

No. 686,014.

Patented Nov. 5, 1901.

H. A. WEBSTER.

TENSION DEVICE FOR SEWING MACHINES.

(Application filed Aug. 20, 1900.)

(No Model.)

2 Sheets—Sheet 1.

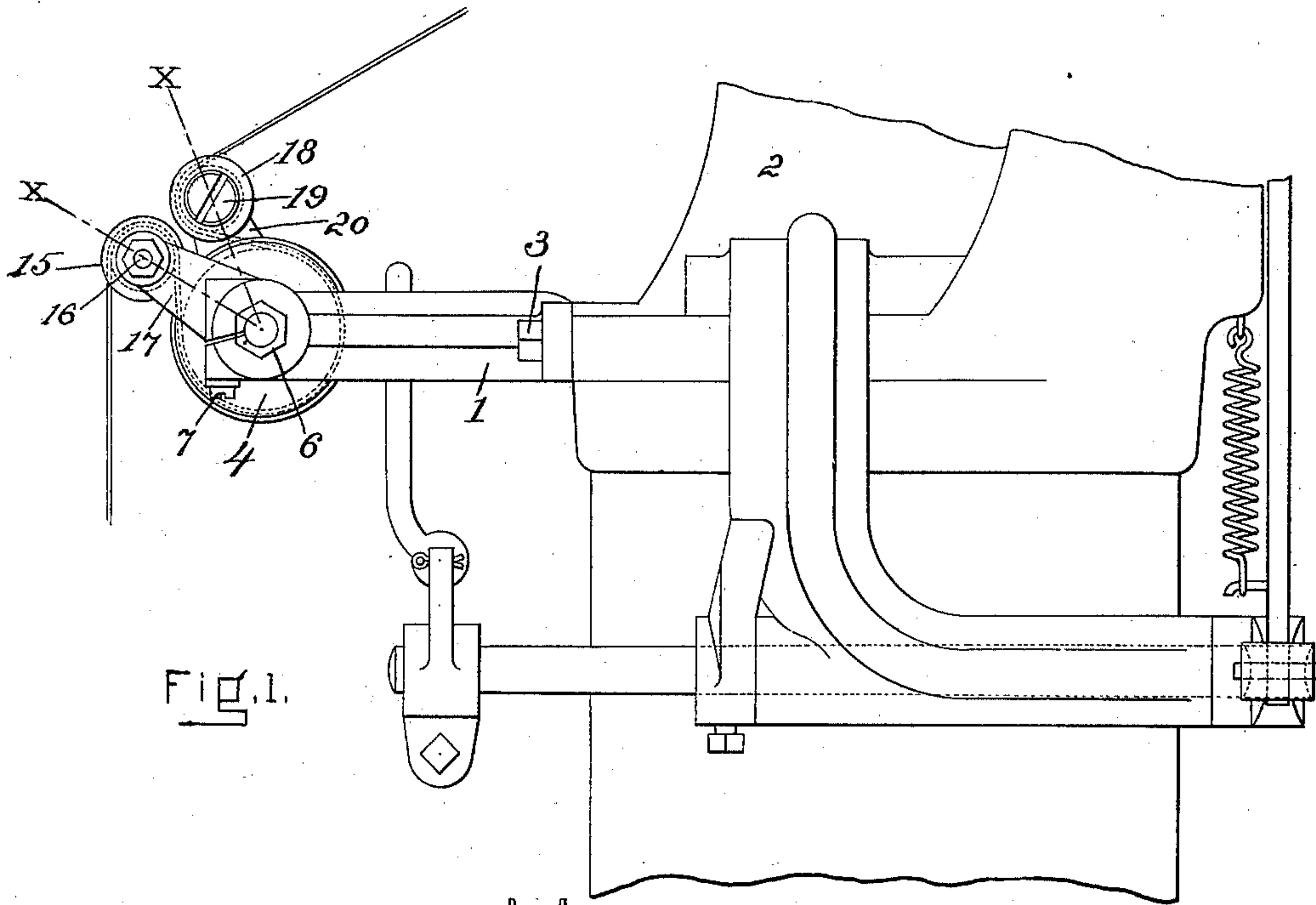


Fig. 1.

