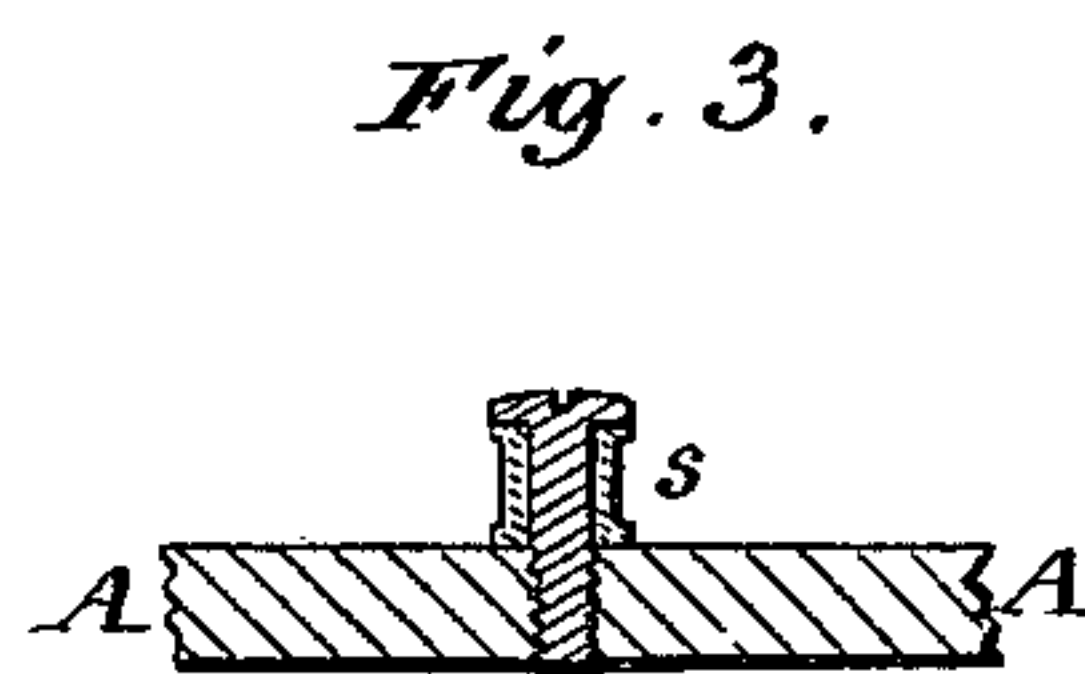
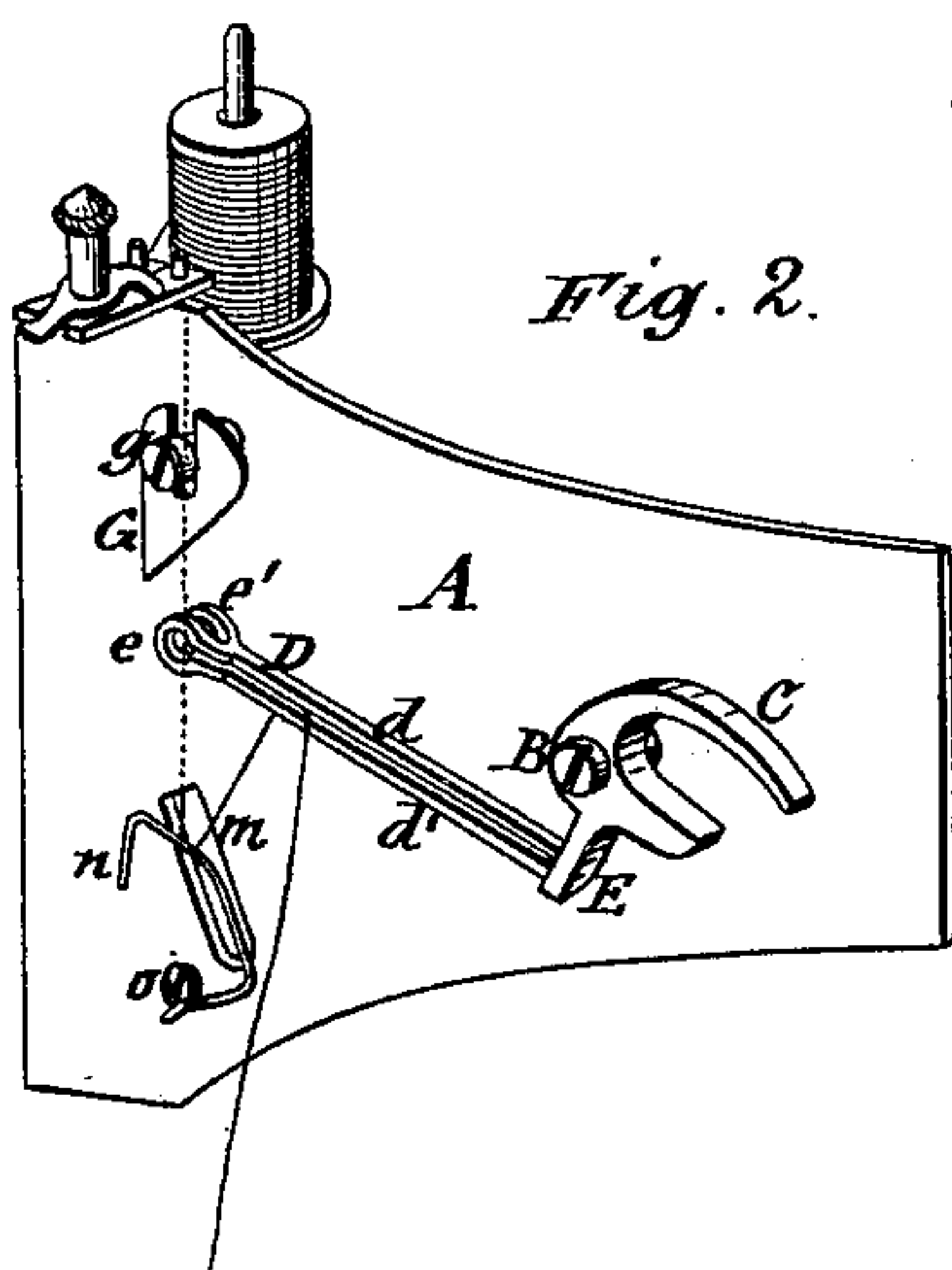
