

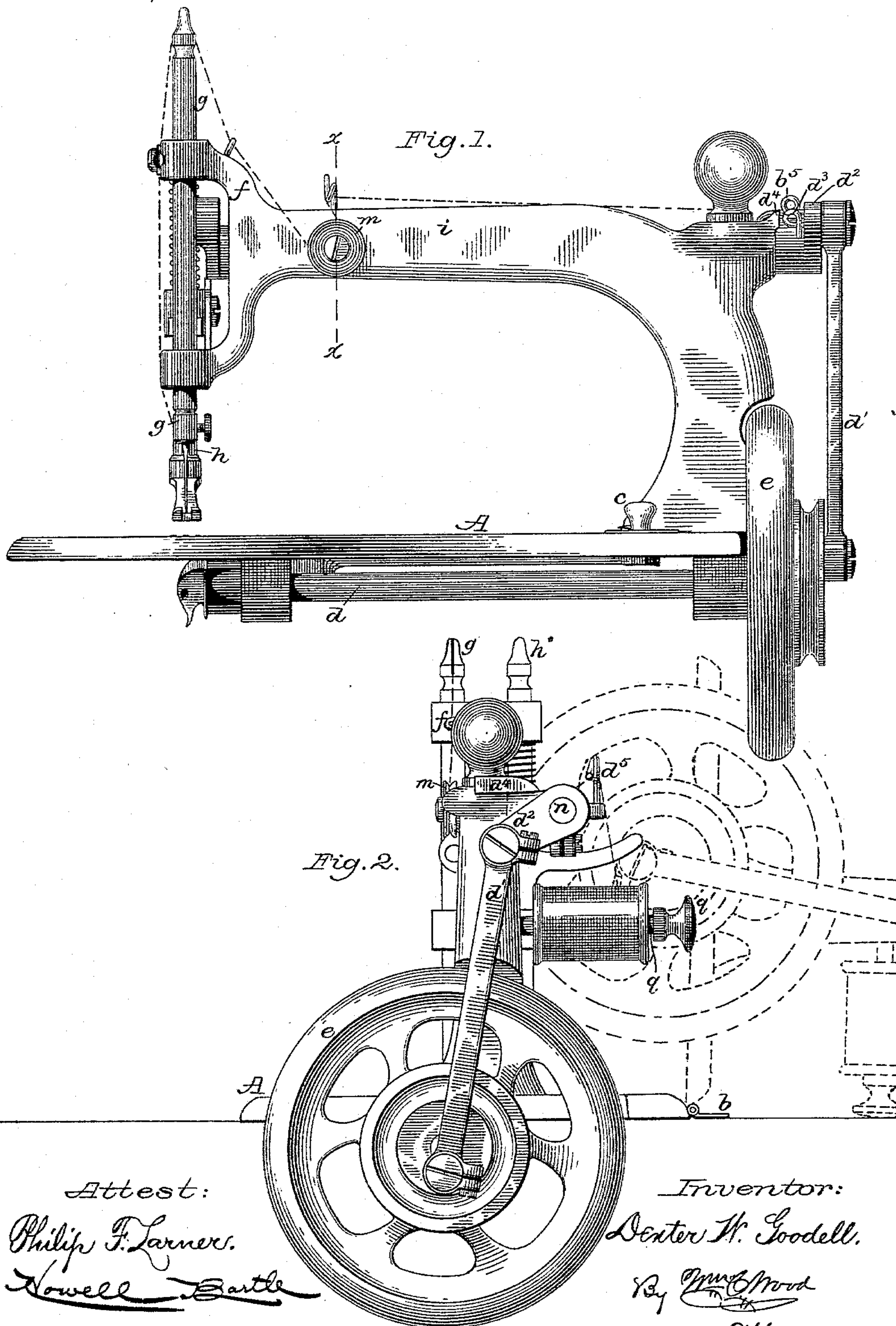
(No Model.)

