

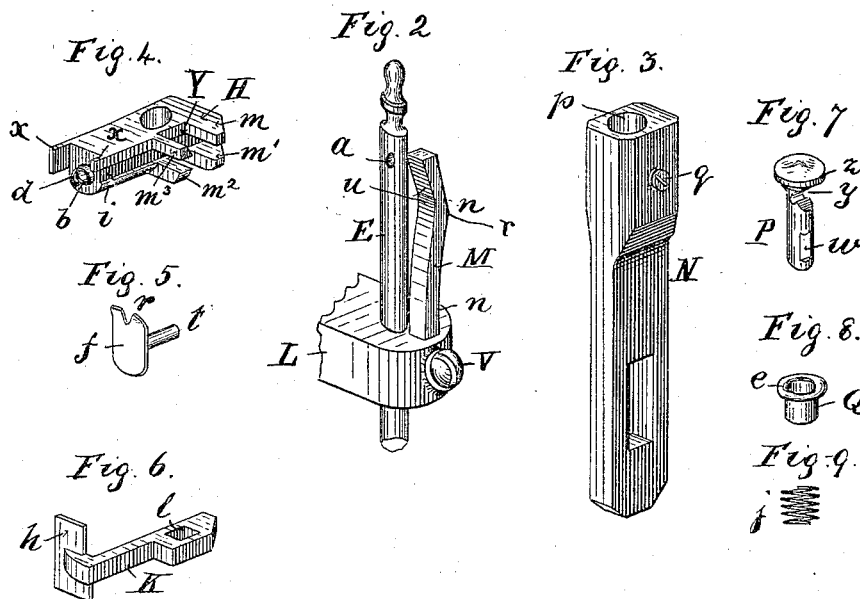
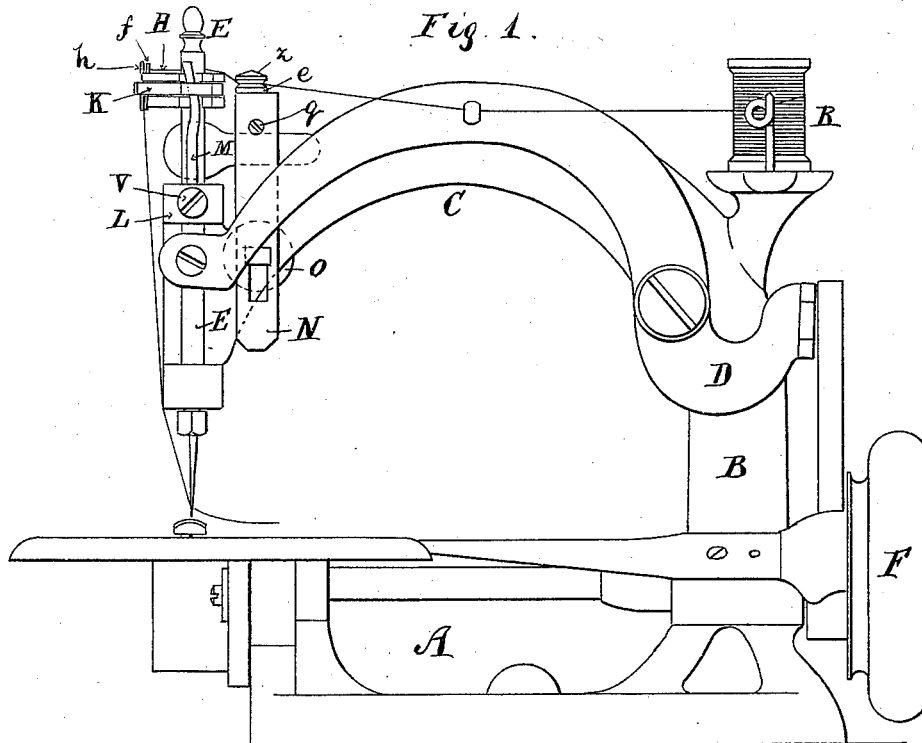
(No Model.)

C. F. WILCOX.

TAKE-UP AND PULL-OFF DEVICE FOR SEWING MACHINES.

No. 307,154.

Patented Oct. 28, 1884.



Witnesses.

