A. BOCHER.

SEWING-MACHINE TAKE-UPS.

No. 195,439. Patented Sept. 25, 1877.

Fig. 1.

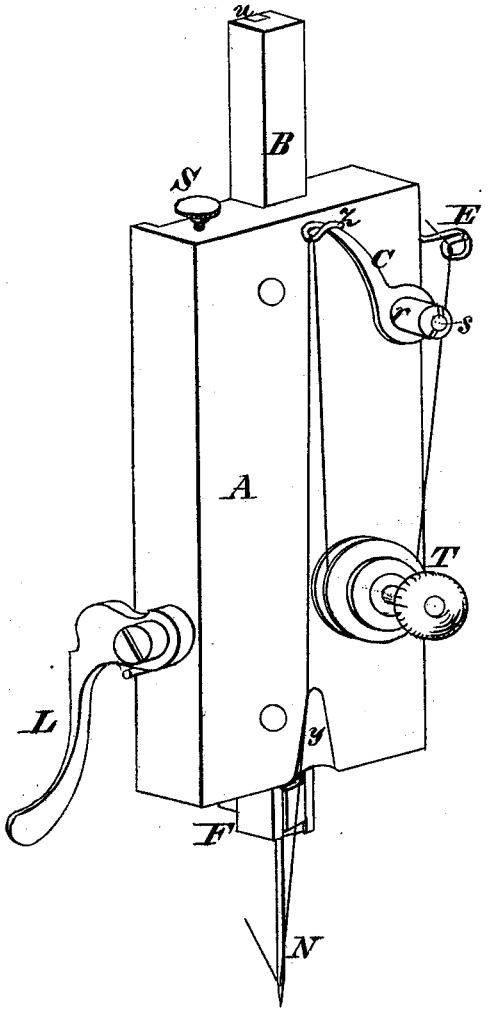


Fig. 2.

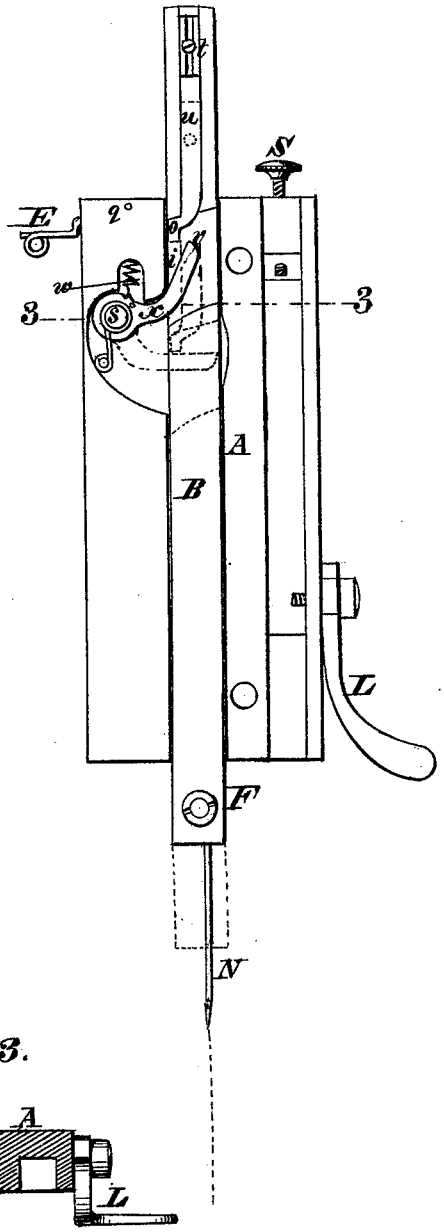
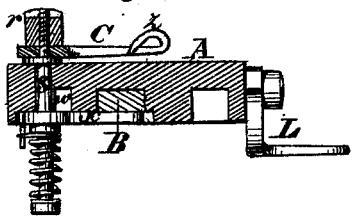


Fig. 3.



WITNESSES

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IMPROVEMENT IN SEWING-MACHINE TAKE-UPS.

Specification forming part of Letters Patent No. **195,439**, dated September 25, 1877; application filed August 30, 1876.

To all whom it may concern:

Be it known that I, ADAM BÖCHER, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Sewing-Machine Take-Ups, of which the following is a specification:

This improvement has reference to those devices for supplying and taking up slack in the thread on sewing-machines known as "take-ups," and is applicable to any sewing-machine that has a reciprocating needle-bar.

The present invention consists, first, in a short check-lever, working parallel to the face-plate, and operated by the needle-bar through a second lever, inclosed within the head, for superior simplicity, directness, and cleanliness, and in the peculiar construction of said inclosed lever, whereby the check-lever is made to move slower than the needle-bar at the beginning and end of each double stroke, and faster than the needle-bar during the remainder of the stroke, so as to keep the thread taut until the eye of the needle is through the cloth, and to draw the stitch tight by a relatively slow movement; secondly, in the employment of a regulating-slide or adjustable operating-point on or within the needle-bar, in combination with said inclosed lever and its retracting-spring, to adjust the take-up to work of different thicknesses, as hereinafter set forth.

