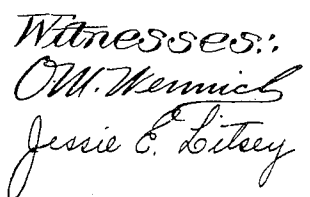


954,858.

2 SHEETS—SHEET 1.



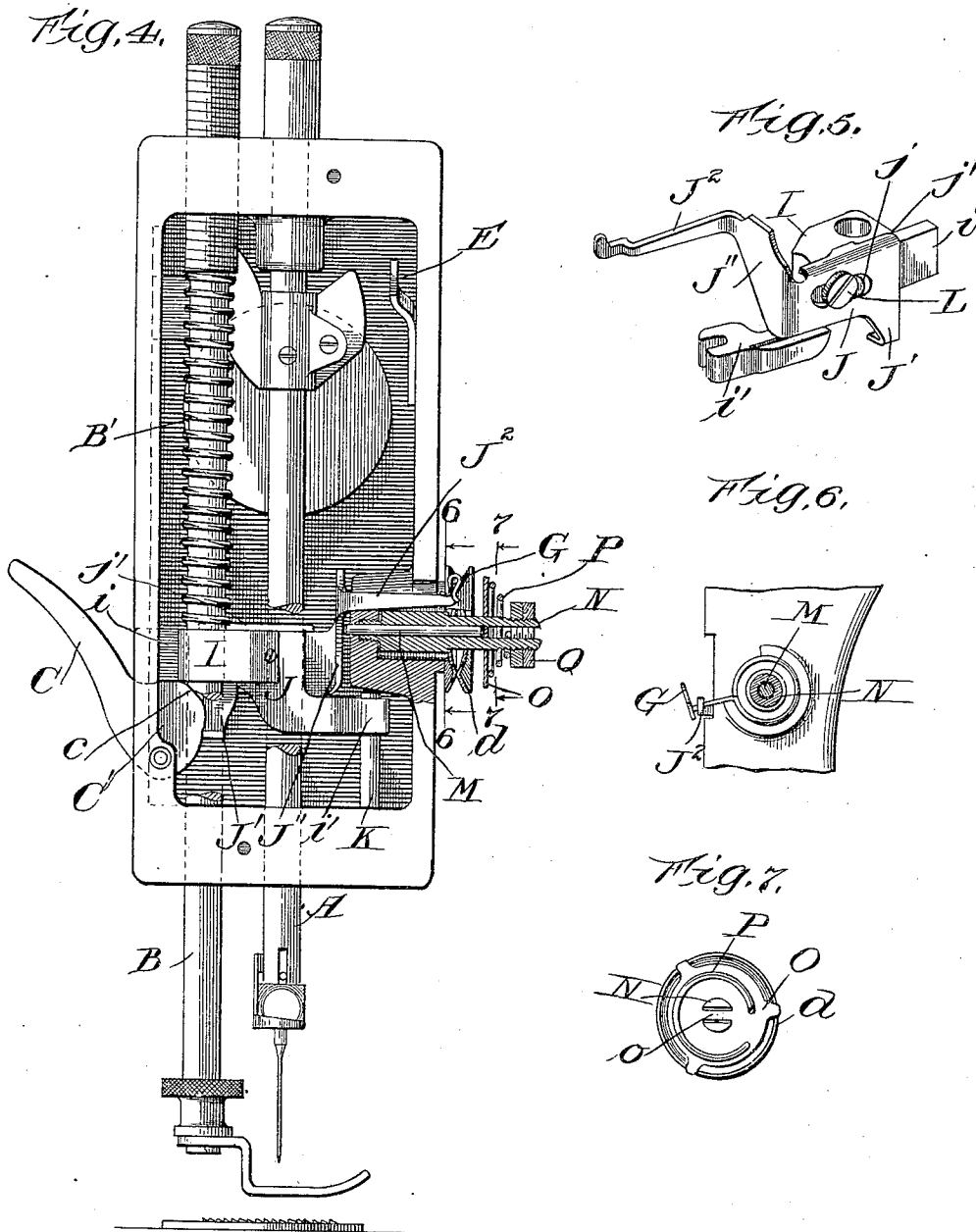
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W. C. FREE.
TENSION RELEASING DEVICE FOR SEWING MACHINES.
APPLICATION FILED MAY 4, 1905.

954,858.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM C. FREE, OF CHICAGO, ILLINOIS, ASSIGNOR TO ILLINOIS SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINIOS.

TENSION-RELEASING DEVICE FOR SEWING-MACHINES.

954,858.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed May 4, 1905. Serial No. 258,801.

To all whom it may concern:

Be it known that I, WILLIAM C. FREE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tension-Releasing Devices for Sewing-Machines, of which the following is a specification.

The present invention relates to mechanism actuated by movement derived from the lifting lever of the presser-foot for automatically releasing the needle thread from tension when the presser-foot is lifted above a given altitude, and it is desired to freely draw the thread through the eye of the needle, as, for example, at the completion of a seam.

The object of the invention is to provide mechanism for this purpose, improved, more especially, with respect to the relative location and disposition of the lifting lever, the tension device and the means for transmitting movement from the lever to a part adapted when moved in one direction to release the tension.

