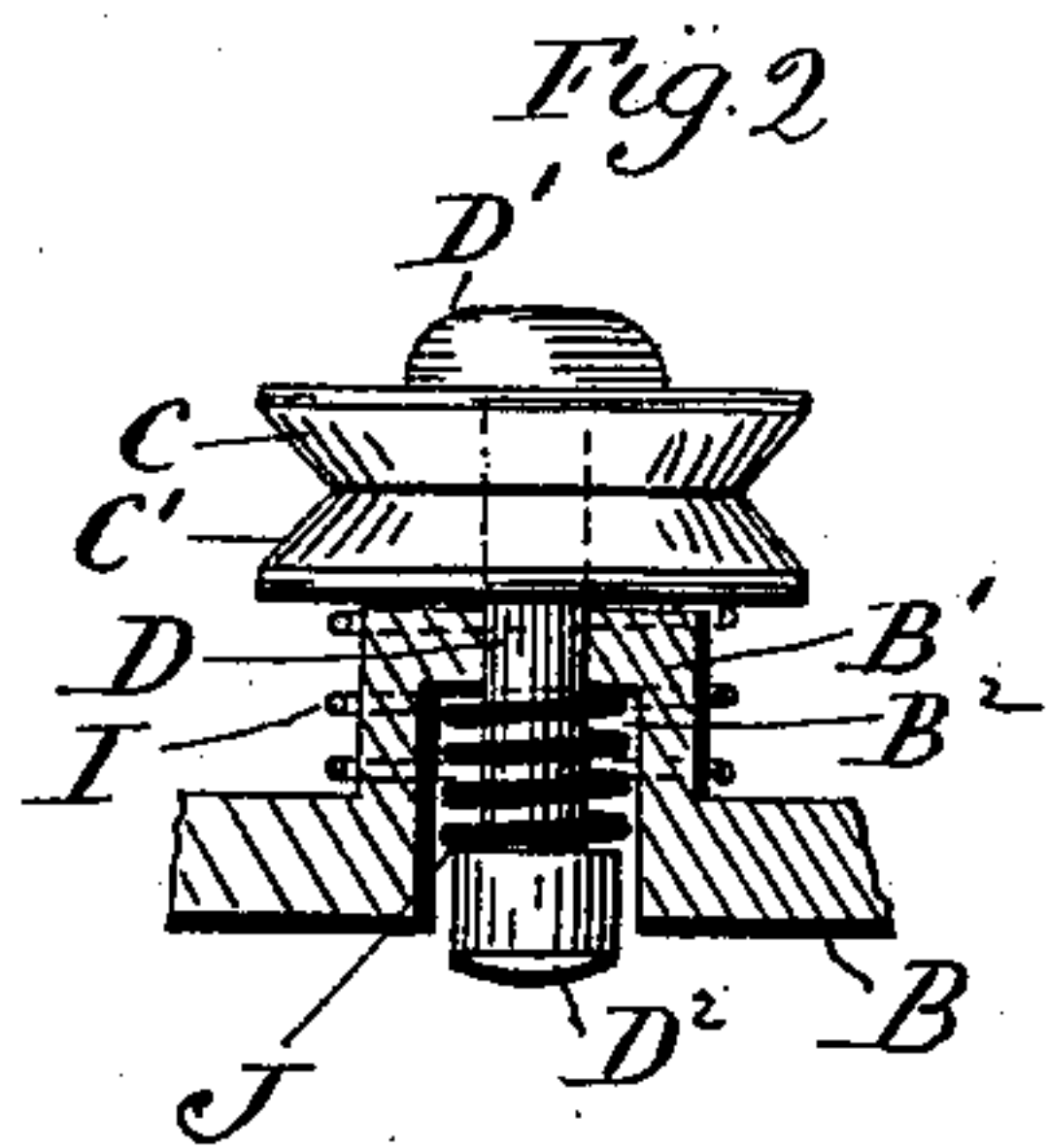