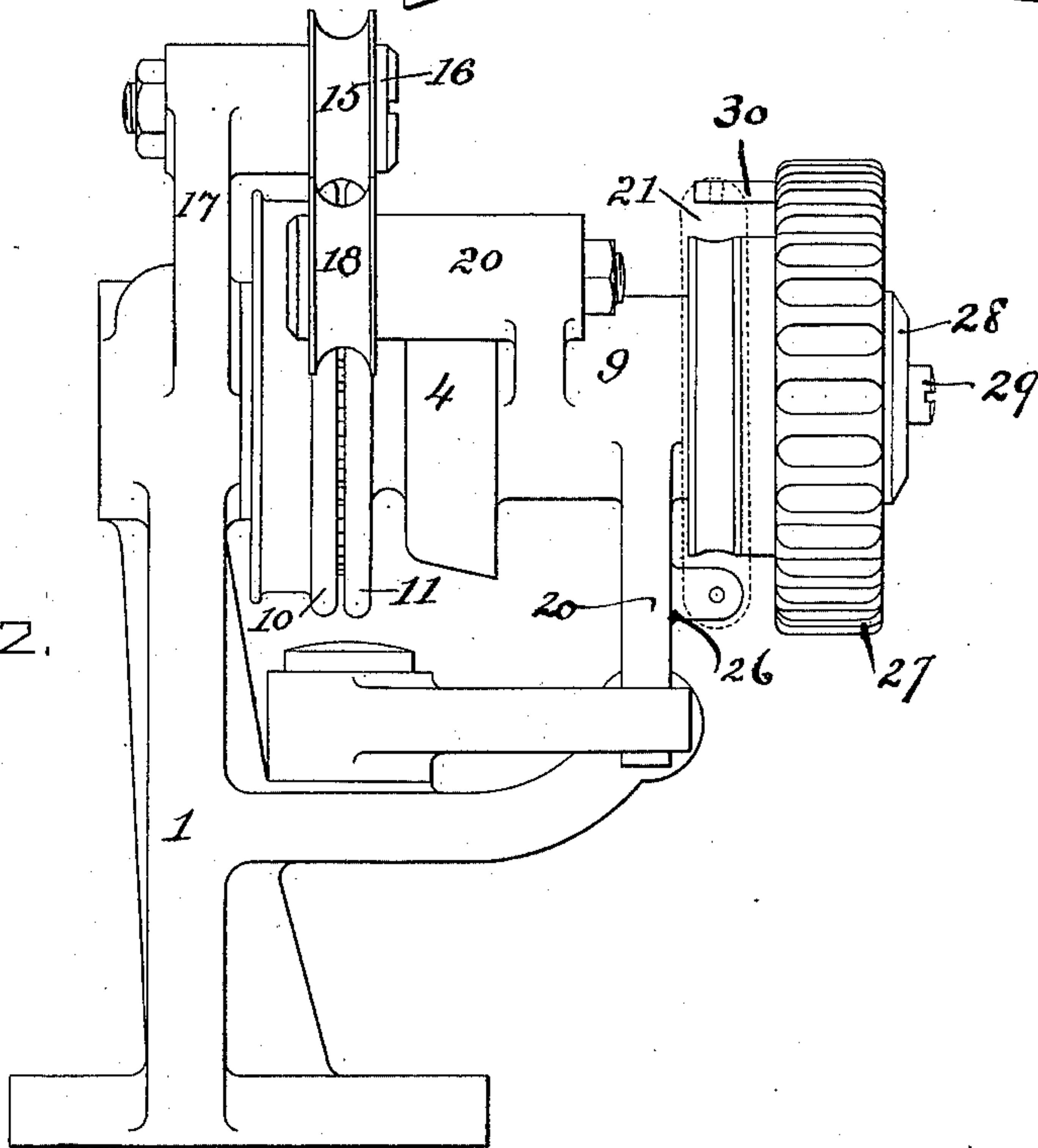


Fig. 2.

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Fig. 3.