2 Sheets—Sheet 1.

D. W. GOODELL.
SEWING MACHINE.

No. 597,555.

Patented Jan. 18, 1898.



Attest:
Philip F. Larners.
Nowell Barth

Inventor:
Dexter W. Goodell.
By *Wm. C. Wood*
Attorney.

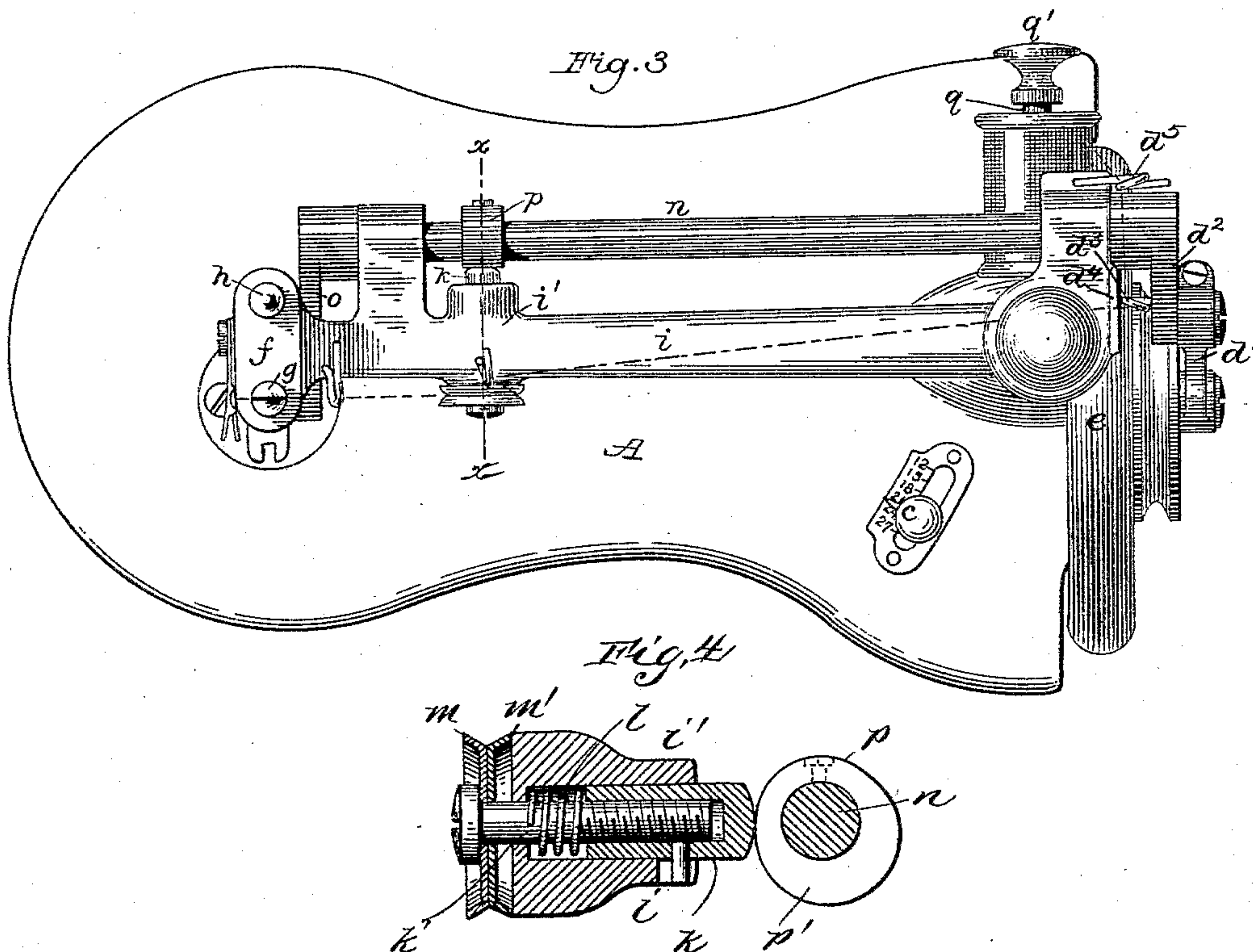
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Howell Bartle.

