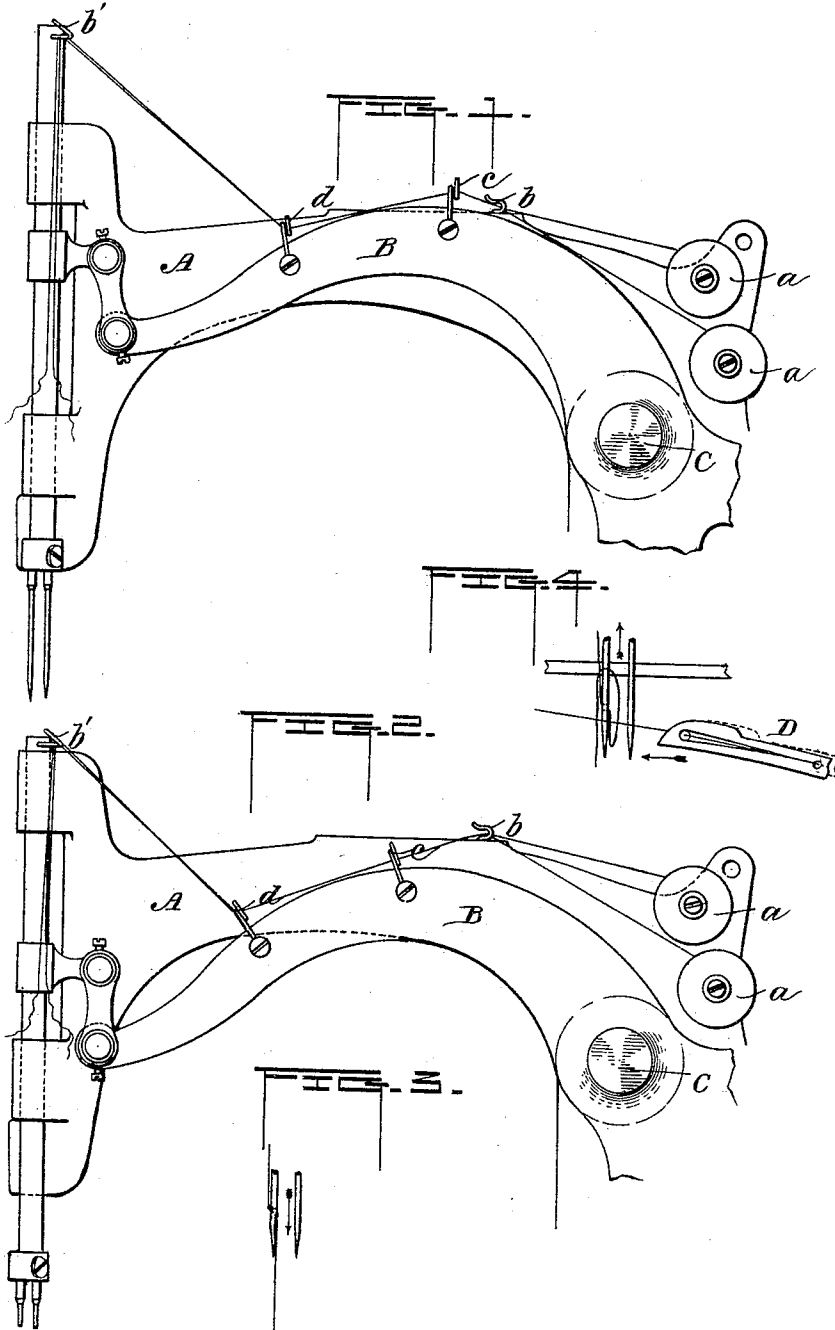


(No Model.)

R. G. WOODWARD.
THREAD CONTROLLING DEVICE FOR SEWING MACHINES.
No. 493,461. Patented Mar. 14, 1893.



WITNESSES

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RUSSEL G. WOODWARD, OF WAUKEGAN, ASSIGNOR TO THE UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS.

THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 493,461, dated March 14, 1893.

Application filed March 27, 1891. Serial No. 386,614. (No model.)

To all whom it may concern:

Be it known that I, RUSSEL G. WOODWARD, a citizen of the United States of America, residing at Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Thread-Controllers for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in devices for controlling the thread fed to the needles of sewing machines and is designed to act at all times to keep the thread taut and without slack.

Heretofore, in the use of such devices in machines employing a looper in connection with the needles, when sewing more than a certain predetermined thickness of leather or other material the strain upon the thread as the looper backs out over the point becomes too great and the stitch either becomes too tight or the thread breaks. Furthermore, with devices such as heretofore used, the thread may have too much slack at a certain portion of the movement of the machine and not enough at another.

The construction which has been found particularly open to objection is that consisting of a single thread eyelet, either adjustable or stationary upon the needle bar lever of the machine.

