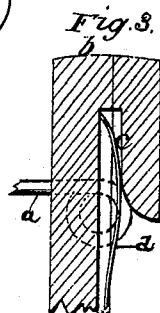
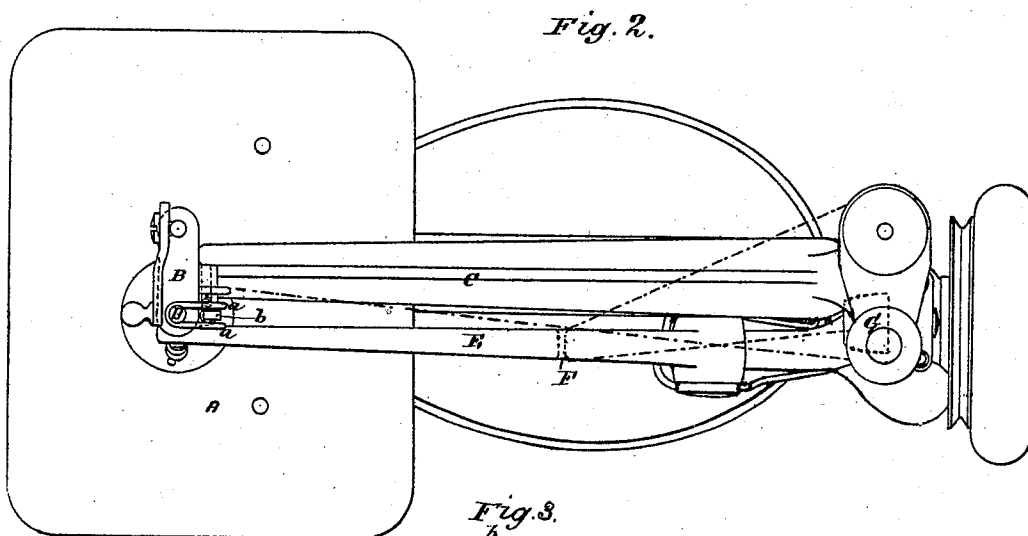
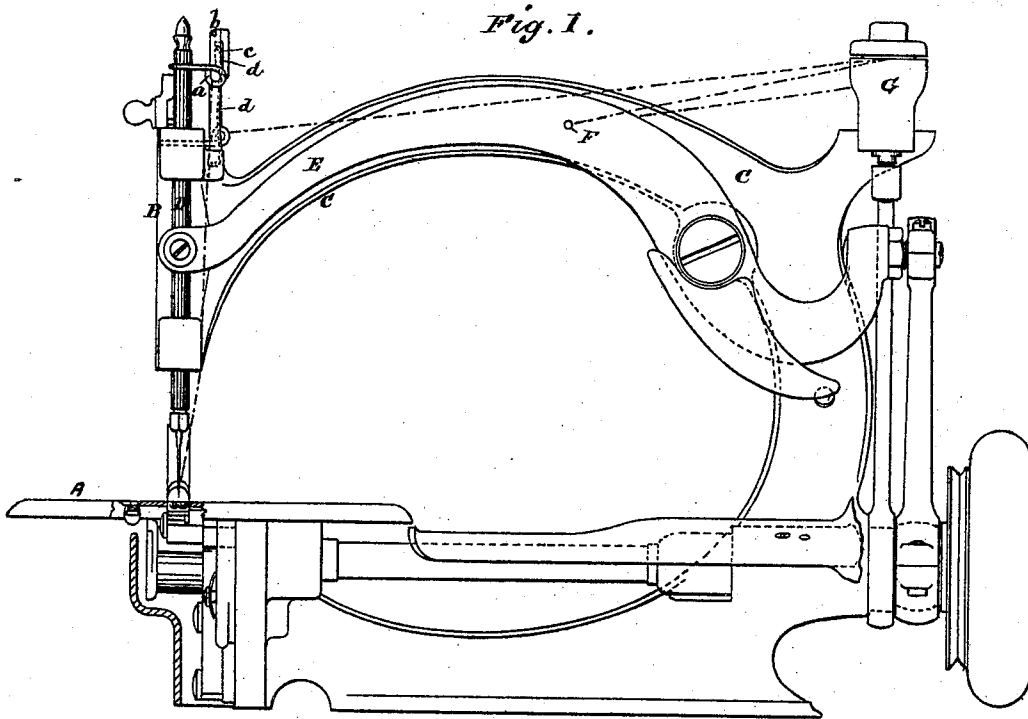


J. E. A. GIBBS.  
SEWING-MACHINE.

No. 171,558.

Patented Dec. 28, 1875.



*Witnesses:*

*Emile A. Cook,  
W. C. Chaffee*

*Inventor:*

*Jas. E. A. Gibbs.  
by atty Rouse & Bailey*

# UNITED STATES PATENT OFFICE.

JAMES E. A. GIBBS, OF STEELE'S TAVERN, VIRGINIA.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **171,558**, dated December 28, 1875; application filed May 25, 1875.

### CASE B.

*To all whom it may concern:*

Be it known that I, JAMES E. A. GIBBS, of Steele's Tavern, Augusta county, Virginia, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification:

My improvement in sewing-machines has reference to controlling the needle-thread during that period of the operation of the machine when the needle is on its downstroke, and before the needle-eye reaches or enters the goods.

