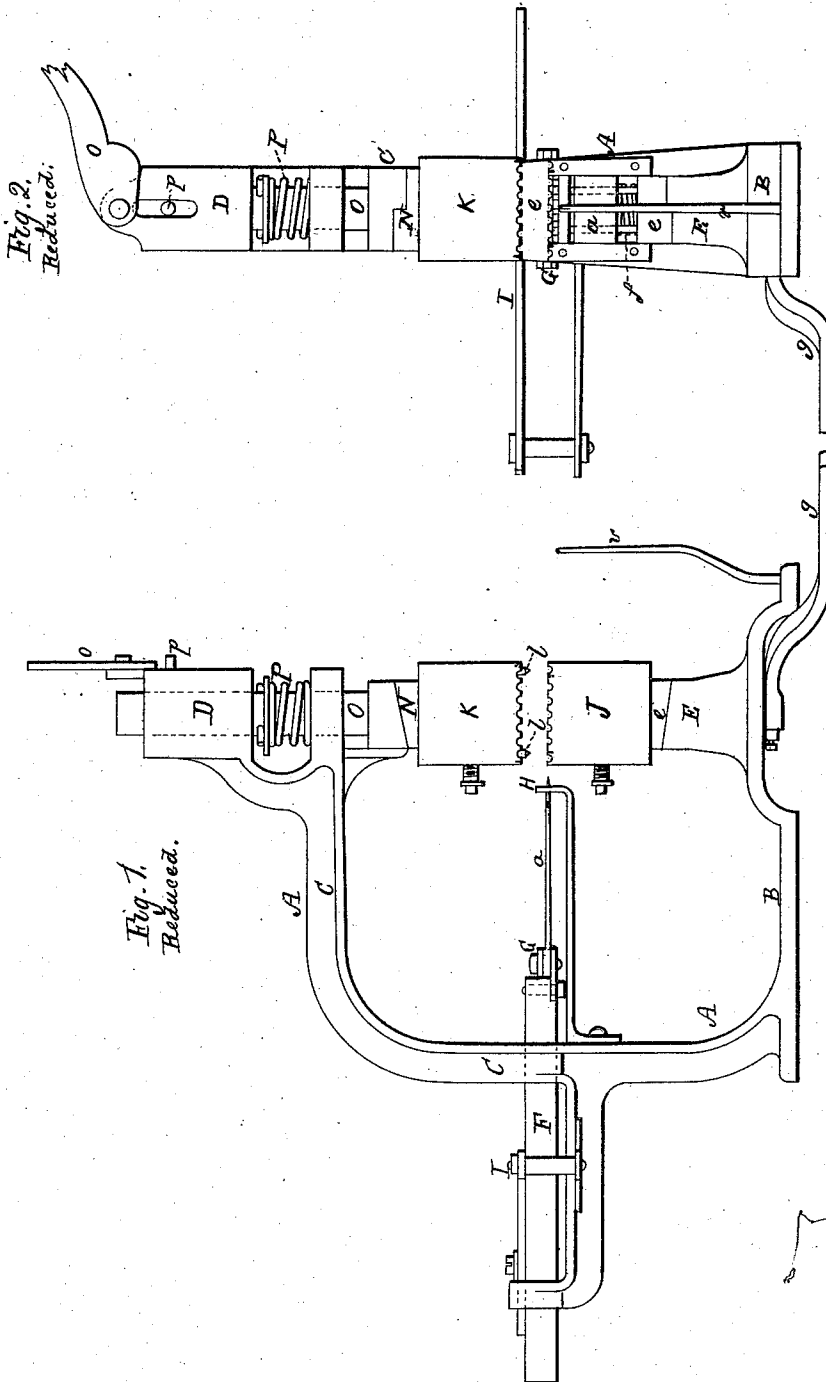


O. S. HOSMER.

Machines for Darning Stockings.

No. 154,483.

Patented Aug. 25, 1874.



WITNESSES.
Francis E. Payson.
W. C. Boardman

Oren S. Hosmer.
J. Curtis, Atty.

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Fig. 3.

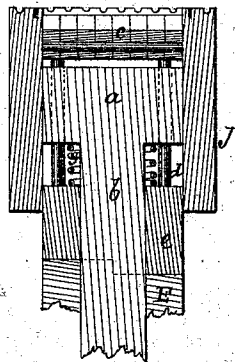


Fig. 4.

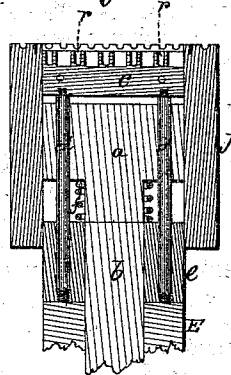


Fig. 5.
Enlarged.