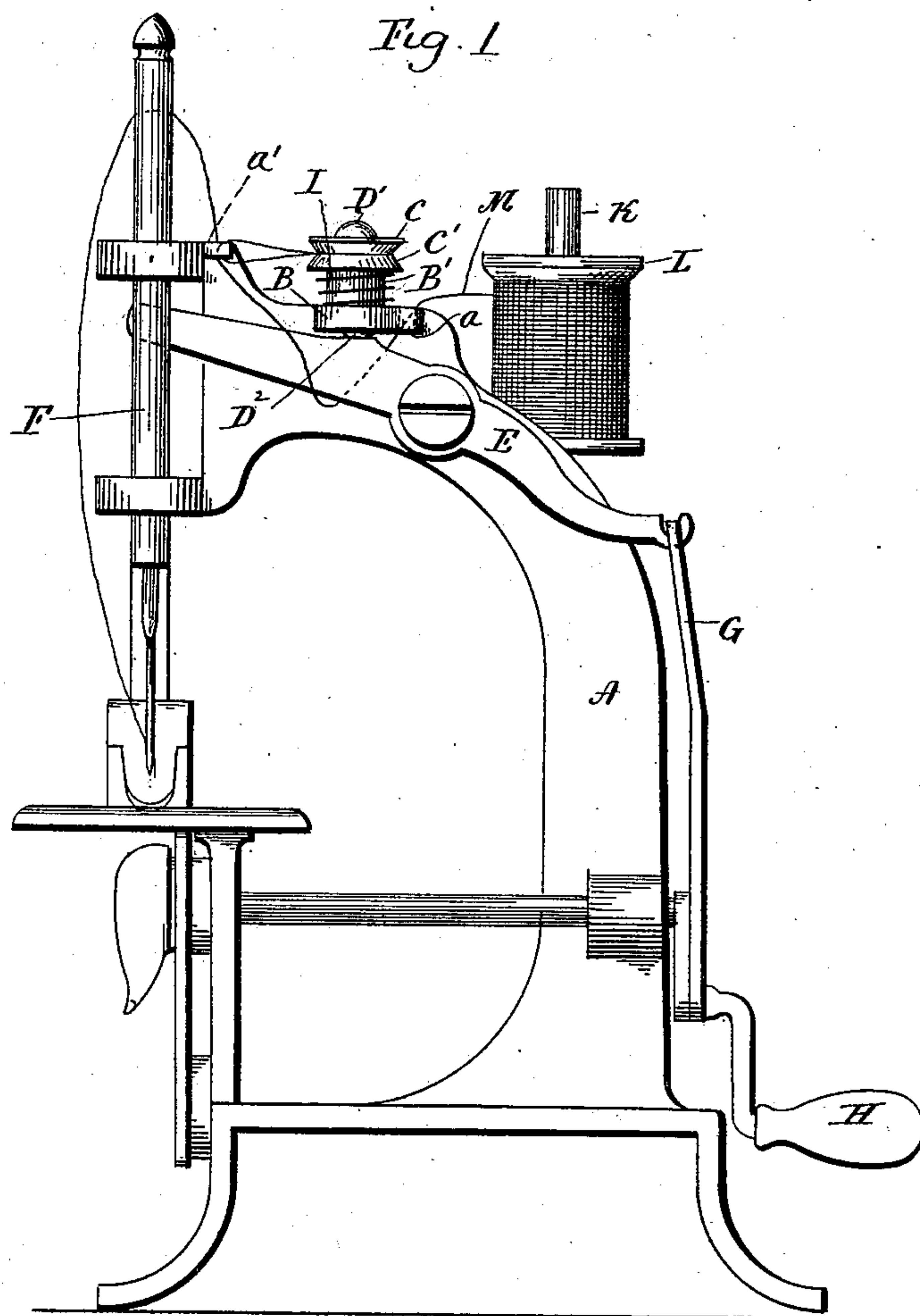