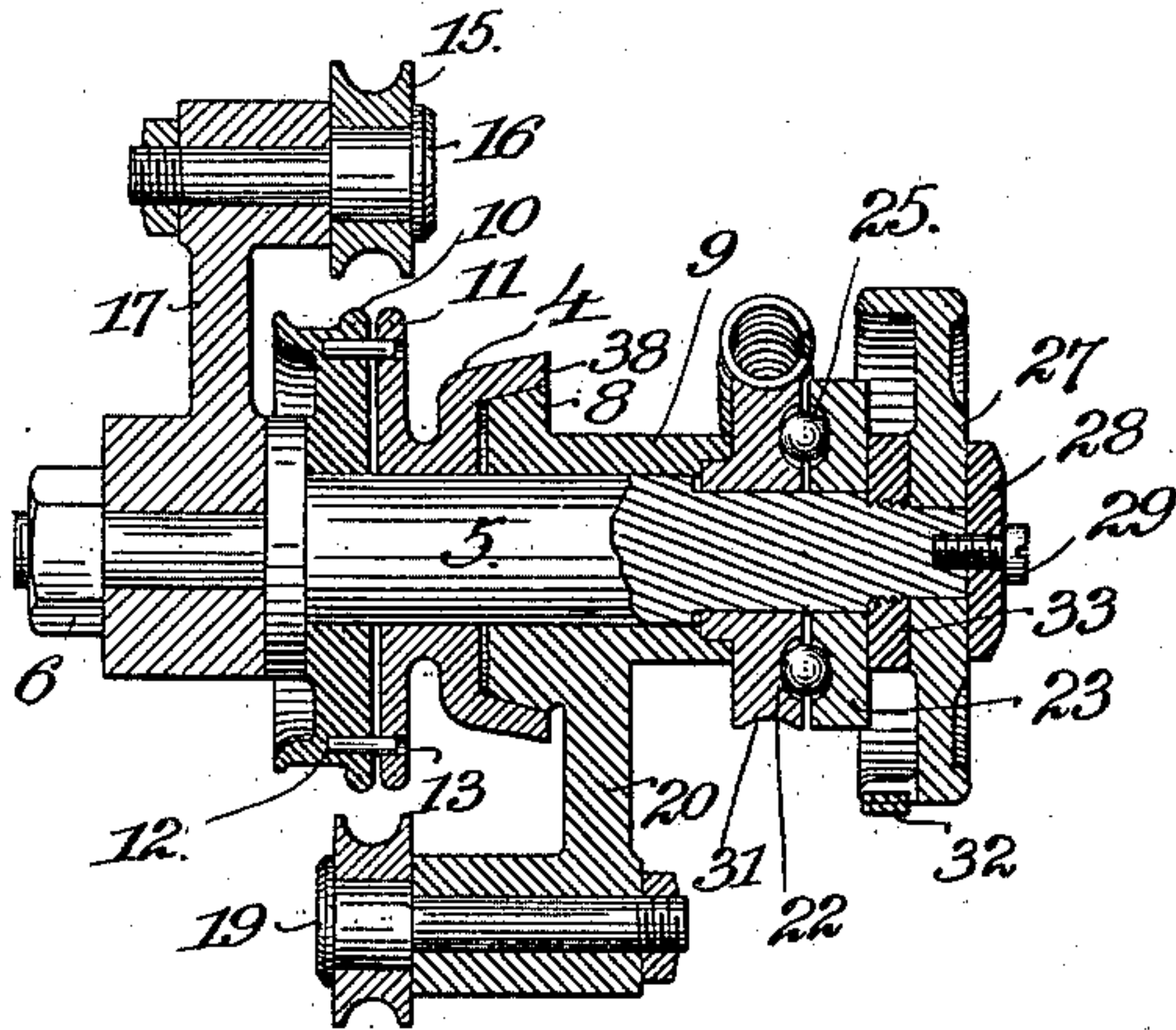


Fig. 4.

