center of motion at one side of said bar, whereby said take-up may be operated in a positive manner directly from the needle-bar by a rack, *f*, on the bar gearing with a pinion, *g*, on the arbor of the take-up. The needle-thread *h* is passed through an eye, *i*, down to and round a tension device, *k*, below the take-up, and from thence to and on the inside of a stationary bar or pin, M, arranged eccentrically in relation with the center of the oscillating take-up, and so that the inside or acting surface of said bar, over which the thread is drawn when tightening the stitch, is in line with the center of the take-up K. The needle thread *h* is then continued to and through an eye, *l*, in the take-up at any suitable distance from the axis of the latter, and from thence to the needle D, passing through a guide, *m*, on the needle-bar. Both lines of the needle-thread *h* bear on the inside surface of the bar or pin M when the stitch is being tightened. This stationary bar or pin M, which forms a combined thread-guide and stitch-tightener, is suitably bent to provide for its attachment to one end of the stationary plate or upright L. The oscillating take-up K swings backwardly over and forwardly down and below the pin or portion of the bar M lying eccentrically opposite the end of the arbor N of the take-up. When the needle D is at the end of its upstroke then the take-up D is in the position occupied by full lines in Figs. 1 and 3, the stitch being tightened as the take-up moves from its position, (shown by dotted lines in Fig. 3,) when the eye *l* is directly over the center of the take-up, to its position represented by full lines in the same figure. The full stroke of the take-up K is represented by full and dotted lines in Fig. 1, the needle being fully down when the take-up K is at its dotted position in said figure. This arrangement provides for the necessary double feed or supply of the needle-thread relatively to the distance traveled by the needle to allow for the passage of the shuttle through the loop, after which, as the needle ascends, the take-up K at first slowly, and afterward more rapidly, takes up the slack of the needle-thread, giving ample time for the passage of the shuttle without forming unnecessary slack, and as said take-up works back of the pin M, tightens the stitch by pull of the thread on or over said pin or bar. This latter action does not commence until the eye of the needle is clear of the cloth, just as in the reverse stroke of the take-up the latter does not commence to give out slack till the eye of the needle is down to the cloth, thereby doing away with any possibility of entanglement. By the arrangement of the pin or bar M in eccentric relation with the arbor of the take-up, and so that its inner side or acting surface is in line with the center of the take-up, the thread *h* is kept tight from the time the needle leaves the cloth until it returns to it, so that it gives out slack when

the stitch is being formed and regulates the thread so as to keep it tight until the needle meets the cloth. The take-up K is made adjustable on or around its arbor N by means of a clamping-nut, *n*, so that the eye *l* of the take-up may be set more or less backward or forward relatively to the stationary bar or pin M, whereby provision is made for adapting the take-up K to different thicknesses of cloth.

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

1. In combination with the oscillating take-up K, the stationary bar or pin M, arranged to occupy an eccentric position relatively with the arbor N or axis of oscillation of the take-up, whereby its inside face over which the thread is drawn will be in line with the center of the take-up, substantially as specified.

2. The oscillating take-up K, made adjustable around the arbor N, by which it is operated, substantially as described, whereby provision is made for adjusting the take-up to suit different thicknesses of fabric.

R. WHITEHILL.

Witnesses:
FRED. HAYNES,
MICHAEL RYAN.