The object of my invention is to provide a construction which shall be free from the defects above noted and consists in the matters hereinafter described and referred to in the appended claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my invention the needle bar lever being shown in its highest position. Fig. 2 is a similar view, the needle bar lever being in its lowest position. Figs. 3 and 4 represent the respective positions of the loopers when the needles are beginning to descend and rise, the eyelets operating in the manner desired.

In the drawings, the main part of the machine is the same as that illustrated in Patent No. 344,493, of June 29, 1886, granted to Lorenz Muther, my invention being shown applied thereto.

The frame-work, the needle-bar lever, the main shaft, the looper, the means for vibrating the same and other parts being all substantially similar to those of the patent above referred to, (the only difference being that I have shown two obliquely set needles and two loopers) need not be here described specifically, though I desire it to be understood that the present invention may be applied with equally good results to other machines, both those making chain stitches and those making lock stitches.

A, represents the main frame of the machine.

B, is the needle bar lever vibrating upon the pivot C, by which it is attached to the main frame.

a, a, are the ordinary tension devices carried by the main frame, and through which the thread runs.

b, b', are the ordinary eyelets supported at about the center of the top frame and the top of the needle bar respectively for guiding the thread coming from the spools to the needle or needles. At points upon the needle bar arm or lever B, in advance of the eyelet b, upon the main frame, I secure eyelets c, d. The thread passes from the spools through the tension devices thence through eyelet b, eyelets c, and d, and eyelet b', down to the needle or needles. In the raising to the highest position of the needle or needles, the rear eyelet c, on the arm B, draws off the thread from the spools, and in descending the front eyelet d, takes up the thread again, still keeping it sufficiently taut. The position of the looper or loopers D, during these different operations is shown in Figs. 3 and 4, in Fig. 3 the looper just about to be withdrawn from the loop, (the needle descending) and in Fig. 4, (the needle rising) just starting into the loop, one of said loopers being shown in dotted lines.

In the use of only one eyelet acting in conjunction with the needle bar eyelet, when the machine is running at a high speed very serious inconveniences arise. For instance, in the use of the front eyelet alone in connection with the needle bar eyelet b' too little thread is pulled off and if a portion of the work containing two thicknesses of material,

or containing a seam, be passed under the needle the thread will break. If the rear eyelet only be used in conjunction with the eyelet *b'* while sufficient thread is pulled off yet there is nothing to take up the slack on the downward movement of the needle and hence an irregular and very slack stitch is formed.

In the use of two eyelets as above described, when the needles are being raised, the rearwardly arranged eyelet *c*, pulls off enough thread from the spools in addition to that drawn off by the eyelet *b'* to give sufficient slack to enable the looper to back out of the loop in the descending movement of the needles, without causing strain on the thread. In the downward movement of the needles the forward eyelet *d*, takes up the thread after the point of the looper is free from the loop and draws the loop up to the material to be sewed or to the tongue of the throat plate thus making a tight stitch.

It will be readily seen from the drawings that when the needle bar is in its raised position the eyelet *c* makes a crook in the thread between *b* and *d* and increases the slack or amount drawn off from the spool, but in the downward position the course of the thread between *b* and *d* is substantially a straight line, the forward eyelet, however, taking up the slack between *c* and *b'*.

While I have shown my invention as applied to the machine illustrated in the particular patent referred to, except that I have used two obliquely set needles and two loopers such as shown in my application filed contemporaneously herewith yet I do not desire to be limited in this respect since, as above stated, it may be applied to many other kinds, both those for making chain stitches and those for making lock stitches, and those in which one or two needles either vibrating, for use in overseaming, or non-vibrating, the particular and essential feature of this invention without regard to the number or arrangement of needles and loopers being the arrangement

of the eyelets *c*, and *d*, upon the needle arm so that in the upward movement and in conjunction with the eyelet *b'* on top of the needle bar eyelet *c*, will draw off thread and in the downward movement eyelet *d*, takes it up again, thus permitting the looper or loopers to accomplish their movements and the stitch to be drawn up without danger of breaking the thread, but yet the same being always sufficiently taut to avoid any looseness.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination with the main frame and needle bar of a sewing machine, eyelets secured respectively to the main frame and needle bar, a needle arm with means for vibrating it, a thread eyelet upon said needle arm moving into a plane above the plane in which the eyelet on the main frame is located when said needle arm moves upward, thereby forming slack in the thread, and an additional eyelet also on the needle arm for taking up the slack on the downward movement of the needle arm; substantially as described.

2. In combination with the main frame and needle bar of a sewing machine, the eyelets *b*, *b'*, secured respectively upon the main frame and needle bar, the needle arm *B* and means for vibrating the same, said needle arm having thread eyelets one in advance of the other and both in advance of the eyelet *b*, the rear eyelet upon the needle arm moving into a plane above the plane in which eyelet *b* is located when said needle arm moves upward thereby forming slack in the thread, the slack being taken up by the front eyelet on the downward movement of the needle arm; substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

RUSSEL G. WOODWARD.

Witnesses:

CHAS. L. STURTEVANT,
ROBERT F. STOCKDALE.