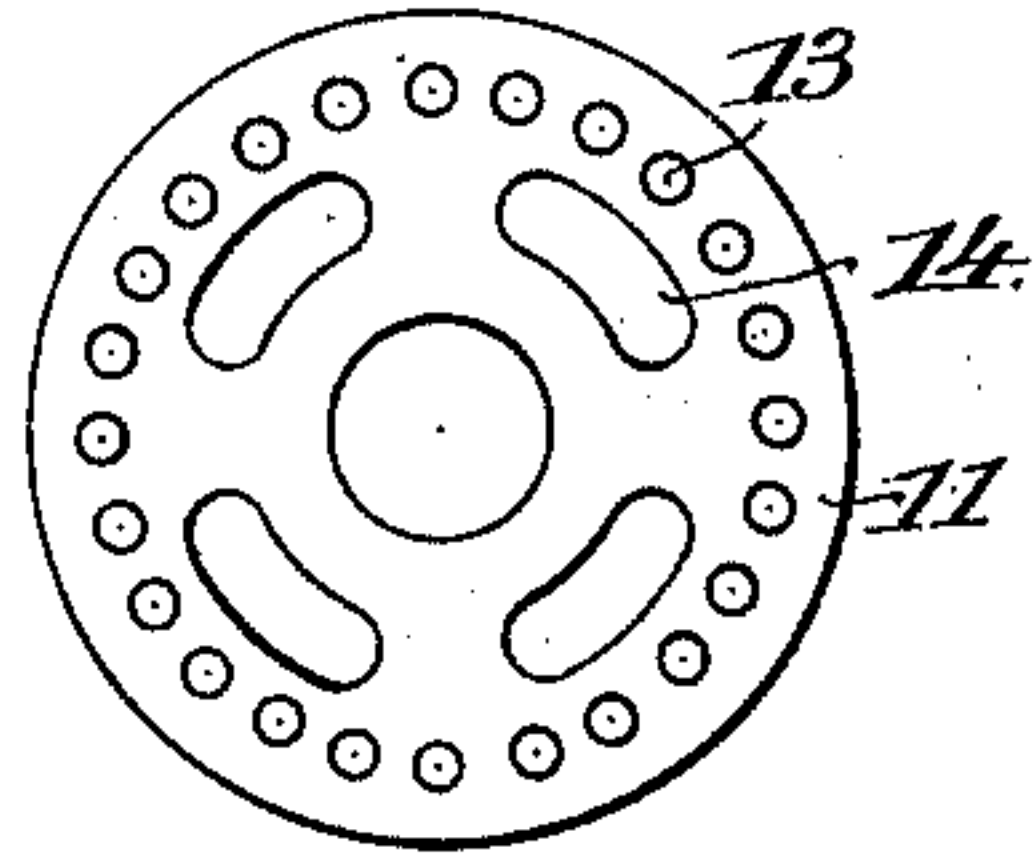


Fig. 5.