To this end the invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings which are made a part of this specification and in which:

Figure 1 is an end elevation on a small scale, of the head of a sewing machine looking toward the face plate. Fig. 2 is an end elevation thereof on a larger scale with the face plate removed. Fig. 3 is a horizontal section thereof on the line 3—3 Fig. 2, looking downward. Fig. 4 is a view similar to Fig. 2 with the presser-foot elevated and the tension released. Fig. 5 is a perspective view of a block carried by the presser-foot and its accessories. Figs. 6 and 7 are sections of the tension device on the lines 6—6, and 7—7, respectively, Fig. 4, looking in the direction of the arrows.

A represents the needle bar, B the presser bar, C the hand lever for lifting the presser bar, D the upper-thread tension device, and E the take-up, all of which parts may be of any desired construction that will enable the carrying out of the invention. From the spool the thread is led through a guide F on the face plate, thence between the disks *d* of the tension device, thence through or under a guiding eye or hook, G, which is carried by the arm of the slack-thread con-

troller, thence through the guiding eye of the take-up, E, thence through a guiding eye H on the face plate and thence to the needle. To the presser bar is secured, by any suitable means, a block I, which has an arm *i* projecting through a vertical slot in the rear wall of the hollow head in which the hollow horizontal arm of the machine terminates. The slot is occupied by the cam-shaped end of the lifting lever C, which is mounted upon a horizontal bearing so as to be capable of moving in a vertical plane parallel with the face plate. When the lever is lifted its cam engages the arm *i* and lifts the presser bar in opposition to the spring B' by which it is impelled downward, and if the upward movement of the lifting lever be carried far enough, its cam will engage and move a part, J, which is mounted upon the block so as to be capable of moving back and forth in a vertical plane parallel with the face plate, for transmitting movement from the lifting lever to the device which controls the tension. The block has also an arm *i'* which is notched so as to straddle the guide pin K whereby rotary movement of the presser bar and corresponding movement of the parts carried by it is prevented.

As shown in the drawings the part J is in fact a slide so mounted as to be capable of horizontal rectilinear movement. As shown in the drawings the slide is secured to the block by means of a screw L, which passes through a horizontal slot, *j*, in the slide and is tapped into the block, and the slide is provided at its upper edge with a flange, *j'*, which engages the block and coöperates with the screw L and slot *j* in confining the slide to the described rectilinear movement. The slide has also a downwardly projecting arm J' provided with a horizontally projecting finger which lies in the path of the cam C' of the lifting lever and which is engaged by said cam, after the presser-foot has reached a given altitude, whereby the slide is moved toward the front wall of the head. The slide has also a vertical portion, J'', which is adapted to engage an endwise movable pin, M, which passes through the front wall of the head, and is disposed in a vertical plane which is parallel with the vertical plane in which the lifting lever moves, and this pin, when moved forward, releases the tension from the thread. The front wall of the head has a recess into which extends a tubular

stud, N, the inner end of which is threaded and has threaded engagement with the rear wall of the recess, whereby the stud is supported in horizontal position and with its longitudinal axis parallel with the vertical plane in which the lifting lever moves. Mounted upon the stud N, are a pair of tension disks, *d*, one of which contacts with a shoulder upon the stud, and the other of which is engaged by a disk, O, which is impelled inward against the outer tension disk by a spring P, the tension of which spring is regulated by a nut, Q, turned onto the threaded outer end of the stud. The stud is slotted longitudinally from its outer end inward, and its slot is occupied by a diametrical bar or cross-piece *o* of the disk O, and this bar or cross-piece is adapted to be engaged by the outer end of the pin M which occupies the bore of the stud and is movable endwise therein.

From the foregoing it is apparent that when the slide is moved forward by the lifting lever it will engage the rear end of the pin, M, and move the pin forward, that the pin in moving forward will engage and move the disk O forward and thereby overcome the tension of the spring P and release the tension disks. The slide has also an arm J², which projects beneath the arm of the slack-thread controller, but the details in the construction and operation of its mechanism need not be here described because it forms the subject of another application filed March 26th, 1906, Serial No. 308,074, which is a division of this application.

What I claim as new and desire to secure by Letters Patent is:

1. In a sewing machine the combination with the head, the presser bar, the hand lever having a cam for lifting the presser bar, and a tension device having a releasing pin, of

a part directly interposed between the cam of the lever and the releasing pin, said interposed part being carried by the presser bar, and said interposed part and releasing pin both being movable horizontally in directions parallel with the vertical plane of movement of the lever, substantially as described.

2. In a sewing machine the combination with the hollow head, the presser bar, the lifting lever arranged at one side of the head and movable in a vertical plane, and a tension device arranged at the opposite side of the head, of a tension releasing device adapted to be operated by movement derived from the lifting lever, said releasing device having a slide carried by the presser bar, and means for confining said slide relatively to the presser bar to horizontal, forward and backward movement in a vertical plane parallel with the vertical plane in which the lifting lever moves, substantially as described.

3. In a sewing machine the combination with the hollow head, the presser bar, a block carried by the presser bar, a lifting lever arranged at one side of the head, and movable in a vertical plane and a tension device arranged at the opposite side of the head, of a tension releasing device adapted to be operated by movement derived from the lifting lever, said releasing device having a slide supported by the block, the slide and block having means for confining the slide relatively to the presser bar to horizontal movement in a vertical plane parallel with the vertical plane in which the lifting lever moves, substantially as described.

WILLIAM C. FREE.

Witnesses:

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