(No Model.) 2 Sheets—Sheet 1.

N. WHEELER.

THREAD TENSION RELEASER FOR SEWING MACHINES.

No. 434,037. Patented Aug. 12, 1890.

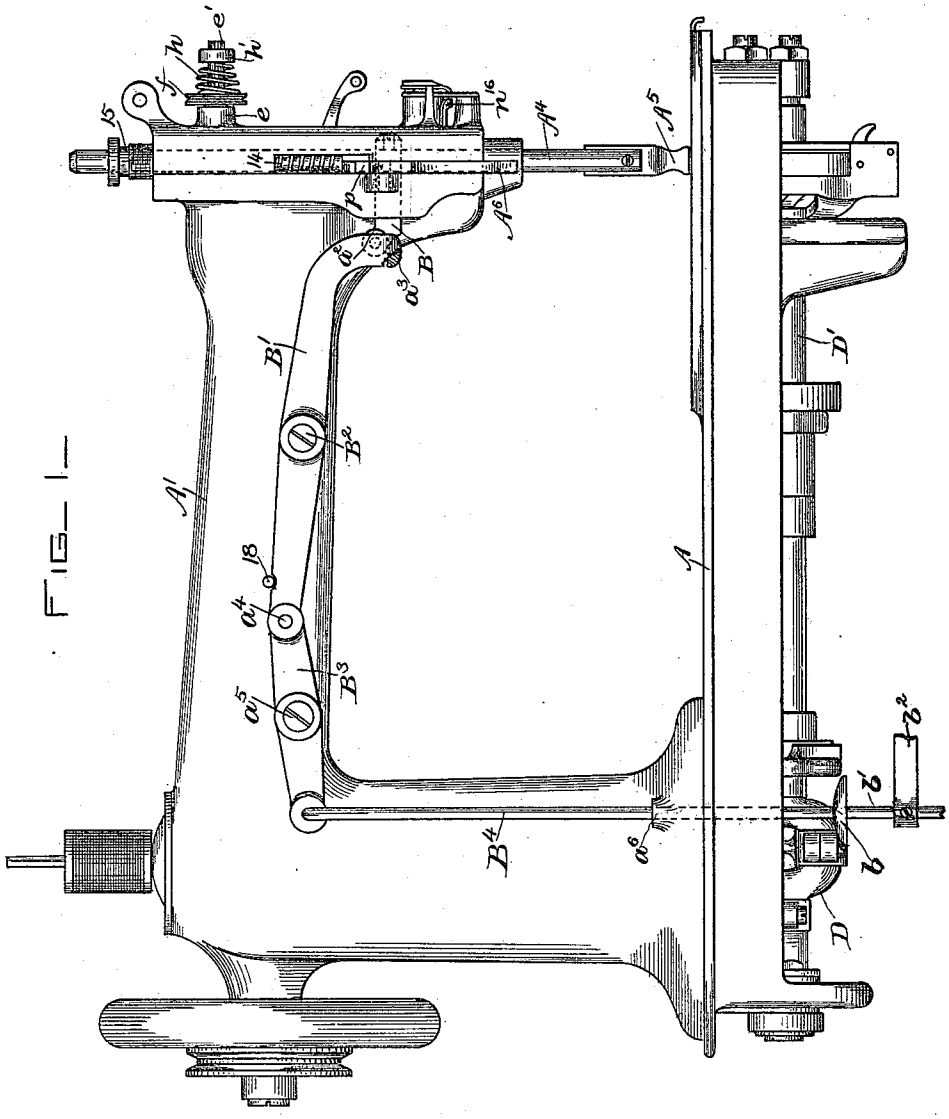


FIG. 1.

WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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FIG. 5.



FIG. 3.

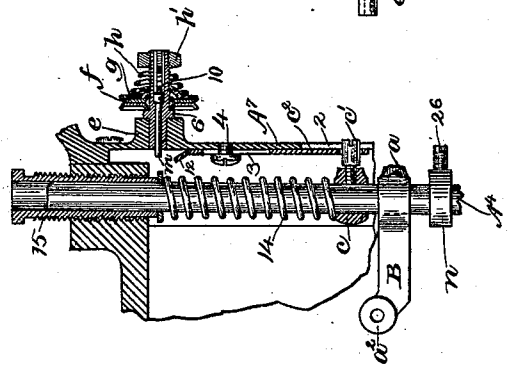


FIG. 4.