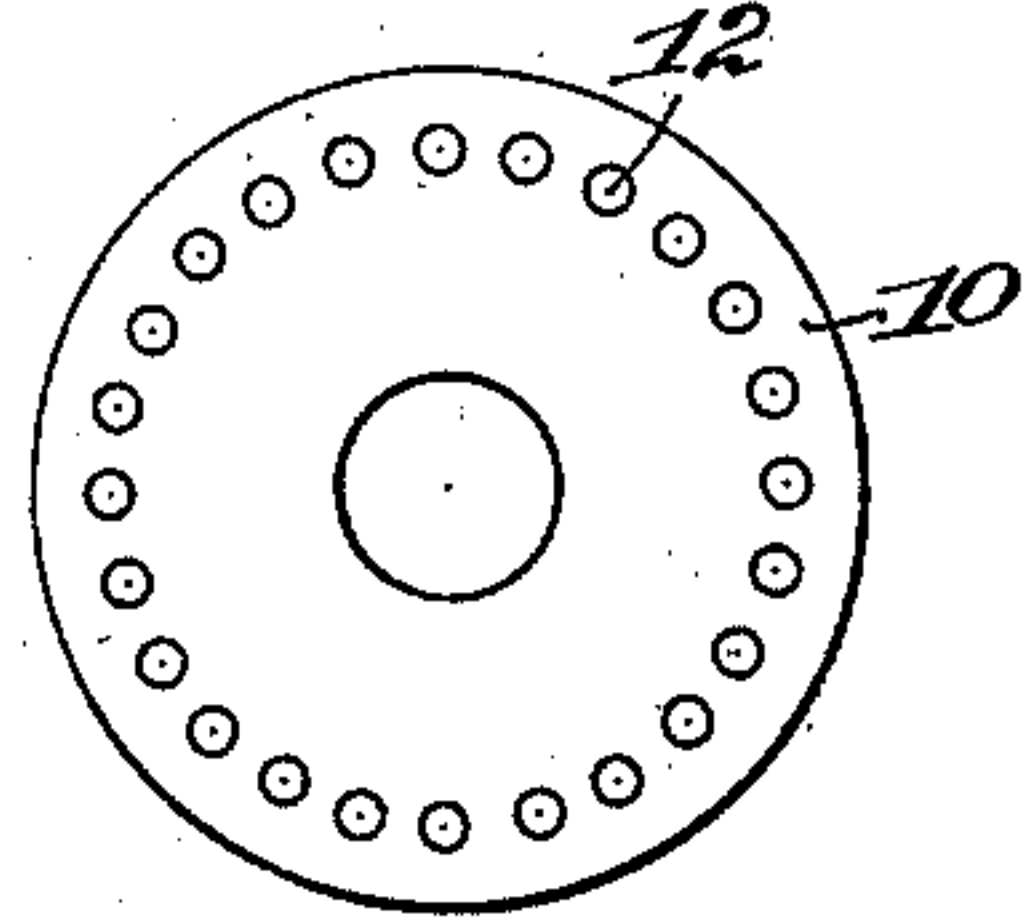


Fig. 6.

