

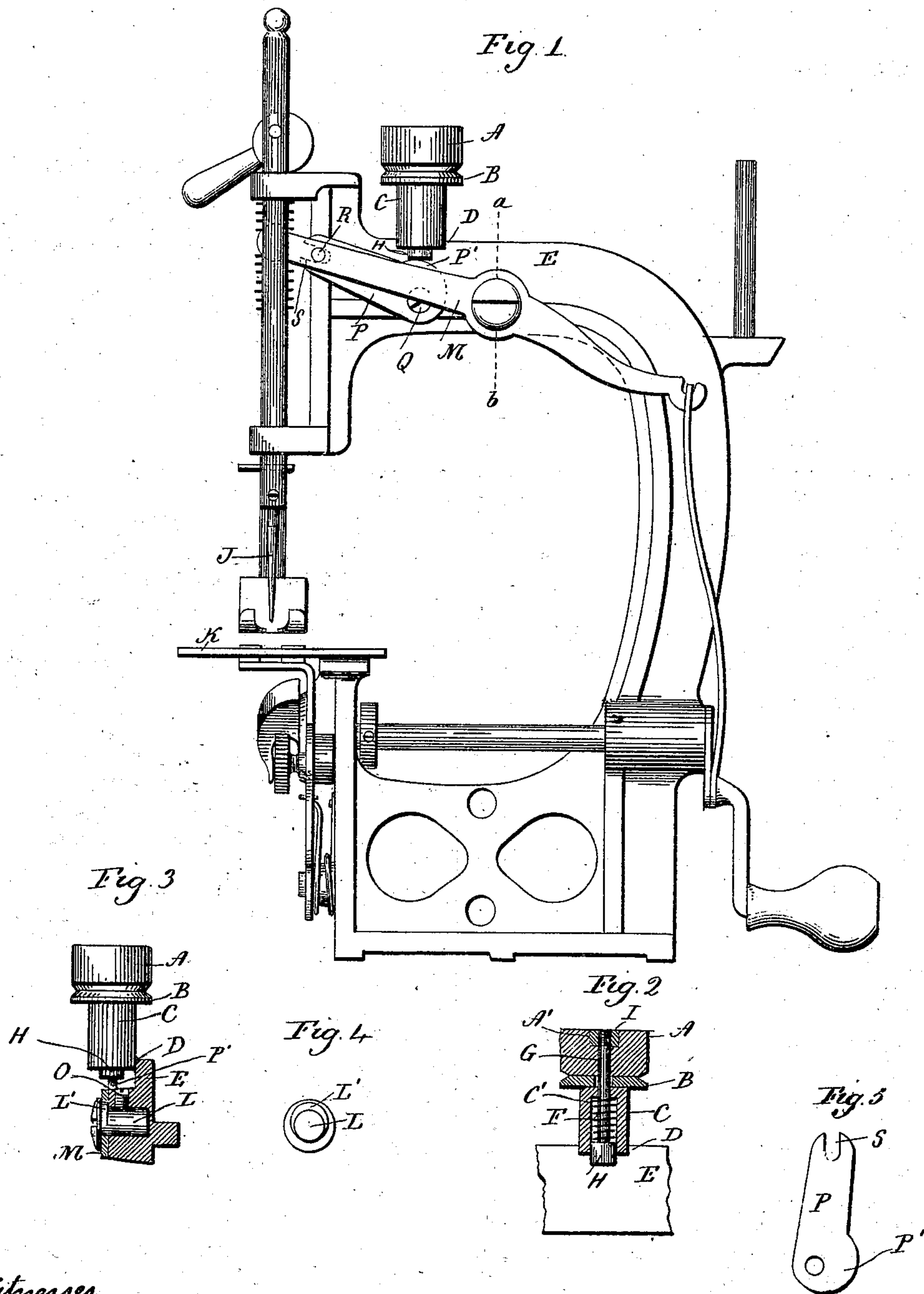
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Patented Mar. 18, 1902.

R. PIERPONT.
TENSION DEVICE FOR SEWING MACHINES.

(Application filed May 22, 1900.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

ROBERT PIERPONT, OF NEW HAVEN, CONNECTICUT.

TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 695,486, dated March 18, 1902.

Application filed May 22, 1900. Serial No. 17,528. (No model.)

To all whom it may concern:

Be it known that I, ROBERT PIERPONT, of New Haven, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in 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
10 same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of a sewing-machine constructed in accordance with my invention; Fig. 2, a broken sectional view
15 of the tension device; Fig. 3, a broken sectional view showing the adjustable connection of the needle-bar lever with the frame of the machine; Fig. 4, a detached view, in inside elevation, of the needle-bar-lever stud;
20 Fig. 5, a detached view, in side elevation, of the intermediate lever employed for transmitting the motion of the needle-bar lever to the tension device.

My invention relates to an improvement in
25 sewing-machines, the object being to produce a durable and efficient machine of extreme simplicity of construction and built with particular reference to ease of adjustment and to a noiseless action.

30 With these ends in view my invention consists in a gravity tension device, in means for adjusting the position of the needle-bar lever for setting the position of the needle with respect to the cloth-plate, and in an improved
35 connection between the needle-bar lever and the tension device for reducing the shock of the action of the latter.

My invention further consists in certain details of construction, as will be hereinafter
40 described, and pointed out in the claims.