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TAKE-UP AND PULL-OFF DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 307,154, dated October 28, 1884.

Application filed June 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FRANKLIN WILCOX, of Ipswich, in the county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Take-Up and Pull-Off Devices for Sewing-Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a sewing-machine provided with my improvement; Fig. 2, an enlarged isometrical perspective view of a portion of the head and needle-bar; Fig. 3, an enlarged perspective view of the tension-standard detached; and Figs. 4, 5, 6, 7, 8, and 9, detail views in perspective of parts of the tension and pull-off mechanisms detached.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates more especially to means for controlling the thread; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more desirable and effective device of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the bed-piece, B, the standard, C the fixed or stationary arm, D the vibrating or needle arm, E the needle-bar, and F the wheel, of an ordinary sewing-machine of the well-known Willcox & Gibbs patent, to which the improvement is represented as applied, although it is applicable to nearly any of the single or double thread machines in common use.

Attached to the upper portion of the needle-bar E, just below the thread-hole *a*, and projecting horizontally toward that end of the machine which is opposite the wheel F, there is an arm, H, provided at its outer end with the projections *x x*, and near its inner end with a hole, *b*, through which the needle-bar passes, said plate being secured to said bar

by a set-screw (not shown) or otherwise. A hole, *b*, is drilled horizontally in the outer end of the arm, and disposed in this hole there is a coiled spring, *d*. A plate, *f*, (see Fig. 5,) having a notch, *r*, in its upper edge for guiding the thread, and provided with a laterally-projecting stud, *t*, is placed vertically between the projections *x x* (see Figs. 1 and 4) of the arm H, the stud being inserted in the hole *b* and compressing the spring *d*.

Projecting horizontally from the side of the arm H toward the front of the machine there are four short arms, *m m' m² m³*, as shown in Fig. 4, and fitted to slide longitudinally between the upper and lower of these arms, and in a groove, *i*, formed in the side of the arm H, there is a bar, K, provided at its outer end with the vertically-arranged plate *h*, and near its inner end with the rectangular hole or slot *l*.

Arranged vertically in the head L of the arm C, nearly in front of the needle-bar E, and rendered vertically adjustable in said head by the screw V, there is a standard, M, (see Figs. 1 and 2,) which projects upwardly through the hole *l* of the bar K when all of the parts are in working position. This standard is curved slightly to the right or toward the wheel F, from its base *n* to the point *r*, and from the latter point to its top is inclined to its body at an angle of about ten degrees to the left or toward that end of the machine which is opposite said wheel. A standard, N, (see Figs. 1 and 2,) is secured to and made vertically adjustable on the arm C near the head L by the nut and bolt O. This standard has a hole, *p*, drilled vertically in its top, the hole being enlarged near its outer end to form a shoulder or rabbet, (not shown,) on which the coiled spring *j* (see Fig. 9) rests. A rod, P, (see Fig. 7,) carrying a horizontally-arranged disk, *z*, at its upper end and provided with an elongated slot, *w*, is inserted in the hole *p*, the body of the rod passing down through the coiled spring *j*, and being secured by the screw *q*, (see Figs. 1 and 3,) having a conical end, which partially enters the slot *w*, below the shoulder or rabbet on which the spring rests. A sleeve, Q, (see Fig. 8,) provided with an annular lip or flange, *e*, is disposed in the hole *p* around the body of the rod P, the lower end of the sleeve standing on the

upper end of the spring *j*, and its flange *e* projecting over the top of the standard *N*, (see Fig. 1,) a lateral notch, *y*, being formed in the body of the rod for receiving the thread.

5 For convenience of reference I denominate the plates *h f*, arms *H H*, and spring *d* the "pull-off," and the rod *p*, sleeve *Q*, spring *j*, and screw *g* the "tension mechanism."