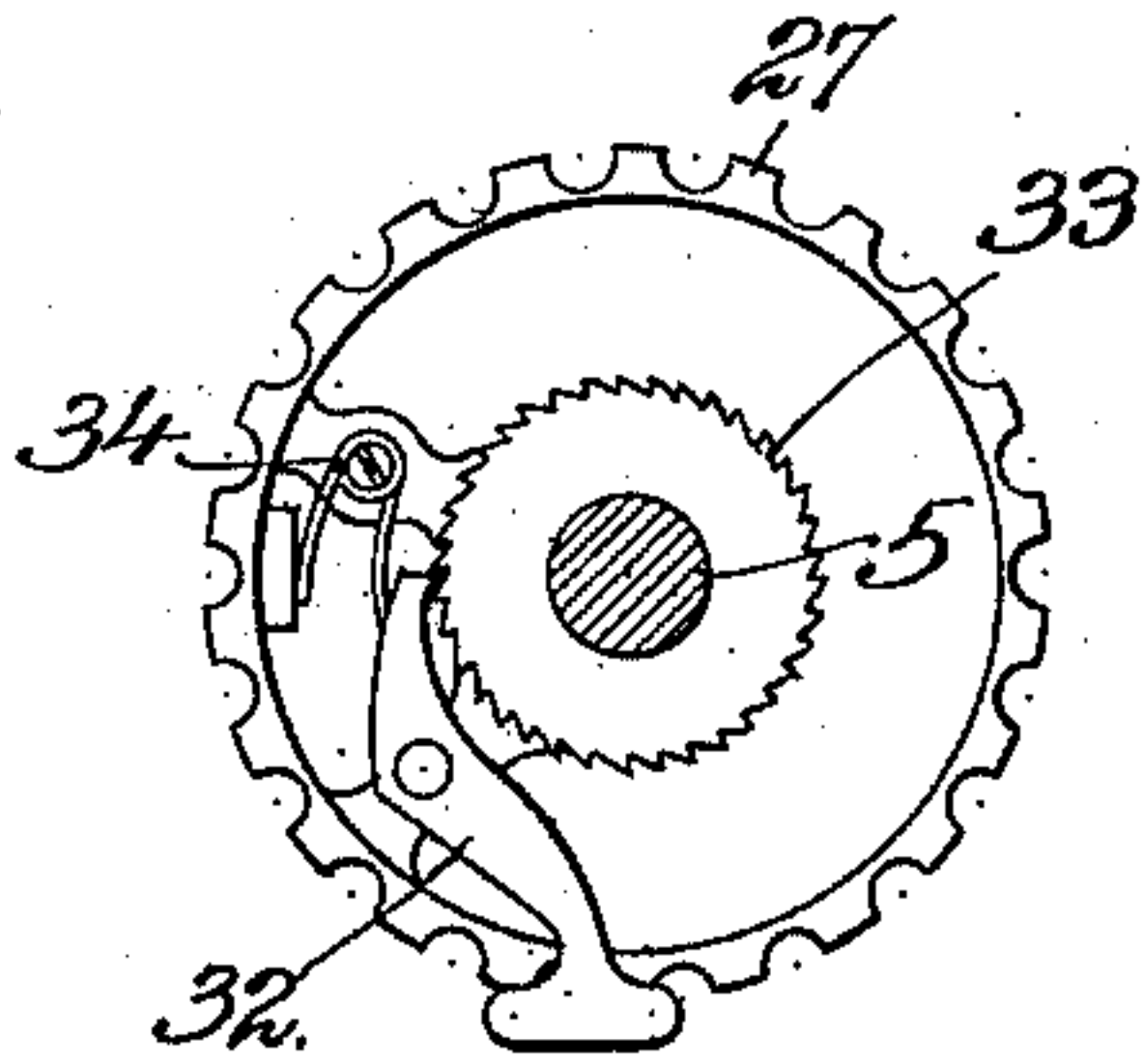
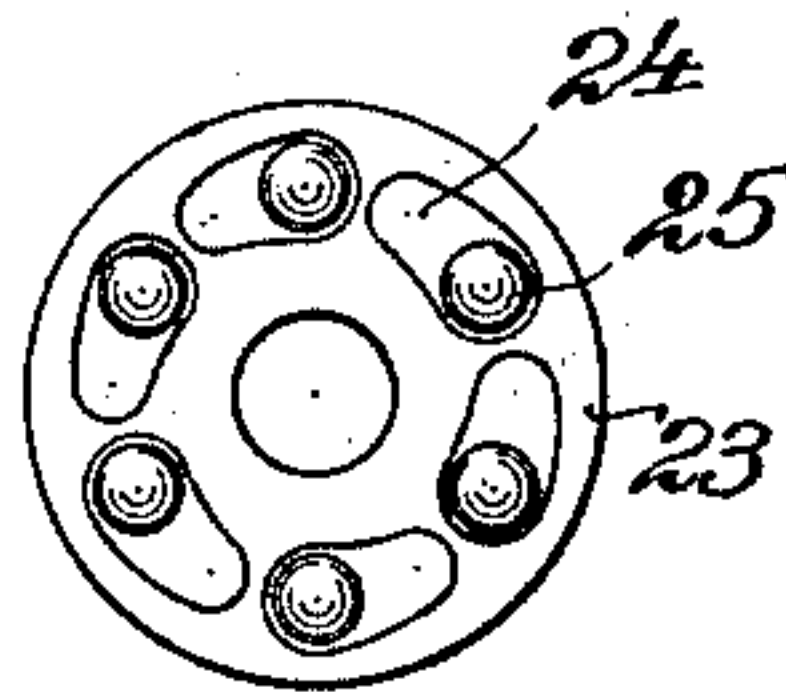


Fig. 7.



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UNITED STATES PATENT OFFICE.

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TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 686,014, dated November 5, 1901.

Application filed August 20, 1900. Serial No. 27,416. (No model.)

To all whom it may concern:

Be it known that I, HAROLD A. WEBSTER, a citizen of the United States, residing at Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Tension Devices for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in tension devices for wax-thread sewing-machines.

Heretofore so far as I am aware tension devices for applying tension to a waxed thread have been provided with a thread-truck around which the thread passed on its way from the wax-pot to the stitch-forming devices, the thread engaging the surface of the truck and the tension being applied by the application of a friction resistance or the like to the thread-truck, so as to impede its free revolution. This form of tension device has been found objectionable, for the reason that the tension applied to the thread depended entirely upon the resistance of the thread to slipping over the surface of the thread-truck, and so far as I am aware it has been found impractical to use devices for applying tension to a waxed thread which operated by clamping the thread between them.