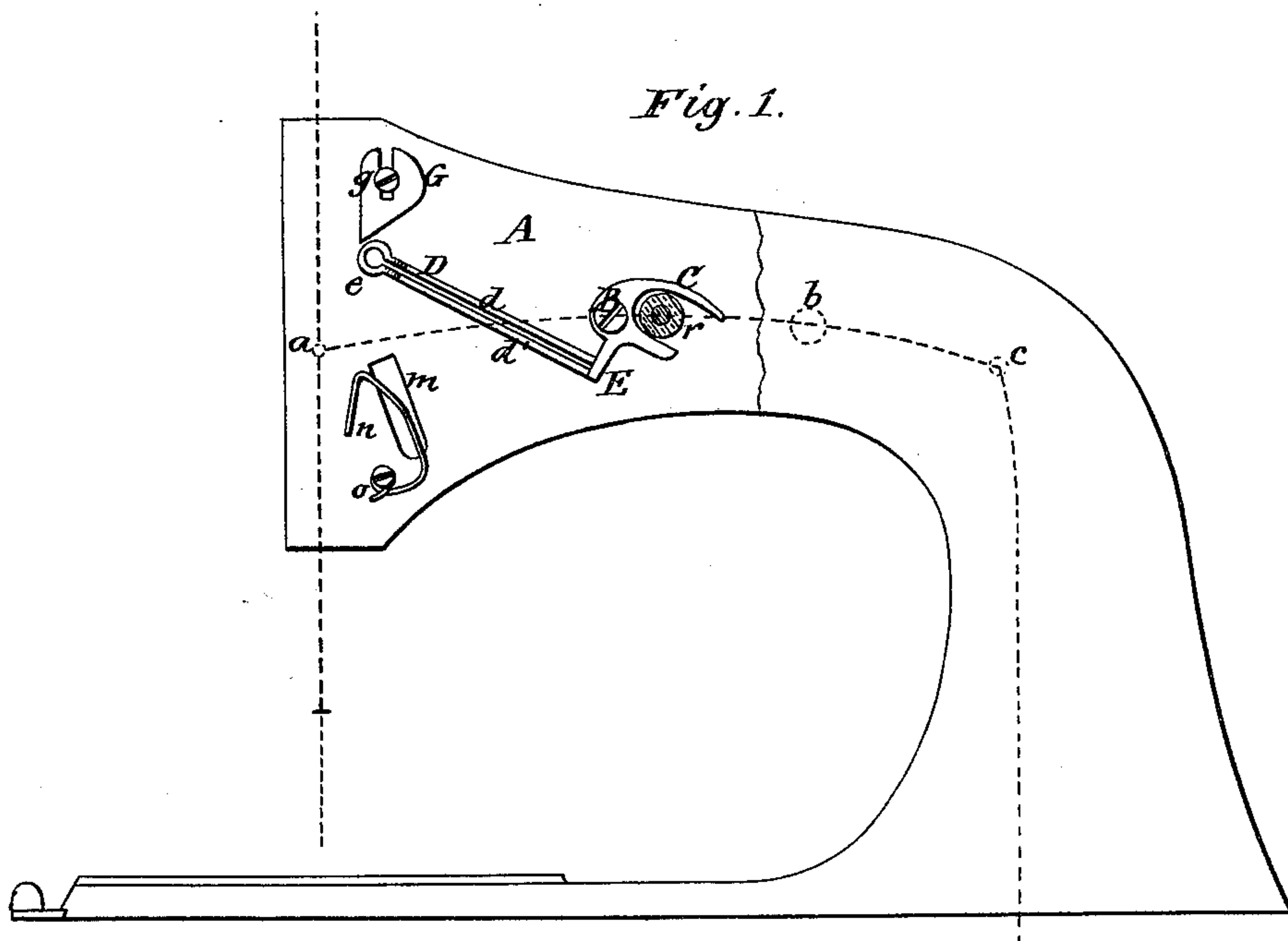