In carrying out my invention I employ a small cylindrical tension-weight A, having its lower edge slightly beveled and resting upon a tension-washer B, having its edge oppositely beveled and resting upon the upper edge
45 of a chambered hub C, extending upwardly from a forwardly-offsetting horizontal flange D, formed integral with the arm E of the frame of the machine. A tension-spring F, located within the chamber C' of the hub C,
50 encircles a stem or coupling-rod G, provided at its lower end with a downwardly-project-

ing plunger H and extending upward through the top of the hub, through the washer B, and through the weight A, its extreme upper
55 end being threaded for the reception of a nut I, which, as shown, though not necessarily, sets down into a recess A', formed in the top of the weight, with the upper face of which the top of the nut is flush. Under this con-
60 struction the tension-spring F, bearing down upon the plunger H, exerts a constant effort, through the stem G and nut I, to pull the weight A down upon the washer B, whereby the thread is pinched between the weight and
65 washer. When, however, the tension of the spring is removed by lifting the plunger H, the weight A is not lifted, but rests upon the thread and prevents the same from running too freely. When the plunger is lifted, as
70 described, the stem G and nut I are raised through and above the weight, which they do not disturb. By this construction I avoid the use of the light spring commonly employed to keep enough tension on the thread
75 to prevent it from running too freely when the tension of the tension-spring proper is removed. Furthermore, I am enabled to secure more uniform results from the tension device, as the tension-weights A may be very accu-
80 rately gaged in weight, while it is difficult to make the secondary tension-springs all of the same strength. Furthermore, this construction is quieter in its operation than the prior construction employing two springs, as when
85 two springs are employed they act in opposite directions upon the tension-washer and cause the same to rattle more or less, which is not the case with my improved device.

In order to provide for setting the needle J
90 of the machine accurately as to height with respect to the cloth-plate K thereof, I provide the stud L, employed to connect the needle-bar lever to the frame with an eccentric L', so that by turning the stud the needle-bar lever M, and hence the needle-bar N, may be ad-
95 justed in height. When the required adjustment has been made, the stud is fixed in its set position by means of a set-screw O, as shown in Fig. 3. This affords an extremely
100 simple and very accurate mode of setting the needle as to height with respect to the cloth-plate.

For the purpose of transmitting the power

of the needle-bar lever M to the tension device I employ an intermediate lever P, furnished upon its upper edge with a cam P' for coaction with the plunger of the tension device, which may be constructed like the device shown or in any other suitable manner. This lever is pivoted at its lower end to the arm E of the frame of the machine by means of a screw Q and loosely connected at its opposite and upper end with the needle-bar lever by means of a pin R, projecting inward from the inner face of the lever and entering an open longitudinally-arranged slot S, formed in the intermediate lever. The screw Q, it will be observed by reference to Fig. 1, is located in line or nearly in line with the plunger H of the tension device. The use of this intermediate lever utilizes the virtually-increased leverage of the needle-bar lever in such a way that the tension device is operated easier and with less shock than when the tension device is operated directly from the upper edge of the needle-bar lever, and also the tension device is operated with far less noise, because the action upon the tension device is less direct and less abrupt, for the action of the cam P of the intermediate lever upon the plunger of the tension device is a sliding action instead of a direct impingement.

It is apparent that the several features of my invention above described may or may not be used in combination in the same machine and, furthermore, that they may be modified in details without departing from my invention. I would therefore have it understood that I do not limit myself to the exact construction herein shown, but hold myself at liberty to make such alterations as fairly fall within the spirit and scope of my invention.

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

1. A tension device for sewing-machines, comprising a tension-weight, a tension-washer upon which the weight rests, a tension-spring, and means whereby the spring operates to hold the weight upon the washer except when in the operation of the device the power of the spring is removed from the washer, at which time the tension is maintained by the gravity action of the weight.

2. In a tension device for sewing-machines, the combination with a chambered hub, of a tension-washer resting thereupon, a tension-weight resting upon the washer, a tension-spring located within the hub, a plunger arranged to be operated by a moving part of the machine, and a stem passing through the spring, the washer, and the weight with which

the stem is connected for movement in a downward, but not in an upward direction.

3. A tension device for sewing-machines, comprising a chambered hub, a tension-washer resting thereupon, a weight resting upon the washer, a spiral spring located within the hub, a plunger located within the lower end of the hub, a stem passing upward from the plunger through the spring, through the washer and through the weight, and a nut located upon the upper end of the stem and connecting the weight therewith for downward movement, but not for upward movement, whereby the spring operates to draw the weight down upon the washer, except when the tension of the spring is cut off by the lifting of the plunger, which does not disturb the weight, which then rests by the action of gravity upon the washer.

4. In a sewing-machine, the combination with the needle-bar and needle-bar lever, of a stud for connecting the said lever with the frame of the machine, the said stud being formed with an eccentric providing for adjusting the position of the lever with respect to the frame, and thus enabling the needle to be set in height with respect to the cloth-plate.

5. In a sewing-machine, the combination with the frame thereof, of a cloth-plate, a needle-bar adapted at its lower end to receive a needle, a needle-bar lever connected at one end with the needle-bar, and a stud mounted in the said frame and supporting the needle-bar lever, and provided with an eccentric with which the said lever engages, and which shifts the position of the lever when the stud is turned, whereby the lever may be adjusted for setting the needle in height with respect to the cloth-plate.

6. In a sewing-machine, the combination with a tension device of the plunger type, of a needle-bar lever, and an intermediate lever pivotally connected with the frame of the machine at a point directly below the plunger of the tension device and forward of the pivot of the needle-bar lever, and the said intermediate lever having its forward end loosely connected with the said needle-bar lever by which it is actuated, and having its pivotal or inner end formed with a cam coacting directly with the plunger of the tension device.

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

ROBERT PIERPONT.

Witnesses:

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