(No Model.) 2 Sheets—Sheet 1.

J. W. BLODGETT.

TENSION AND TAKE-UP DEVICE FOR SEWING MACHINES.

No. 246,591. Patented Sept. 6, 1881.

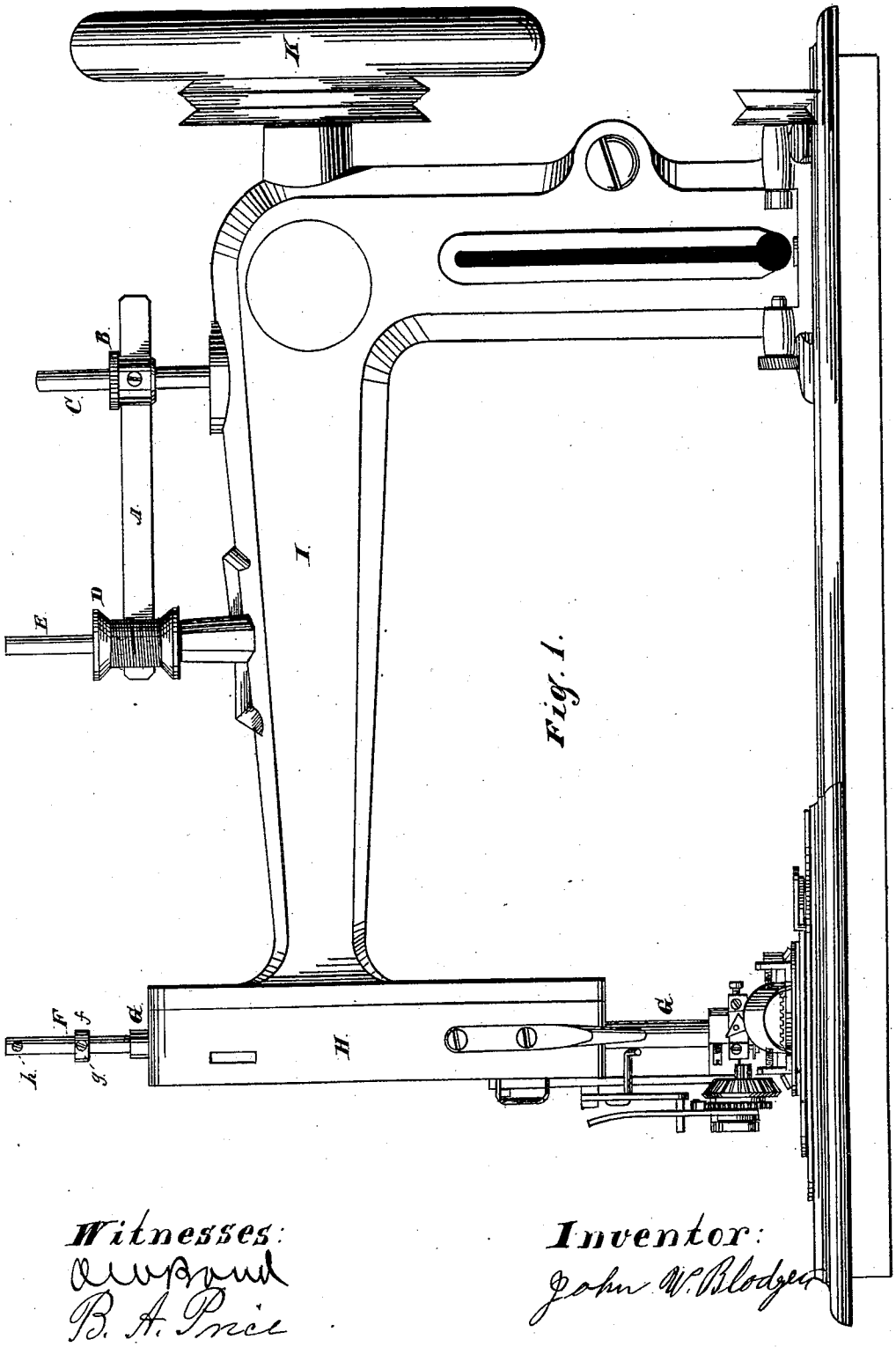


Fig. 1.

Witnesses:
A. Wyand
B. A. Price

Inventor:
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N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets -Sheet 2.

J. W. BLODGETT.

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Fig. 2.