J. L. FOLLETT.

TAKE-UP DEVICE FOR SEWING-MACHINES.

No. 189,446.

Patented April 10, 1877.



Attest.

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UNITED STATES PATENT OFFICE.

JOSEPH L. FOLLETT, OF NEW YORK, N. Y.

IMPROVEMENT IN TAKE-UP DEVICES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **189,446**, dated April 10, 1877; application filed January 22, 1877.

To all whom it may concern:

Be it known that I, JOSEPH L. FOLLETT, of the city, county, and State of New York, have invented certain new and useful Improvements in Thread-Controlling or Take-Up Devices in Sewing-Machines, of which the following is a specification:

In most take-ups which operate by a thread-carrying lever, in combination with a stationary or movable cam or other device acting upon the thread in opposite direction to the motion of the lever, the thread is generally thrown out of the lever, or held away therefrom, or is otherwise operated in such way as to suddenly create a full slack of the thread, which, it has been found, is a source of trouble and inconvenience, inasmuch as such slack is liable to kink, to catch with other movable parts of the machine, or to be thrown around the point of the needle.

To obviate this is the object of my present invention; and I have accomplished the same by the employment, in combination with a stationary cast-off, of a double or forked vibratory or oscillating lever, each branch of said forked lever having at its outer end an eye, and being slotted throughout its length in continuation of said eye, and being operated by the needle-arm, as hereinafter described, so that the needle-thread which is or may be carried by said thread-carrier shall be held in said eyes across the path or the plane of the cast-off until the said thread shall, by the descent of the needle, be carried up against the cast-off, and by it thrown into the longitudinal slot of said lever, and therein held, following the inclined plane or planes of the slot until the completion of the stroke of the needle. During the descent of the needle the inclination of the slotted lever is reversed, allowing the thread to slide down toward the eye as it is taken up by the hook or other loop-forming device.

The lever may be of curvilinear or other irregular form, according to the requirements in the paying out of the slack.

The cast-off may be made adjustable, so as to properly time its action upon the thread.