In the use of my improvement the standard *N* is properly secured to the arm *C* by the arm nut and bolt *O*. The spring *j* is then inserted in the hole *p*, the sleeve *Q* placed on the spring *j*, and the rod *P* passed down through the sleeve and spring and secured by the screw *g*, the inner end of the screw being adapted to press against the rod or edges of the slot *w*, and thereby secure said rod at any desired elevation, it being understood that the notch *y* is arranged toward the front of the machine, and that the sleeve *Q* is forced upwardly by the expansive action of the spring *j* against the under side of the disk *z*, thereby forming a friction clamp or tension mechanism for the thread. The arm *H* having been attached to the needle-bar *E*, the stud *t* is next inserted in the hole *b*, with the spring *d* beneath it, the plate *f* being adjusted vertically between the projections *x*. The bar *K* is then inserted in the groove *i*, between the arms *m m'*, its plate *h* being also placed between the projections *x x*, outside of the plate *f*, after which the standard *M* is passed through the hole *l*, and when properly adjusted as to height is secured in the head *L* by the screw *v*, in the position shown in Figs. 1 and 2. The thread is then drawn from the spool *R* and passed between the flange *z* of the rod *P* and flange *e* of the sleeve *Q* into the notch *y*, after which it is drawn through the hole *a* in the needle-bar and passed into the notch *r*, downwardly between the plates *h f*, to the needle. The pull-off being in the position shown in Fig. 1, the machine is then started up, and as the needle-bar descends the cam shaped side of the standard *M* nearest the wheel *F* presses the sliding bar *K* toward said wheel, and causes the plates *h f* to clamp or grasp the thread and pull it from the spool through the tension mechanism. When the downward movement of the needle-bar is reversed and the needle-bar ascends, the thread is still held clamped between the plates *h f*, thereby taking up the slack thread and drawing the stitch into the work properly; but when the needle-bar has risen far enough to bring the sliding bar *K* above the sharp bend or point *r* of the standard *M* the standard will move said bar toward the left or toward that end of the machine which is opposite the wheel *F*, thereby opening the plates *h f* and releasing the thread. After the thread is released, as described, the needle-bar continues to ascend a short distance, the thread in the meantime passing freely between the plates; but when the upward movement of the needle-bar is reversed and it descends, the bar *K* is again moved toward the wheel, and the thread grasped by said plates and pulled from the

spool, as before described. The quantity of thread drawn from the spool at each throw of the needle-bar should correspond with the thickness of the work and length of the stitches, and is determined by the position of the standard *N*, which is raised to increase the quantity and lowered to diminish it by means of the nut and bolt *O*, the standard and parts carried thereby constituting a measuring tension device, which not only exerts a proper tension on the thread, but measures it off intermittently in suitable lengths to properly form the stitches.

It will be understood that the looper and all other working parts of the machine are so "timed" as to operate in unison with the pull-off or thread-clamp to form perfect stitches and do the work properly. The flanges *m* are slotted vertically, as shown at *Y*, to receive the standard *M*, and as said standard below the bend *r* is slightly inclined toward the wheel *F*, when the needle-bar rises, the flange *m'* will be brought into contact with that side of the standard which is nearest the wheel, and spring or sway the standard laterally in the opposite direction, so that when the bar *K* passes the bend *r*, and the flange *m'* is brought into contact with said bend, the inclined side *u* of the standard will force the bar *K* to the left, thereby insuring the unclamping of the thread at the proper time.

The standard *M* is constructed of steel or elastic metal, and adapted to yield laterally as the needle-bar rises and falls, thereby preventing the bar *K* from cramping on the standard, and insuring the proper operation of the clamping-plates *h f*. The tension on the threads passing between the flange *z* and thimble *Q* may be governed by raising and lowering the rod *P* by means of the screw *g*, and also somewhat by raising and lowering the standard *N*.

It will be understood that the standard *M* is so bent or formed, and also so adjusted in the head *L*, and the bar *K* so constructed, as to cause the clamping plates or jaws of the pull-off to act at the proper time and in a proper manner.

Having thus explained my invention, what I claim is—

1. In a sewing-machine, the arm *H*, provided with the spring *d*, the plate *f*, provided with the stud *t*, the arm *K*, provided with the hole *l* and plate *h*, the standard *M*, and the needle-bar *E*, combined and arranged to operate substantially as set forth.

2. In a sewing-machine, the standard *N*, rendered vertically adjustable on the arm *C* by the nut and bolt *O*, and carrying a tension device, in combination with the needle-bar *E*, a take-up and pull-off device, and operative mechanism, substantially as described.

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Witnesses:

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