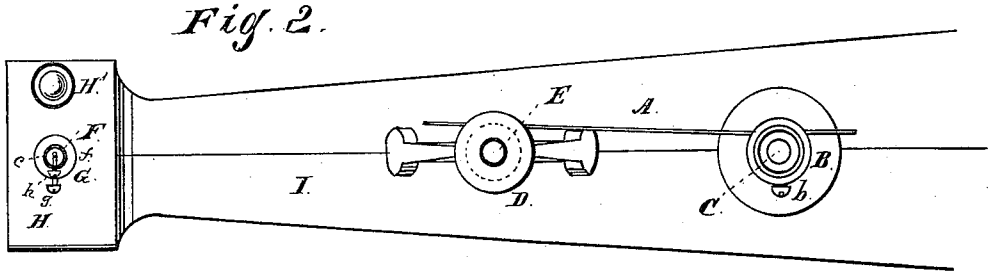


Fig. 3

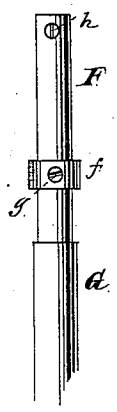


Fig. 4.

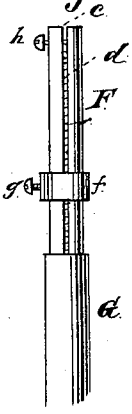


Fig. 5.

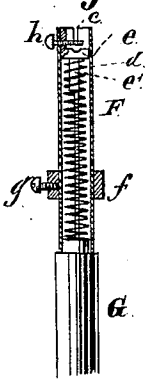


Fig. 6.

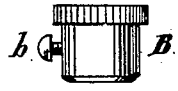
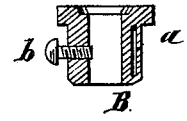


Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN W. BLODGETT, OF CHICAGO, ILLINOIS.

TENSION AND TAKE-UP DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 246,591, dated September 6, 1881.

Application filed March 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. BLODGETT, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Tension and Take-Up Devices for Sewing-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a sewing-machine embodying my invention; Fig. 2, a top or plan view of the arm of the same; Figs. 3, 4, and 5, details of the take-up device; Figs. 6 and 7, details of the socket or collar by means of which the tension arm or spring is held in position and its pressure regulated.

A proper tension on the thread and the taking up of the slack thread constitute two of the essential features in the successful working of a sewing-machine, and in practice it has been found that the tension should be one that can be regulated or changed so as to adapt it to different conditions and requirements of the work and to the amount and quality of the thread, and that the take-up should be automatic in its operation, and perform its work so as to prevent any tangling or knotting of the thread, and at the same time be adjustable so as to accommodate itself to the amount of the slack in the thread.

To construct devices that will accomplish these desired ends successfully and perform their respective works in an efficient and reliable manner, and so as not to injure and break the thread or interfere with the operation of the machine, and which can be easily and quickly changed or regulated so as to adapt them to the varying conditions and requirements of the work and the thread, is the object of this invention; and it consists in providing a spring or spring-arm, secured at one end to a collar or socket, which can be raised or lowered on its spindle or arbor and be rotated thereon, so as to cause the free end of the tension-arm to bear with more or less force against the spool or thread; in providing a coil-spring located in a tube or casing having slits in its opposite sides through which thread can pass and lie on top of the coil-spring, a cap-piece resting on the spring and closely fitting and sliding within the tube, said tube being provided with an adjustable set-collar located on the tube or casing for limiting the action of the spring and causing its movement to correspond to the amount of slack in the thread.

In the drawings, A represents the tension-arm, made of spring-steel or other suitable material, and of the requisite flexibility, so that when its free end is bearing on the spool or thread it will exert the necessary pressure to prevent the thread from being unwound, except as required for use.

B is a set-collar or socket having a central circular opening adapted to receive an arbor or spindle, to which the collar or socket can be firmly secured and held in any desired position by means of a set-screw, *b*, or other suitable device, so that it can be raised or lowered to bring it in the proper position for supporting the spring A properly. In this socket or collar B is a transverse slot or opening, *a*, to receive the end of the tension-arm A, and by turning the socket or collar on its arbor or spindle the angle at which this slot *a* stands in reference to a straight line parallel with the arbors or spindles for the spool and the socket B can be made greater or less, so as to cause the free end of the tension-arm A to bear with a greater or less force on the thread, and thereby vary the amount or degree of tension.