It is obvious that this take-up may be used in connection with any sewing-machine, using

either one or two threads, and whether the same be a shuttle or hook machine.

The pivot for the oscillating lever I prefer to surround with sound-deadening substance, and for this purpose I form around the shank of the pivot a rawhide sleeve, which may have flanges on either end; or, instead of flanges, separate washers may be introduced for that purpose. This will also insure accuracy of movement, as the parts are not liable to be worn by the interposition of this or any equivalent substance.

To enable others to make and use my said invention, I shall now proceed to describe in detail the structure of the several parts of my machine, which parts, in conjunction with each other or separately, perform the several functions to which reference has been made in the opening of this specification, and referring to the accompanying drawings.

Figure 1 is an elevation of the parts which constitute my said improvements in take-up in sewing-machines.

The needle-arm and needle-bar are merely indicated in dotted axial lines, *a* being the point of connection of the needle-arm with the needle-bar; *b*, the fulcrum of the needle-arm; *c*, the connection of the needle-arm with the connecting-rod, through which vibratory movement is imparted to the former from a pulley upon the driving-shaft.

The goose-neck, or frame inclosing the mechanism referred to, as well as the take-up, hereinafter to be described, is indicated in outlines.

The take-up proper is fully shown in elevation, with the exception of its pivotal bearings, which is shown in section.

Fig. 2 is a perspective view of a section of the goose-neck, which carries the thread-controlling and take-up devices.

Fig. 3 is a cross-section of part of said goose-neck, showing the construction of the pivot. In said figures, *A* is that part of the goose-neck to which the support of the spool of the needle-thread, as well as the needle-thread tension and needle-thread controlling and take-up devices, are attached.

For the purpose of this specification I shall omit reference to all and any parts not direct-

ly co-operating with the take-up, or which may have been described in patents previously issued to me, or which may be the subject-matter of separate applications for patents.

Upon the inside of the plate A, and at a proper distance from the fulcrum *b* of the needle-bar, is arranged the fulcrum pin B, which may consist of a headed shank, the end of which is screw-threaded to be screwed into the goose-neck. Upon this fulcrum-pin is mounted a cam, C, which forms part of the take-up lever D. The latter is composed of a bar, the outer end of which is divided or forked, in the sense of its width, each branch of said fork forming, in the sense of its depth, an eye, *e e'*. The bar is also divided longitudinally, and in the sense of its depth, so as to form an upper and lower bar, *d d'*; or a slot, which, continuing throughout the whole length of the bar and the forked portion thereof, opens into the respective eyes of the forked ends of the lever D, and terminates at the opposite end of said lever, where it is connected with a spur, E, projecting from the lever-operating cam C. This cam, or "straddle-piece," as it may be termed, is shaped to embrace the fulcrum-pin on the needle-arm, and hold the same so embraced during the upward and downward motions of the needle-arm, and impart to the lever D the requisite motion, as hereinafter set forth. In the path of the forked end of the lever D I arrange a heart or diamond, or otherwise suitably-shaped blade or cast-off, G, which is held stationary in its proper relation to the eyes on the lever D by means of a set-screw, *g*, whereby the position of the said blade may be properly adjusted.

To avoid wear and noise of, and to insure accuracy in the operation of, the machine, I provide the fulcrum or other pivotal bearing with suitable leather or rawhide washer. Thus the fulcrum-pin on the needle-arm is surrounded with tightly-fitting leather ring *r*, and the fulcrum-pin B is provided with a leather or rawhide lining, *s*, around all the surfaces which are or may be in contact and friction. Inasmuch as the cam is mounted upon a headed pin against the wall of the goose-neck, it is important that the lining should extend both around the shank and against the head of the pin and the wall of the goose-neck, so that the metallic portions of the parts may be entirely isolated by a sound-deafening substance which will also prevent the wear of them. To this end the leather or rawhide washer may be formed with two side flanges; or a cylindrical washer may be put on the shank between two laterally-projecting leather or rawhide disks, which latter will prevent the cam from coming in lateral contact with the fulcrum-pin or the side of the goose-neck.