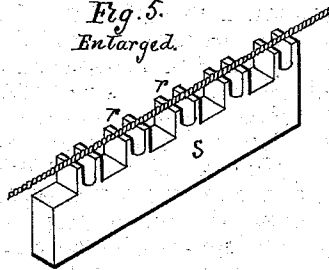
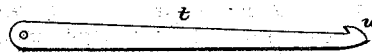
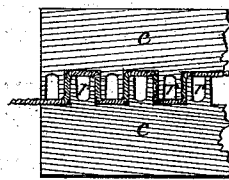


Fig. 6.
Enlarged.



WITNESSES.
Francis E. Fayou,
W. Boardman

Oren S. Hosmer,
J. Curtis, Atty.

UNITED STATES PATENT OFFICE.

ORIN S. HOSMER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR DARNING STOCKINGS.

Specification forming part of Letters Patent No. **154,483**, dated August 25, 1874; application filed July 14, 1874.

To all whom it may concern:

Be it known that I, ORIN S. HOSMER, of Boston, Suffolk county, Massachusetts, have invented a Machine for Darning Stockings, of which the following is a specification:

The purpose of this invention is to provide a simple and inexpensive implement by which the darning of stockings may be effected with a fraction of the time and labor now employed for the purpose; and consists in the combination, with a series of needles supported by a sliding carriage, and operating to draw the yarn across the hole to be mended or the material to be darned, of a clamp for holding the material to be operated upon, and for shifting the position of such material, and a pair of plungers operating, as hereinafter described, so that after the needles have laid or drawn a number of stitches or rows of yarn another series may be interlaced with them in a direction at right angles thereto.

The drawings accompanying this specification represent in Figure 1 a side elevation; in Fig. 2 a front-end elevation; in Figs. 3 and 4 vertical sections of the lower cylinder or guide; in Fig. 5 a perspective view of one of the toothed bars making part of the plungers; and in Fig. 6 a section of a portion of the two plungers.

In these drawings, A represents the frame of the machine, consisting of a base or bed plate, B, and a curved standard or goose-neck, C, the latter terminating in a head, D, very much after the manner of sewing-machines, the said head D being over and coinciding with a tubular post, E, erected upon or making part of the base B. Sliding horizontally within the upright portion of the goose-neck or standard C, and about centrally thereof, I dispose a bar, F, whose inner end is converted into a suitable clamp, G, to seize and support at their bases a series of needles, *a a*, &c.—preferably latched needles—the outer ends or points of such needles passing through a perforated guide-plate, H, disposed as shown in the drawings, and by which they are steadied as they are advanced through the material to be darned, the bar F being forced to and fro of its bearings by a lever, I, pivoted to it and the standard in a suitable manner. The clamp, before alluded to for confining the material in place while being operated upon and for shifting the position of the yarns, is constructed as follows: I place immediately over the post E

a tubular guide-cylinder, J, which is mounted upon a head, *a*, constituting the upper part of an upright bar or standard, *b*, which fits within the bore of the post E, while within the upper part of such guide J I dispose a rectangular plunger, *c*, whose upper surface is flat, and scored or channeled, as hereinafter explained, this plunger or block being connected, by means of rods *d d*, &c., with, or erected upon, a tubular cam-block, *e*, which is situated within the lower part of the receiver J, a coiled spring, *f*, being placed between said cam-block and the head or partition *a*, and serving to depress the plunger and force the cam-block in contact with the upper surface of the post E. No vertical motion is permitted to the guide J, but the plunger *c* slides within it, and is raised or lowered therein by turning the plunger upon its axis to the extent of ninety degrees of a circle, as the lower face of said plunger and the upper face of the post E are sloping or oblique with respect to the horizon, the extent of this slope being determined by the height to which the plunger is to be raised. A hand-lever, *g*, is connected with the lower extremity of the rod or shank *b*, by which the guide J, and with it the plunger, may be turned in the arc of a circle, the plunger having a compound motion imparted to it since it rotates with the guide, and rises or falls within the latter according to the direction in which the two are rotated, the upper edges of the guide J being scored or roughened to take a firm hold of the material to be darned. Immediately over the guide J and plunger *c*, with their adjuncts, as stated, I dispose a second set, which are duplicates of the first, but inverted end for end, the second guide being shown at K, cam-block at N, and shank or rod at O, the shank O being supported within the head of the goose-neck, and the cam-block operating in connection with the lower part of said head, which is sloping, to correspond with the upper portion of the post E, before alluded to. Depending from the under side of the upper guide K are several steady-pins, *ll*, &c., which, when the guide is lowered, are to enter corresponding coinciding sockets, in the upper edges of the guide J, these pins serving not only to confine the two guides firmly together and compel them to rotate in unison, but to aid in confining the work in place while being darned. The guide K and its adjuncts

are raised and lowered by means of a cam-lever, *o*, pivoted to the top of the head *D*, and bearing upon a stud, *p*, projecting from the shank. The end surfaces of the two plungers are each formed with a series of rows of notched spurs or teeth, *r r*, &c., of equal size and distance asunder, and the number and length of these rows of spurs are dependent upon the size of the place to be darned, or of the size of fabric to be made by the machine, as hereinafter explained.