Figure 1 is a perspective view of the face-plate and needle-bar of a sewing-machine, with their accessories, including an improved take-up, illustrating this invention. Fig. 2 is a rear elevation of the same, showing the needle-bar in its uppermost position, as in Fig. 1, in full lines, and in its lowermost position in dotted lines. Fig. 3 represents a transverse section on the line 3 3, Fig. 2, with the needle-bar and inclosed lever at an intermediate part of their stroke.

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

A represents the face-plate or head-cap of an illustrative sewing-machine; B, its needle-bar; N, the needle; F, the needle-fastening; L, the foot-lifter; and S, the adjusting-screw of the presser or foot bar.

E represents an eyelet at the front edge of the face-plate; T, a tension on the face in front of the line of the needle-bar; and C, a check-lever above said tension.

The thread is brought from the spool through one or more guides or direct to the eyelet E; from thence around the tension T; thence through the hook *z*, at the extremity of the check-lever C; and thence to the eye of the needle N direct, as shown in Fig. 1. The check-lever works parallel to the face-plate, and its hook moves as nearly as possible in line with the needle, so as to pull directly upward on the stitch. There is no eyelet on the needle-bar, and there are no eyelets between the check-lever and the needle; but the face-plate has been cut away at the bottom, as shown at *y*, so that the thread may pull in a direct line, as described, with very little friction. There is no attachment whatever to the foot-bar, it will be observed. The eyelet E is arranged at the top of the head, so as to take the thread in line with the arm; and the check-lever C has been arranged near the top, so that the adjusting device shall project at the upper end of the needle-bar. The tension T may be located at any preferred point below the check-lever.

The back of the face-plate F is recessed, as shown in Figs. 2 and 3, to receive a lever, *x*, and a coiled retracting-spring, *w*, attached thereto at top; and the back of the needle-bar B is cut away to form a notch or slot, *v*, to accommodate the end of the lever *x*, and a guide-groove to accommodate a regulating-slide, *u*, which is held in different positions by a small screw, *t*, passing through a slot near its upper end. The lever *x* is secured on the inner end of a little shaft, *s*, which passes through the face-plate, and carries the check-lever C in front of the face-plate. A washer is interposed behind the check-lever, and the latter is then tightened on the shaft by a nut, *r*. The upper end of the retracting-spring *w* is held by a pin, *q*. An oil-hole, extending inward to the shaft *s* from the edge of the face-plate, may provide for lubricating this part. The working-surface of the lever *x* will be lubricated in oiling the needle-bar. The check-lever requires no oil, and consequently will not soil the thread.

To provide for withholding the slack until the eye of the needle has passed through the

cloth, and then giving it with the required rapidity, and for taking up the slack during the same time, and easing or graduating the pull on the thread as the stitch becomes tight, the lever *x* is constructed with an ascending incline, *i*, on its upper or effective surface, and the lower end *o* of the slide *u*, which is the operating-point of the needle-bar, is constructed of the peculiar shape shown, with its lowest point at the front of the needle-bar, so as to move as close as possible to the shaft *x*, which is the center of the lever. As the needle-bar descends after the point of the needle has entered the cloth, the upper extremity of the incline *i* and the highest point of the slide end *o* come in contact first, and a very slow motion is imparted to the check-lever. When the lowest point of the slide end comes in contact nearer the shaft, the motion is increased, and as it travels down the incline the motion grows faster as the point of contact comes still nearer the shaft. Finally, the length of lever between the point of contact and the shaft increases, but the operation of the incline, added to the leverage, keeps up the speed. When the needle-bar ascends, the operation, as above described, is simply reversed, the spring *w* keeping the lever in contact. The slow motion of the check-lever in this case avoids pulling too hard on the tightened stitch. The form of the check-lever, as above described, and its arrangement so that it moves upward from a nearly-horizontal position at about right angles to its line of draft to a nearly-vertical position, where its effect as a lever is much less, operate also to lessen its effect on the thread as the stitch becomes tight, and to graduate the supply of slack, in furtherance of the object of the said peculiar shape of the lever *x*.

Different styles of springs may be employed, and the arrangement or location of the spring *w* will vary, according to its form and other circumstances. The employment of a spring reduces wear and prevents rattling.

The following is what I claim as new and desire to secure by Letters Patent, namely—

1. The combination of the reciprocating needle-bar B, the inclosed lever *x*, constructed with the incline *i*, and the retracting-spring *w*, rock-shaft *s*, and check-lever C, arranged and operating as herein shown and described, for the purpose set forth.

2. The regulating-slide *u*, adjustable within the upper end of the needle-bar, as described, in combination with the inclined lever *x*, retracting-spring *w*, and check-lever C, for the purpose set forth.

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