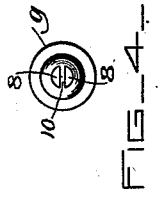
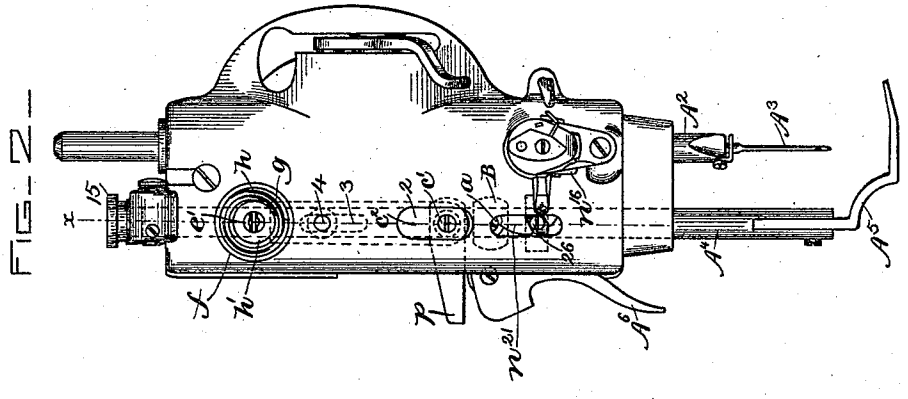


FIG. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

NATHANIEL WHEELER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

THREAD-TENSION RELEASE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 434,037, dated August 12, 1890.

Application filed August 23, 1889. Serial No. 321,709. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL WHEELER, of Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to provide a sewing-machine with means whereby the presser-foot may be lifted and the tension on the needle-thread thrown off when it is desired to remove from the machine the material which has been stitched, the movement of the presser-bar to lift the presser-foot and relieve the tension being shown as effected from the under side of the bed-plate, thus leaving both hands of the operator free to handle the material.

My invention consists, essentially, in the combination, in a sewing-machine, of the following instrumentalities, viz: a spring-controlled tension device, a presser-bar, means actuated by it to relieve the effective pressure of the spring of the tension device as to its hold on the needle-thread, and a lever and connection to lift the presser-bar from below the bed-plate, as will be hereinafter described, and as more particularly set forth in the claims.

Figure 1 in side elevation represents a sewing-machine with my improvements added; Fig. 2, a partial front elevation of the machine; Fig. 3, a section in the line *x*, Fig. 2; Fig. 4, a detail of the spring-supporting washer, and Fig. 5 shows the tension-stud detached.

The bed-plate A, the overhanging arm A′, the needle-bar A^2, eye-pointed needle A^3, means for actuating the needle-bar, and the presser-bar and presser-foot are and may be all as common, the parts referred to being as common to the Wheeler & Wilson sewing-machine. The presser-bar A^4 has secured to it by a screw *a*, or in other suitable manner, an arm B, having a roll or other stud a^2, which, when the presser-foot is to be lifted without moving the usual presser-foot-lifter A^6, is acted upon by a lug as a^3, shown partially broken out in Fig. 1 at one end of a lever B′, pivoted at B^2 upon the overhanging arm A′. This lever B′, as herein shown, has pivoted to it at a^4 one arm of the lever B^3, pivoted at a^5, the opposite end of the said lever having loosely connected to it a rod B^4, which is extended down through a suitable guide a^6, and the end of the said rod is carried below the bed-plate A, in order that it may be acted upon by or through a suitable pad or lever under the control of the leg or foot, it may be, of the operator, so that the presser-bar and presser-foot may be lifted without the interposition of the hand of the operator. In this present instance of my invention the said rod B^4 rests normally against a button *b* of the rod *b*′, connected to a lever b^2, so located and arranged as to be lifted by the leg of the operator when it is desired to lift the presser-foot, by reason of the button elevating the rod B^4 and through the lever B^3 the front end of the lever B′.

I do not broadly claim lifting the presser-foot by or through a treadle or lever.

The presser-bar described has applied to it a collar, as *c*, having a projection *c*′, (shown as a screw,) which enters a hole in a slide-bar c^2, applied to the inner side of the face-plate A^7, the said face-plate being slotted, as at 2, as herein shown, so as not to interfere with the movement of the said projection *c*′, and so, also, as to enable the collar *c* to be adjusted when desired. The slide-bar c^2 is slotted, as at 3, the said slot receiving through it a screw 4, which is screwed into the face-plate, the said screw acting, however, merely as a guide for the slide-bar c^2 as it rises and falls in unison with the presser-foot. The face-plate has a hollow hub *e*, into which is inserted and held snugly a hollow spindle *e*′, made as a sleeve and provided with a collar 6, which bears against the said hub *e*, the outer end of the spindle being split, as best shown in the separate detail view, Fig. 5. This spindle receives upon it the two like tension disks or plates *f*, between which the needle-thread is passed to produce tension thereon on its way to the needle. Next to these tension-disks *f* the split spindle receives upon it a spring-lifting washer *g*, (shown separately in Fig. 4,) the said washer having two like holes 8 to receive the two halves of the spindle, the narrow cross-bar separating the two holes 8 8