In the operation of interlacing of the stitches in sewing-machines a considerable amount of slack thread is required, varying in different machines, according to the looping devices used, from one-half inch to two inches, or more. During the ascent of the needle this slack is taken up by the needle-bar or other take-up device, and is again released and allowed to become slack during the descent of the needle to furnish the necessary slack to be manipulated by the looping apparatus; but this slack is not needed until the eye of the needle is about to enter the goods, and previous to that time this slack is not only not necessary, but injurious, from its liability to become entangled with the point of the needle. Hence, various devices have been employed to control this slack during that time. The devices heretofore used for this purpose may be divided into three classes, viz: First, those which hold the thread rigidly by the arrest of motion of the take-up, by which it does not begin to descend until the proper time for slack. The objection to this class is the cumbersome nature of any mechanisms having intermittent motions, and their holding the thread too rigid for proper action. Second. Those using a slight intermediate tension, technically known as a friction-pad, to control this slack. These are found objectionable from the fact that although they control the thread properly during the first part of the descent of the needle, their continued action, however slight it may be, is injurious after the eye of the needle has entered the goods, when perfect slackness is required. Third. A class which is an improvement upon the last, and consists

in an automatic or mechanical movement given to the friction spring or pad that holds the thread, so as to seize and release the thread at the proper times; but this class in turn is found to have the serious defect that any mechanical device, by which so slight a friction as is needed can be made intermittent, is too delicate for durability, and is very liable to disarrangement from wear and use.

My invention belongs to the latter class, in so far as that I use a slight friction-spring, having an intermittent action, but this is so obtained as to remove the aforesaid objections.

Under the arrangement I have devised the friction device itself has no movement; it is entirely passive. The thread during the upstroke enters the friction-pad; on the downstroke it, by its own movement, frees itself from the friction-pad, leaving it at the proper time to enable the needle to throw out a free loop, as above stated.

The manner in which my invention is or may be carried into effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a plan of said machine. Fig. 3 is a sectional view of the friction-pad on an enlarged scale.

The machine may be any sewing-machine of ordinary or suitable construction. The one shown in the drawing is a rotary hook lock-stitch machine. It is not necessary that I should describe it in detail, and I here note only the principal parts which require to be named in order to explain my invention.

A is the cloth-plate; B, the head; C, the goose-neck; D, the needle-bar; E, the vibrating needle-arm; F, the pull-off; and G, the tension proper.

The needle-thread passes from the spool to the pull-off; thence to the tension; thence to the needle-bar and needle. Its course is plainly indicated in the drawing.

On the upper end of the needle-bar, above the head, are two eyes, *a a*, that project in the rear of the bar. Between these eyes is an upright bar, *b*, fixed to the head. This bar has an offset on its rear, in which is formed a vertical

slit, *c*, which divides this part into two jaws, the entrance between the jaws of the hook being from below. In the main part of the bar, which constitutes one jaw, is a light and very sensitive spring-strip, *d*, (indicated by dotted lines in Fig. 1, and also in full lines in Fig. 3,) which bears against the inner face of the opposite jaw. The eyes *a* are so placed that a thread stretched between them will be in the plane of the slit *c*. The two jaws and the spring constitute the intermediate tension or friction pad hereinbefore referred to.

The thread passes from the tension *G* through the two eyes *a a*, and thence to the needle.

The result of this arrangement is as follows: Premising that the eyes *a a* are so placed with relation to the said friction that when the needle-bar rises the thread stretched across between these eyes enters the friction-pad as the needle leaves the cloth, and, on the downstroke, leaves the friction-pad when the needle has reached, or just entered the cloth, on the upstroke of the needle the needle-thread is taut, and, consequently, that part which extends across between the eyes *a a*, when rising with the eyes, will have no difficulty in entering and traversing the slit *c*, encountering the merely nominal resistance of the spring *d*. By the time the thread has reached the upper end of the slit the needle has completed its upstroke, and the supply of thread for the next stitch has been drawn.

When the needle begins its downstroke the thread between the eyes *a a* begins to move down through the friction-pad, and continues therein until the needle reaches or enters the goods, at which time the eyes have descended far enough to cause the thread to withdraw itself entirely from the pad. So long, therefore, as the thread, during the downstroke, continues in the pad, the thread in the neighborhood of the needle is kept straight without appreciable stretching or tension; but the moment the needle reaches the goods even this tension ceases, and the thread is remitted to

the loose and slack condition requisite for the formation of a proper loop.

The length and height of the upper end of the spring in my friction-pad are so adjusted that at the extreme upward stroke of the needle-bar and thread-carrier the thread is carried just above and beyond the end of the spring, and is thus released and entirely free from the action of the spring at the moment that the stitch is being completed, and does not interfere with the proper tightening up of the stitch, but instantly re-enters under the spring when the thread begins to descend, thus producing a double intermittent action at each successive stitch.

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

1. The combination, for the purpose of controlling the slack of the needle-thread, of a stationary auxiliary tension or friction pad and a thread-carrier which moves in unison with the needle, and operates to carry the thread into and withdraw it from said tension at the times and in the manner substantially as set forth.

2. The needle-thread controller or friction-pad tension, having a double intermittent action, by which the thread is controlled during a part of the descent of the needle, and is left perfectly free both during the latter part of the descent of the needle, and at the termination of the extreme upward stroke, substantially as and for the purposes described.

3. The friction-pad, constructed substantially as described, in combination with the needle-bar and the two thread-eyes thereon, arranged to move one on each side of the friction-pad during the reciprocations of the needle-bar, as and for the purposes set forth.

In testimony whereof I have hereunto signed my name this 22d day of May, A. D. 1875.

JAS. E. A. GIBBS.

Witnesses:

EWELL A. DICK,  
M. BAILEY.