The sides of the goose-neck are correspondingly slotted at *m* for convenience of threading the take-up, as will appear from the description of the *modus operandi*. Finally, at

o, by means of a screw, is secured a small wire spring, *n*, around which the thread passes when properly applied to the take-up, bearing upon the thread occasionally with gentle pressure.

The operation of the device, the detailed construction of which I have described, is as follows:

The thread from the spool is conveyed through a suitable tension apparatus through the goose-neck, for which purpose a hooked instrument is used, which is passed transversely through the goose-neck at the lateral openings *m*. Care should be taken, however, to so first set the needle-bar as to bring the eyes *e e'* of the take-up opposite the said openings, and this is done when the needle-arm is at or near its highest point of elevation or stroke. With the hooked instrument thus introduced into the goose-neck through the eyes of the take-up, the thread is seized and pulled through and brought out at the opposite side of the goose-neck. The same instrument is now introduced through an opening or the open portion underneath the needle-head, or that portion of the goose-neck immediately in the rear of the needle and presser-foot bars, and the thread being again seized by it, the end of it is drawn out in the rear of the head of the sewing-machine, whence it is conveyed to the needle-stock and needle-eye. The needle-thread thus follows the line indicated in dots in Fig. 2 on the outside of the goose-neck, enters the interior through *m*, thence to the two eyes *e e'* or longitudinal slot *d d'*, and thence to the needle. When the machine is now operated it will be seen that the downward stroke of the needle or needle-arm will cause the lever D, with the thread held across the two eyes *e e'*, to rise until it passes the point of the blade or cast-off G, when the thread, coming in contact with the inclined edge of said cast-off, will be pushed back into the longitudinal slot *d d'*.

The further depression of the needle-bar will cause the lever D to assume such an inclined position as to induce the thread to slip of its own accord down the incline of the slot in the lever. The thread is thus, while released from the take-up, held up and prevented from dropping down upon the needle or forming kinks, or otherwise interfering with the perfect operation of the sewing mechanism. When the needle is about to resume its upward motion the thread is lodged in the closed end or bottom of the slot, and as the needle ascends the outer end of the take-up descends, and, its inclination becoming reversed, it will be seen that by the time the needle is about completing its upward stroke the slotted bar shall have assumed a downwardly-inclined position, and thus shall have gradually let the thread down its incline and paid out the slack at the completion of the stitch.

These operations, by virtue of the nicety of the action of the take-up, may be effected with

great rapidity without any possibility of mishap to the needle-thread.

As before said, the cast-off may be adjusted up and down, or sidewise, to deflect the thread at an earlier or later period of time with respect to the movement of the needle-bar, and the time of such deflection may be prolonged or diminished and take up more or less thread, according to the requirements of the machine. It may also be found expedient, which is more a matter of nicety than of necessity, to retain the thread at certain points of the stroke of the needle, and this may be effected by making the slot formed by *d* and *d'* of an angular or curvilinear form.

It will also be understood from the foregoing description that this take-up, operating symmetrically with the up-and-down motions of the needle, is made to operate in conjunction with any machine, whether the same has a mechanism feeding one way or the other, or capable of moving and operating alike in either way. It is also applicable to sewing-machines of any description, whether double or single thread, and whether using a reciprocating or rotary looping device, whether they be shuttle or hook machines.

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

1. A sewing-machine take-up, constructed and operating substantially as herein shown and described, so that while the positive hold of the take-up on the thread is released at the proper time with respect to the needle, the take-up still acts to control and pay out gradually the slack created by the release of the thread, as set forth.

2. In a take-up, the combination of a vibratory double-eyed longitudinally-slotted thread-carrier and a cast-off, the two being combined for operation, substantially as herein shown and described.

3. The combination of the vibratory thread-carrying lever with a stationary cast-off, the latter being capable of adjustment for the regulating of its action upon the needle-thread in the thread-carrier, substantially as shown and set forth.

4. The combination, substantially as set forth, of the vibratory double-eyed longitudinally-slotted thread-carrier, the cast-off, and the spring-holder *n*.

In testimony whereof I have hereunto signed my name.

J. L. FOLLETT.

Witnesses:

FRANK W. MILLER,
CHAS. H. WILSON.