The object of my invention is to produce a tension device for waxed thread which engages the thread directly and which clamps and holds the thread with certainty and which permits the thread to be drawn off without stripping the wax therefrom.

To the above end my invention consists in the tension device hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, illustrating the preferred form of my invention, Figure 1 is a side elevation of the device attached to the rear of the well-known Goodyear welt and turn machine, of which the upper part of the stand and the lower part of the head only are shown. Fig. 2 is a plan. Fig. 3 is a section of the device on the line $x-x$, Fig. 1; and Figs.

4, 5, 6, and 7 illustrate details hereinafter described.

In the illustrated embodiment of the invention the frame 1 of the tension device is secured to the rear of the head 2 of the sewing-machine in any desired manner, as by the bolts 3. The frame is projected rearwardly and supports the operative parts of the tension device. The tension-wheel or thread-truck (indicated in a general way by the reference character 4) is revolubly supported upon the stud 5, which is mounted in the rear end of the frame 1 and secured in position by the nut 6 and the clamping-screw 7, which clamps the slotted bearing for the stud 5 together to hold the said stud therein. The tension-wheel 4 is provided with a friction-face 38, which is adapted to be engaged by an opposing friction-face 8 of a sleeve 9, loosely mounted on said stud, the construction of the friction-face being such that when the sleeve 9 is forced toward the tension-wheel 4 it will engage and hold the same from rotation. Thus the two inner faces comprise a friction-clutch which may be opened and closed to release and hold the thread-truck.

The tension-wheel 4 consists of two oppositely-disposed plates 10 and 11, rotatably mounted on the stud 5 and held from relative rotation by means of a series of pins 12, mounted in the plate 10 near its periphery and projected into a corresponding series of holes 13 in the plate 11. The two plates and the series of pins make a thread-truck, the thread being adapted to be received between the two plates and to rest upon the pins, which in effect comprise the bottom of the thread-groove.

The means provided for moving the sleeve 9 toward the tension-wheel 4 are the same as the means illustrated in my copending application, Serial No. 15,224, filed May 2, 1900; but it will be noted that when the sleeve 9 is moved toward the tension-wheel 4 to close the clutch the plate 11 will be moved toward the plate 10 and will clamp and hold the thread between the two plates. The means described in my said application for moving the sleeve 9 toward the tension-wheel 4 consists of two

disks 22 and 23, the latter of which is rigidly secured to the stud 5, and the other of which is rigidly secured to the sleeve 9. These disks are provided in their adjacent faces with recesses 24, the bottoms of which are inclined in opposite directions, and in which balls 25 are placed. The above arrangement is such that when a rotational movement is imparted to the sleeve 9 the balls 25 will roll up the oppositely-inclined bottom surfaces of the recesses 24 and force the sleeve 9 toward the tension-wheel 4, thereby clamping the tension-wheel and holding it from rotation. Means are provided normally tending to rotate the sleeve 9 upon the stud 5 in the direction to cause the balls 25 to roll to the higher parts of the recesses 24, so as to force the sleeve 9 against the tension-wheel 4, so as to clamp and hold the same. The arm 20, which projects forwardly from the sleeve 9, is provided with a lug 26, to which the spring 21 is attached, and the hand-wheel 27, which is loosely mounted upon the end of the stud 5 and held in place by a washer 28 and screw 29, is employed for adjusting the tension to which the spring 21 is subjected. One end of the spring is attached to the lug 26 on the arm 20, and the other end of the spring is attached to a lug 30 on the hand-wheel 27, the spring being wrapped loosely around the disk 22, which is provided with a groove 31 to hold the spring from accidental displacement therefrom. The means for holding the hand-wheel in any desired position consists of the pawl 32 and the ratchet-wheel 33, the former of which is pivoted on the hand-wheel and the latter of which is secured to the stud 5. The spring 34 normally holds the pawl in contact with the ratchet-wheel. By turning the hand-wheel 27 the tension on the spring 21 may be increased or diminished, and the ratchet-wheel will hold the hand-wheel, by means of the pawl, in any desired position of adjustment. I have provided the plate 11 with holes 14, through which any accumulation of wax between the plates 10 and 11 may escape.