Inventor:
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UNITED STATES PATENT OFFICE.

DEXTER W. GOODELL, OF NORTHAMPTON, MASSACHUSETTS, ASSIGNOR TO
J. WILLIS DOWNS, OF NEW HAVEN, CONNECTICUT.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 597,555, dated January 18, 1898.

Application filed February 3, 1886. Serial No. 190,701. (No model.)

To all whom it may concern:

Be it known that I, DEXTER W. GOODELL, of Northampton, county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of the several features of my invention.

My invention relates to an improvement in sewing-machines, and more particularly to tension devices therefor, the object being to provide tension devices of a simple, compact, convenient, and effective character.

With these ends in view my invention consists in a sewing-machine having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

After fully describing the machine illustrated in the drawings the features deemed novel will be specified in the several claims hereunto annexed.

Referring to the drawings, Figure 1 is a side view of a machine embodying my invention. Fig. 2 is an end view of the same. Fig. 3 is a top view of the same. Fig. 4 is a transverse section of the machine on line *x*, Figs. 1 and 3.

The bed-plate *A* of the machine is hinged at its rear edge to the stand-top *b*, and beneath said plate there is in this machine a revolving hook, a feed-bar, and a feed-controlling lever provided with a thumb-piece *c*, projecting above the bed-plate through a curved slot therein, all substantially as heretofore. The driving-shaft *d*, on which the hook is mounted, has at its outer end the usual belt-pulley and hand-wheel *e*.

Here I may mention that my improved machine is a single-thread or chain-stitch machine, in the operation of which the thread may sometimes get fouled upon the hook or looper, from which it becomes necessary to disengage it, which is done with great difficulty if the machine is secured in the ordinary manner to its table or support; but my machine, being hinged by its rear edge to the table, may be tilted back, so as to bring the

under portion of the bed-plate of the machine and all the parts attached thereto into a substantially vertical position, enabling the hook or looper to be readily got at for freeing the thread in case it is fouled.

The machine-head *f* contains bearings for a needle-bar *g* and presser-foot bar *h* of the usual character; but the frame-arm *i* has a lateral or transverse enlargement to afford a slide-bearing *i'* for the tension-plunger, the said lateral or transverse enlargement being formed with a horizontal chamber of circular cross-section. This plunger, as clearly shown in Fig. 4, is constructed in two parts of different diameters, and the bearing *i'* corresponds therewith in diameter. The rear portion *k* of the plunger is the largest, and it projects at its rear end beyond its bearing and has a radial stud, which, by occupying a straight open slot in said bearing, prevents that portion of the plunger from rotating.

The front portion *k'* of the plunger is a screw, which tightly occupies a tapped hole in the larger portion of the plunger and has a bearing in the arm corresponding with its lesser diameter, thus affording an interior annular recess containing an expansive spiral spring *l*, which encircles the screw and abuts against the inner end of the larger portion of the plunger and the shoulder in the bearing, resulting from the said reduction in its diameter. Upon the front end of the plunger, inside of the head of said screw, there is a tension-disk *m*, between which and a suitable coincident surface the thread can pass freely whenever the controlling power of the spring is overcome. The coincident surface referred to is preferably in the form of a second disk *m'*, but a convex surface on the arm of the machine or on a plate permanently fixed thereto may be relied upon in lieu of this second disk. It is apparent that by turning the said screw in one direction or the other the tension of the spring may be varied, and hence the bite of the friction-disks upon the thread regulated.

The needle-bar *g* is operated by the rock-shaft *n*, which at one end is coupled to said bar by means of the arm *o* and a ball-and-socket joint in a usual manner. The vibrations of the rock-shaft are imparted from the

driving-shaft d by means of the hand-wheel e , the pitman d' , and the rock-shaft arm d^2 in a usual manner. The said rock-shaft is arranged to one side of but in a plane parallel with the plane of the said arm of the machine-frame.