The spurs of each alternate row are opposite the spaces intervening between the spurs of the next adjacent row, and I have found it convenient in the present instance to form the plunger of a series of thin bars, one of which is shown at *s* in Fig. 5 of the drawings. By referring to this figure it will be seen that the upper edge of the bar *s* is converted into a series of double pointed or notched spurs, *r r*, &c., of equal size and distance asunder, the spaces intervening between these spurs being somewhat greater than the extreme width of any one spur. The two plungers are so arranged that the spurs of one coincide with and partially fill the spaces between the spurs of the other when the plungers approach each other by the turning of the two by means of the hand-lever, and as the upper surfaces of the two guides when forced toward each other meet, or practically so, I score such two of each of them as are in line with the needles with a series of channels to receive such needles.

In the use of this machine or implement, the operator seizes the material and places it over the lower guide, the hole to be darned being situated as near the center of the lower plunger as can conveniently be done. The upper guide is now lowered, and the material firmly clamped between the two. The needles are next advanced and pushed through the sound material upon two opposite sides of the hole until the points and eyes of such needles protrude beyond the front face of the two guides. The operator next seizes an instrument consisting of a thin steel plate, (shown at *t* in the drawings,) with a hook, *u*, upon one end, and passes this hook through the eyes of the entire range of needles, or such a number thereof as may be necessary, having done which he seizes with such hook a piece of yarn and draws the latter through the eyes, and thus threads the needles. He next attaches the end of the yarn to a post or stud, *v*, erected upon the base of the machine, and then withdraws the needles, by means of the hand-lever *I*, to their extreme rearward position, the result of which is that a series of stitches or rows of yarn corresponding in number with the number of needles threaded are passed through the material and across the hole. The yarns, as they are laid across and through the material coincide with or lie across the tops of the notched spurs, as shown by black line in Fig. 5 of the drawings, the entire series of spurs of the two plungers being

at this time a slight distance asunder. The operator next seizes the shipper *g* and turns the two guides and their adjuncts in the arc of a circle to the extent of ninety degrees, the effect of which is to force the two plungers together and compel the spurs of one set to enter and partially fill the spaces of the opposite set. The effect of this is to force each yarn into a series of alternating undulations or loops, as shown in Fig. 6 of the drawings. Consequently, when the needles are next pushed forward they pass through these loops, and as the bend of each loop of one series is diametrically opposite that of the next loop of the other series the two sets of yarns cross each other at right angles and are interlaced in the manner of ordinary woven fabrics. The two guides having been partially rotated upon an axis, as stated, the needles are again advanced and threaded as before, and returned to place, drawing with them a series of yarns which interlace those first laid. After the needles are withdrawn in the act of laying the stitches the yarns are to be cut from them if a closed-eyed needle is employed; but I prefer to employ latched needles, in order that the yarns may be readily removed.

Although my present machine, as originally devised, was mainly intended for darning stockings, I am enabled to adapt it without a change to a variety of useful purposes. For instance, I am enabled to weave lamp-mats, chair-tidies, and many ornamental and useful articles of a size equal to the area of the upper surface of each plunger, or according to the number of needles which may be threaded.

If considered expedient the upper surfaces or edges of each guide may be converted into notched spurs arranged after the manner of those of the plungers, in order that the stitches or yarns passing through the material about the place to be darned may interlace; but in practice this will hardly be found necessary.

I do not confine myself to strict details, as herein shown and described, as these may be varied to a marked degree without departing from the spirit of my invention.

I claim—

1. The combination, with a series of needles mounted and operated as explained, of the pair of upright guides or cases for supporting and clamping the work while being operated upon, and the plungers sliding within such guides, the plungers being arranged and operated so that when the first series of yarns are laid the faces of the plungers are detached, and when the second course of yarns is laid the plungers meet and compel the second to interlace the first at right angles, substantially as and for purposes stated.

2. The combination of the guide *J*, plunger *c*, cam-block *e*, and sloping abutment *E*, substantially as and for purposes stated.

ORIN S. HOSMER.

Witnesses:

F. CURTIS,

W. E. BOARDMAN.