(No Model.)

A. W. JOHNSON.
TENSION DEVICE FOR SEWING MACHINES.

No. 592,092.

Patented Oct. 19, 1897.



Witness
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ALBERT W. JOHNSON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO
J. WILLIS DOWNS, OF SAME PLACE.

TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 592,092, dated October 19, 1897.

Application filed April 20, 1896. Serial No. 588,218. (No model.)

To all whom it may concern:

Be it known that I, ALBERT W. JOHNSON, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Tension Devices for Sewing-Machines; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of a sewing-machine containing my improved tension device; Fig. 2, an enlarged view of the said device in vertical section.

My invention relates to an improved tension device for sewing-machines, the object being to produce at a low cost for manufacture a simple, compact, and effective device, not liable to derangement, and not requiring any attention on the part of the user of the machine.

With these ends in view, my invention consists in a tension device for sewing-machines, the said device having certain details of construction, as will be hereinafter described, and pointed out in the claim.

In carrying out my invention as herein shown I provide the forwardly-extending upper portion of the arm A of the frame of the machine with a forwardly-offsetting horizontal flange B, from which rises a chambered hub B', the chamber B² of which opens downward. Upon the flat upper end of this hub I place two beveled friction-disks C and C', which are held together by means of a short plunger D, provided at its upper end with a head D', which bears upon the center of the upper disk C. This plunger passes downward, through central perforations formed in the said disks, through the closed upper end of the hub and into the chamber B² thereof, its extreme lower end being furnished with a button D², which is engaged by the upper edge of the forward end of the operating or needle-bar lever E, the forward end of which is connected with the needle-bar F, while its rear end is connected with the operating-pitman G, which is actuated by the handle H,

the said lever being mounted so as to rock in a vertical plane upon the horizontally-arranged stud entering the arm of the frame at a point below the flange B of the said arm. A light spiral spring I, encircling the hub and interposed between the flange B and the under face of the friction-disk C', exerts a constant effort to press the two friction-disks together and prevents the thread from running freely through them at any time. A heavier spring J, located within the chamber B², engages with the bottom wall of the said chamber and with the button D² of the plunger, which it encircles, and exerts a constant effort to draw the plunger down, and is stiff enough to normally hold the two friction-disks together with such force as to prevent the thread from being drawn between them. When, however, the forward end of the operating-lever E rises to lift the needle-bar, it engages with the button D² of the plunger and lifts the same against the tension of the said spring J, whereby the bite which the two friction-disks C and C' normally exert upon the thread is so far relieved that the thread is allowed to be drawn through them by the completion of the upstroke of the needle-bar, but the relatively light spring I always imposes just enough tension upon the disks to prevent the thread from feeding too fast or "running," as the term is. Just as soon, now, as the downstroke of the needle-bar begins the operating-lever is cleared from the button D² of the plunger, allowing the spring J to recover and cause the disks to tightly grip the thread.

The device just described is located between the upwardly-extending spindle K, which carries the spool L, upon which the thread M is wound, and the needle-bar F before described. The thread after leaving the spool passes downward through a perforation a, formed in the flange B, thence under the lever E, and upward through a perforated lug a', forming a portion of the arm A, thence rearward around the plunger and between the two friction-disks, and thence back through the lug a' and upward through the eye formed in the upper end of the needle-bar.

It will be understood that under the tension

of the spring J the friction-disks grip the thread so firmly that it is normally prevented from feeding. For that purpose it is momentarily released just before the needle-bar finishes its upstroke by the engagement of the operating-lever with the button at the lower end of the plunger, whereby the plunger is lifted and the tension of the spring J removed from the friction-disks, which are then left under the tension of the light spring I, which is not stiff enough to prevent the thread from feeding. Shortly after the beginning of the downstroke of the needle-bar the operating-lever clears the plunger, allowing the spring J to reassert itself, and cause the friction-disks to bite the thread, which is then drawn from the spool by the forward end of the operating-lever, which in its downstroke pulls the threads from the spool against the bite of the friction-disks upon that portion of the thread already played out or fed.

It is apparent that my improved friction device may be applied to other machines than that herein shown, and also that it may be somewhat varied in the details of its construction. I would, therefore, have it understood that I do not limit myself to the exact construction set forth, but hold myself at liberty to make such alterations as fairly fall within the spirit and scope of my invention. I am aware, however, that an automatic tension device comprising two disks arranged to have the thread passed between them, and centrally perforated for the reception of a spring-controlled and automatically-operated plunger, is not broadly new.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

In a sewing-machine, the combination with a frame having its frame-arm provided with a forwardly-offsetting horizontal flange supporting an upwardly-extending chambered hub, the chamber of which opens downward through the flange, of a vertically-oscillating lever connected at its forward end with the needle-bar of the machine for the operation thereof; and an automatic tension device comprising two friction-disks resting upon the upper end of the said hub, a plunger passing downward through the disks and hub in position to be directly engaged by the upper edge of the forward end of the said lever, which therefore acts directly upon the plunger to automatically operate the same, a heavy spring located within the chamber of the hub, encircling the plunger, and coacting therewith to draw downward upon the plunger and hence draw the two disks together, and a lighter spring encircling the hub and engaged at its upper end with the lower disk which it presses upward to maintain a slight pressure upon the thread passing between the disks when they are relieved of the power of the heavy spring by the lifting of the plunger by the lever which relieves the tension upon the thread between every stitch.

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

ALBERT W. JOHNSON.

Witnesses:

FRED. C. EARLE,

LILLIAN D. KELSEY.