

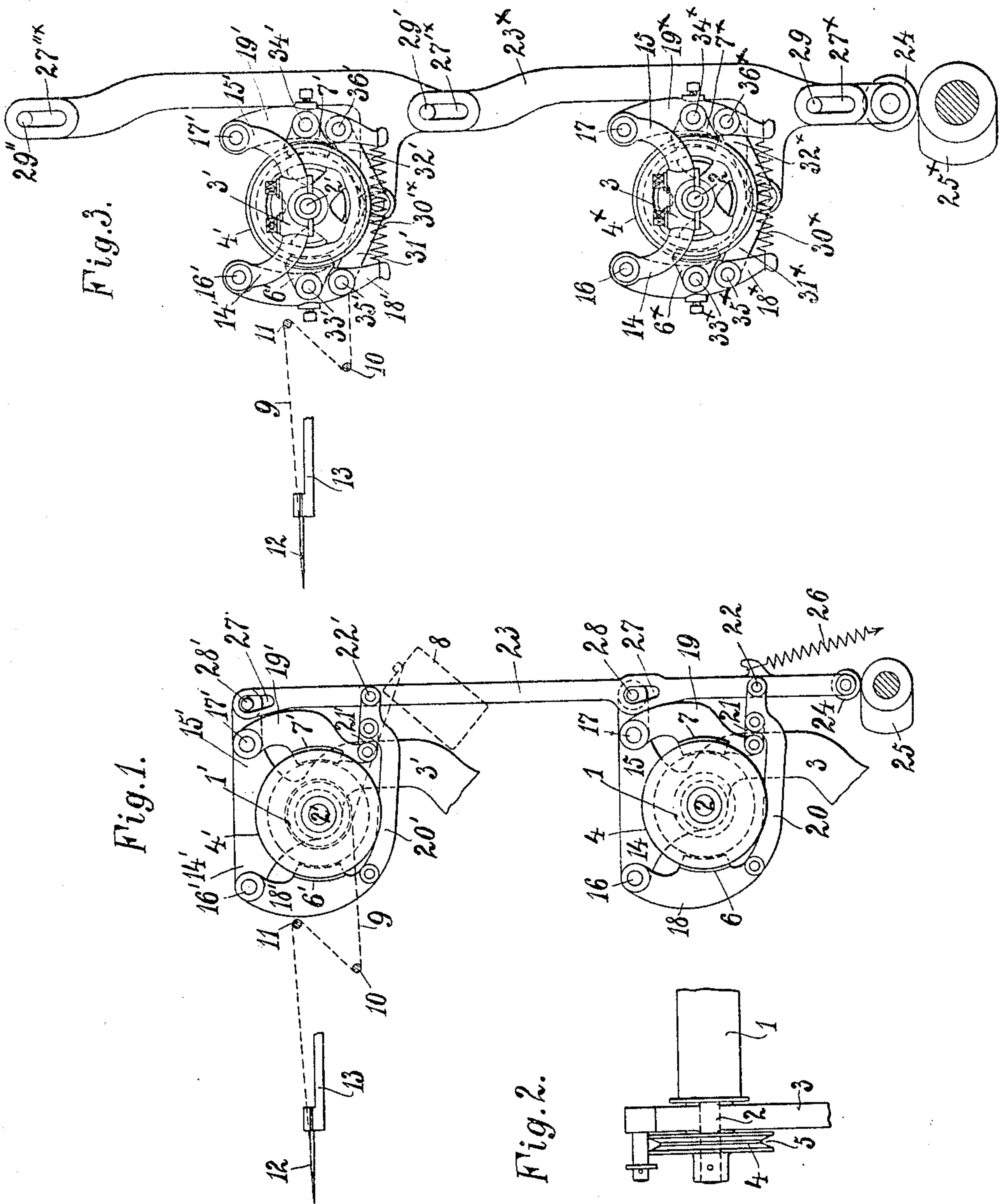
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TENSION DEVICE FOR THE THREAD DELIVERY ROLLERS IN EMBROIDERY MACHINES.

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Witnesses:  
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# UNITED STATES PATENT OFFICE.

ROBERT ZAHN, OF PLAUEN, GERMANY.

TENSION DEVICE FOR THE THREAD-DELIVERY ROLLERS IN EMBROIDERY-MACHINES.

No. 920,233.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed December 21, 1907. Serial No. 407,451.

*To all whom it may concern:*

Be it known that I, ROBERT ZAHN, a subject of the Emperor of Germany, residing at Plauen, Germany, have invented certain new and useful Improvements in Tension Devices for the Thread-Delivery Rollers in Embroidery-Machines, of which the following is a specification.

This invention relates to a tension or braking device for the thread delivery-rollers in embroidery machines and consists of several pairs of shoes or jaws which engage the tension disks of the thread delivery-rollers on two sides in a similar manner as a pair of pincers and are simultaneously opened and closed, for the purpose of causing the delivery-rollers to respectively be given free and held fast instantaneously.