C is a spindle or arbor for the socket or collar B. Its lower end is firmly secured, in the form of construction shown, to the ordinary arm, I, of the machine which supports the head H for the presser-foot and needle-bars G and H′.

D is an ordinary spool for thread.

E is a spindle or arbor for the spool. Its lower end, as shown, is firmly secured to the sewing-machine arm forward of the spindle or arbor C, and its diameter is such as to allow the spool to be placed thereon and rotate freely. The position and location of the spindles or arbors on the machine may be varied to adapt them to machines of different constructions and bring the tension device and spool in the proper relation to each other.

By means of the spring or spring-arm A and the adjustable and rotating socket or collar B it will be seen that any desired tension can be given by simply turning the socket or collar on its arbor, so as to cause the free end of the spring-arm or tension-arm to bear with

more or less force, and that all that is necessary to be done in order to produce this result is to loosen the set-screw of the collar, turn the collar in the required direction, and then tighten the set-screw. To increase the tension the socket or collar B is turned so as to cause the end of the slot or opening *a* which is toward the spool to be carried inward or toward a line drawn through the centers of the arbors C and D. To decrease the tension a reverse movement is given to the socket or collar B. By thus changing the line of direction of the slot *a* any required degree of tension can be applied to the thread.

F is a casing or tube, secured at its lower end to the upper end of the needle-bar G so as to move therewith, and having its upper end left open so as to permit of the insertion of a coil-spring, *d*. On opposite sides of this casing or tube F and in line with each other are slits *c*, to permit of the passage of the thread transversely through the tube or casing and over the upper end of the coil-spring *d;* and in order to support the thread properly a cap, *e*, having an extension, *e'*, which fits the interior of the spring is provided, on which cap *e* the thread rests, and, as shown, the cap is prevented from being thrown out by the recoil of the spring by a set-screw, *h*, or in any other suitable manner. Around the casing or tube F is located an adjustable set-collar, *f*, which can be adjusted up or down on the tube, and when in the desired position can be held therein by a set-screw, *g*, or other suitable device. This set-collar *f* limits the descending movement of the coil-spring by reason of the thread coming in contact therewith, so as to have the descent of the spring correspond to the slack in the thread.

The operation will be readily understood. The thread, passing over the coil-spring, as it is drawn by the descent of the needle will cause the coil spring to contract to the same extent, and as the needle ascends the spring will return to its normal condition, and will, of course, take up any slack there may be in the thread, and by means of the set-collar the contraction of the spring can be made to correspond with the descent of the needle, and the recoil of the spring will be to the same extent.

By means of this device the slack thread will all be taken up in an efficient manner, and the tension-arm prevents any unwinding of the thread from the spool, except as required, so that kinking and knotting of the thread will not take place, and no interference will arise with the operation of the machine.

In Fig. 1 a button-hole attachment is shown, but as the same is made the subject-matter of another application of even date herewith it need not here be described.

I do not claim a flat spring arranged to press upon the spool of thread and having its tension adjusted by a set-screw bearing against the spring between its point of attachment to the machine and the spool of thread; neither do I broadly claim a sliding cap arranged on the needle-bar and supported by a coiled spring, the cap having an eye through which the thread passes on its way to the needle.

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

1. In a tension device for sewing-machines, the combination of the fixed cylindrical arbor C, the collar B, provided with the transverse slot *a* and set-screw *b*, and arranged to be rotated and adjusted vertically on the spindle to change the position or angle of the slot, and the flat spring A, having one end secured in the transverse slot and its free end arranged to bear on the spool of thread, substantially as described, whereby the pressure of the spring on the spool can be adjusted by turning the slotted collar on its axis, all as and for the purpose described.

2. The tube F, secured to the needle-bar and provided with two coincident vertical slots, *c*, extending to the upper end of said tube, in combination with a coiled spring, *d*, arranged within the tube, and the thread-rest bearing on the spring and closely fitting and sliding within the slotted tube, all substantially as and for the purpose described.

3. The tube F, secured to the needle-bar and having the two vertical coincident slots *c c*, the coil-spring *d*, arranged within the tube, the cap piece *e*, closely fitting and sliding within the tube, and the collar *f*, arranged to slide upon the exterior of the tube, and provided with a set-screw, *g*, for adjusting and locking the collar in position to regulate the descent of the coil-spring, all substantially as and for the purpose described.

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Witnesses:
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B. A. PRICE.