Adjustably mounted on the rock-shaft and in line with the tension-plunger there is a cam p , so shaped and so adjusted upon said shaft that during the latter portion of the lifting movement of the needle-bar the toe p' of said cam engages with said plunger and compresses its spring and thereby so far relieves the tension-disk from undue pressure that the thread may be properly taken by the stitch-forming mechanism.

Although under ordinary circumstances the stitch-forming mechanism can be relied upon to draw thread from a spool during the release of the tension, greater uniformity in stitching can be obtained if the draft of thread from the spool is effected by other means, and hence I have devised a "take-off" or "pull-off" mechanism which operates in perfect harmony with the intermitting tension device. A spool-carrier of some kind is essential and a spool may be mounted or carried in various ways without affecting the operation of the pull-off; but I employ a laterally-projecting stud q at the rear side of the vertical portion of the frame-arm, which is so proportioned and arranged as to not only serve as a spool-holder, but also as a support for the machine when it is tilted backward on its hinges, as indicated in dotted lines in Fig. 2, thus not only protecting the table-top from defacement, but leaving the several parts free to be operated for the purpose of observation, lubricating, or cleansing. A thumb-screw q' securely retains the spool in place and also serves as a foot for the stud when operating as a support for the tilted machine. The rock-shaft arm d^2 has on its inner side a readily-accessible self-threading eye d^3 , and opposite thereto there is a plain thread-seat d^4 on the frame-arm, so that the thread on its way from the spool toward the needle will pass through said eye and over or upon said seat and enable the arm at each downward movement to take off from the spool more or less thread, according to the quantity used in forming the preceding stitch, provided, of course, that there is between said thread-seat and the needle-bar a tension device, which exerts on the thread a restraining force greater than the tensile force involved in taking thread from the spool. As here organized, the tension-plunger is fully controlled by its spring during the downward

movement of the rock-shaft arm. For enabling the pull-off to efficiently operate it is obvious that a thread-guide of some kind should be interposed between the eye on the rock-shaft arm and the spool and in the path of the thread, and hence I use the self-threading eye d^5 , mounted, as shown, in a projecting portion of the frame-arm, which affords an adjacent bearing for the rock-shaft.

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

1. In a sewing-machine, the combination with a frame-arm formed with a plunger-chamber, of a rock-shaft, a cam mounted thereupon, and a tension device comprising a plunger composed of a tapped portion and a screw entering the same, a spiral spring encircling the screw, one or more friction-disks applied to the screw and caused to bite the thread by means of the tension of the spring, one of the said disks bearing upon the said frame-arm, and the said plunger being actuated by means of the said cam which engages with its tapped portion.

2. In a sewing-machine the combination with a frame-arm formed at its forward end with a horizontally-arranged plunger-chamber, of a needle-bar-actuating rock-shaft arranged to one side of but in a plane parallel with the said arm, a cam located upon the said shaft, a plunger located in the said plunger-chamber and comprising a tapped portion which projects out of the chamber in position to be engaged by the said cam, and also comprising a screw which is entered into the tapped portion of the plunger, a spiral spring encircling the said screw, and one or more friction-disks supported upon the outer end of the screw and caused to bite the thread by the action of the spring which is adjustable in tension by means of the said screw, and which is compressed for releasing the thread when the plunger is actuated.

3. In a sewing-machine, the combination substantially as hereinbefore described, of the driving-shaft, the rock-shaft coupled to, and operating the needle-bar, the rock-shaft arm, coupled to said driving-shaft, a tension device automatically operated by a cam on the rock-shaft, a spool-carrier, a thread-eye on said rock-shaft arm, an adjacent thread-seat d^4 , and a thread-guide d^5 between said arm-eye, and the spool-carrier.

DEXTER W. GOODELL.

Witnesses:

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OSCAR N. KYLE.