Since it is desirable that as great a length of thread as possible should be clamped between the thread-engaging plates 10 and 11, so that the pressure on the thread per unit of length and the incident liability of squeezing the wax out of the thread may be proportionately diminished, and so that there shall be no tilting of the plates or crossing of the thread in the groove, I have so arranged the lead of the thread that it passes nearly but not quite around the whole periphery of the thread-truck. By reference to Fig. 1 it will be seen that the thread passes upward from the wax-pot around the guide-truck 15, freely mounted on the stud 16, secured in the arm 17, projected rearwardly from the frame 1 of the tension device. From the thread-roll 15 the thread passes down around the thread-truck 4 and up around the thread-truck 18, which is rotatably mounted on the stud 19, se-

cured in the arm 20, projected upwardly from the sleeve 9. The above arrangement is such that a pull upon the thread by the stitch-forming instrumentality tends to rotate the sleeve 9, and when rotated it operates to permit the sleeve 9 to move away from the thread-truck 4, thereby opening the clutch and permitting the plate 11 of the thread-truck 4 to move away from the plate 10 and releasing the thread, so that it may run off freely, and such that when the stitch-forming instrumentalities diminish their pull upon the thread the spring 21 rotates the sleeve 9 in the opposite direction and forces the sleeve 9 toward the thread-truck 4, thereby closing the clutch and holding the thread-truck from rotation and at the same time forcing the plate 11 toward the plate 10 to clamp and hold thread.

It is to be noted that by making the thread-truck in the manner hereinbefore described the parts thereof which come in contact with the waxed thread have no tendency to strip the wax off of the thread, as the thread simply passes over the pins 12, upon which it rests and lies between the opposite faces of the thread-engaging plates, and that when the plates are released from their clamping pressure the thread is released and may pay off from the truck without being deprived of its coating of wax. It is also to be noted that my invention is not limited to the employment of any particular means for restraining the thread-truck from rotation, as any suitable devices may be employed for that purpose without departing from the spirit of my invention. I have illustrated for this purpose the thread-truck-holding device of my former application hereinbefore referred to; but any usual or suitable device may be used in lieu thereof.

My invention in its broader aspect is not limited to the specific embodiment thereof hereinbefore described.

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

1. A thread-holder for sewing-machines, having, in combination, two oppositely-disposed rotatable thread-engaging plates, means for holding the plates from relative rotation, one of said plates being movable toward the other to clamp and hold the thread, and means for moving said plate, substantially as described.

2. A thread-holder for sewing-machines, having, in combination, two oppositely-disposed rotatable thread-engaging plates, a series of pins mounted in one plate near its periphery and projected into a corresponding series of holes in the other plate, acting to support the thread, and hold the plates from relative rotation, one of said plates being movable toward the other to clamp and hold the thread, and means for moving said plate, substantially as described.

3. A thread-holder for sewing-machines,

having, in combination two oppositely-disposed rotatable thread-engaging plates, one of which is movable toward the other to clamp and hold the thread, a clutch for holding the plates from rotation, and means for closing the clutch and moving the movable plate toward the other plate, substantially as described.

4. A thread-holder for sewing-machines, having, in combination, two oppositely-disposed rotatable thread-engaging plates, means for holding the plates from relative rotation, one of said plates being movable toward the other to clamp and hold the thread, a clutch to hold the plates from rotation, and means for closing the clutch and moving the movable plate toward the other plate, substantially as described.

5. A thread-holder for sewing-machines,

having, in combination, two oppositely-disposed rotatable thread-engaging plates, a series of pins mounted in one plate near its periphery and projected into a corresponding series of holes in the other plate, acting to support the thread and hold said plates from relative rotation, one of said plates being movable toward and from the other to clamp and hold the thread, a clutch for holding the plates from rotation, and means for closing the clutch and moving the movable plate toward the other plate, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HAROLD A. WEBSTER.

Witnesses:

FRED O. FISH,

WILLIAM A. SARGENT.