lying in the slit between the two halves of the spindle. Outside this spring-lifting washer is applied a spring h, the outer end of which, as herein represented, is laid into the slitted end of the spindle, the nut h' being applied to the threaded outer split end of the spindle, rotation of the said nut in one or the other direction increasing or diminishing, as it may be, the effective force of the spring, and consequently measuring the tension upon the needle-thread. The hollow spindle e receives in it a pin m, the head of which acts upon the lower narrow cross-bar 10 of the spring-lifting washer, the inner end of the said pin protruding through the face-plate A^7 and in the range of movement of the beveled upper end 12 of the slide-bar c^2.

In operation, whenever the operator lifts the presser-foot by or through the lever B′ and its attached devices, (or it may be through the lifter A^6,) the slide-bar c^2 is raised, and the beveled upper end thereof, acting against the pin m, moves the same, viewing Fig. 3 to the right, causing the head of the pin, acting on the cross-bar 10, to force the same longitudinally on the spindle and move the spring-lifting washer and spring away from and so that they no longer act to produce friction upon the plates f, and as a result thereof the needle-thread is freed from any tension or pressure between the said plates f, leaving the needle-thread free to be drawn between the said plates without friction or tension.

The presser-bar has connected with it a collar n, provided with a projection 26, which in practice enters a slot in a segmental gear n^{21}, (partially shown in Fig. 2,) which engages another segmental gear, (not shown,) but common to United States Patent No. 386,300, dated July 17, 1888, the said second segmental gear having an arm n^{16}, (partially shown in Fig. 2,) which arm is extended outwardly through a slot in the face-plate, the said arm being moved, as described in the said patent, to thereby limit the extent of movement of the spring-like slack-thread controller, all as common to the said patent. In this way the presser-bar not only controls the slack-thread controller, but also controls the tension on the needle-thread.

The spring 14, surrounding the presser-bar and resting on the collar c, is made adjustable by the usual presser-bar nut 15 to vary the force of the presser-foot upon the material. The presser-foot bar can rise and fall for varying thickness of the material passing under the presser-foot without affecting the tension upon the needle-thread by the tension device f.

I have herein shown the needle-thread as passed between two disk-like loose plates f, which I denominate the "tension device;" but I desire it to be understood that, instead of the two loose disks, I might use any well-known equivalent, such as a wheel having a grooved periphery.

The collar c (shown in section in Fig. 3) has extended from it a projection p, (shown best in Figs. 1 and 2,) which projection is acted upon by the usual presser-foot lifter A^6 when it is desired to lift the presser-foot otherwise than by the lever B′.

The overhanging arm is provided with a pin 18, which acts as a stop for the rear end of the lever B′ in its upward movement.

The rotating shaft D of the machine and the short shaft D′ and the under-thread-carrying mechanism (not specifically shown herein) are and may be the same as in the Wheeler & Wilson machine in common use.

I claim—

1. In a sewing-machine, a presser-bar having a collar provided with a projection c', a spring-pressed tension device, a spring-lifting washer, a slide-pin to act against it, and a slide-bar c^2, moved with the presser-bar to relieve the tension on the needle-thread when the presser-bar is fully lifted, and an arm B upon the said presser-bar, combined with a lever, as B′, a rod B^4, extended below the bed-plate, and intermediate connecting devices between the said rod and lever B′, by which to lift the presser-bar by power applied below the bed-plate to the rod B^4, all being to operate substantially as described.

2. In a sewing-machine, a presser-bar having a collar provided with a projection c' and a projection p, a spring-pressed tension device, a spring-lifting washer, a slide-pin to act against it, and a slide-bar c^2, moved with the presser-bar to relieve the tension on the needle-thread when the presser-bar is fully lifted, an arm B upon the said presser-bar, and a presser-foot lifter A^6 to act upon the projection p, combined with a lever, as B′, a rod B^4, extended below the bed-plate, and intermediate devices between the said rod and lever B′, by which to lift the presser-bar by power applied below the bed-plate to the rod B^4, all being to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NATHANIEL WHEELER.

Witnesses:
LOUIS H. BAKER,
F. HURD.