In the accompanying drawings two forms of construction of the present invention are illustrated.

Figure 1 shows one form of construction in side-view. Fig. 2 is a front view representing part of the delivery-roller with the tension disk and its journal, and Fig. 3 is a side-view of another embodiment of the invention.

In both forms of construction 1 is the well known thread delivery roller supported by its journal 2 in the bearing 3. Fixed to said journal 2 is the tension disk 4, said parts 1, 2, 4 being rigidly connected to each other. This tension disk 4 is provided with an angular groove 5 adapted to be engaged from opposite sides by the jaws or shoes 6, 7.

As is well known the delivery-rollers 1 in embroidery machines are arranged above one another. The roller 1<sup>1</sup> is destined to hold the threads 9 arriving from the bobbin 8 fast at certain moments in the operation and then free them. The threads 9 pass over the two thread-guide rods 10, 11 to the needles 12 fixed to the needle-bar 13. The same parts 8, 9, 10, 11, 12, 13 are also applied to the lower delivery-roller 1, but are not represented in the drawing, for the sake of better understanding.

The bearing 3 at its upper part is provided with two laterally projecting parts 14, 15 to which the pins 16, 17 are fixed. Pivoted to these pins 16, 17 are the two jaw-levers 18, 19, the lower ends of which in Fig. 1 are connected to each other by way of the lever 20 and the connecting-link 21. Consequently when the end 22 of the lever 20 is raised, the

two jaws 6 and 7 are forced toward each other and the disk 4 with the delivery-roller 1 is held fast. However, if the end 22 of the lever 20 is lowered the levers 18, 19 are opened, the tension-disks are freed again, and the delivery roller is enabled to turn again.

The great advantage of the present device compared with former constructions consists in that it also acts very precisely and suddenly even after the journals 2 are worn out and have play in their bearings. The two levers 18, 19 respectively hold the tension-disk 4 fast and give it free again precisely at a certain moment, whether the bearing of journal 2 fits well or has become loose.

The action of the present device is brought about through the medium of the connecting-rod 23 pivoted at 22 and 22<sup>1</sup> to the lower rod 20 and the upper rod 20<sup>1</sup>; this rod 23, by way of the revoluble roller 24 is adapted to travel along the circumference of a cam-disk 25 and constantly drawn downward by a spring 26. The rod 23 is provided with slots 27 and 27<sup>1</sup> receiving the pins 28 or 28<sup>1</sup> fixed to the part 15 or 15<sup>1</sup> of the bearing 3, thus permitting the rod to move vertically and be loosely guided.

In the form of construction represented in Fig. 3 the connecting rod 23<sup>x</sup> is rectilinearly guided by means of the three slots 27<sup>x</sup>, 27<sup>1x</sup>, 27<sup>11x</sup> on the pins 29<sup>x</sup>, 29<sup>1x</sup>, 29<sup>11x</sup> fixed to the machine-frame. This embodiment differs from that shown in Fig. 1 in that a special spring 30<sup>x</sup> and 30<sup>1x</sup> is provided, adapted to draw the two jaw-levers 18<sup>x</sup>, 19<sup>x</sup> toward each other, and in that the pair of levers 31<sup>x</sup>, 32<sup>x</sup> serves for the purpose of forcing the levers 18<sup>x</sup>, 19<sup>x</sup> asunder. Now when the rod 23<sup>x</sup> is lowered by the cam-disk 25<sup>x</sup>, as shown in Fig. 3, the levers 31<sup>x</sup>, 32<sup>x</sup> move downward also, and the spring 30<sup>x</sup> draws the levers 18<sup>x</sup>, 19<sup>x</sup> toward each other so that the two jaws 6<sup>x</sup>, 7<sup>x</sup> fixed to the levers 18<sup>x</sup>, 19<sup>x</sup> by means of the pins 33<sup>x</sup>, 34<sup>x</sup> automatically engage the groove 5 of the disk 4<sup>x</sup> the jaws 6 and 7 being moved away from each other in substantially the same way as in the form seen in Fig. 1. For enabling the spring 30<sup>x</sup> to bring about this effect by itself the bearings 35<sup>x</sup>, 36<sup>x</sup> are drilled a little larger than the diameters of the pins 35<sup>x</sup>, 36<sup>x</sup>. In this way a very precise and uniform action of the device is insured.



Having thus described my invention what I claim is:

1. In a tension device for the thread-delivery rollers in embroidery machines, the combination of a thread-delivery roller a grooved disk rigidly connected thereto, pivoted levers arranged one on each side of said disk, a jaw fixed to each of said levers, means connecting the lower ends of said jaw-levers, a connecting rod for said pivoted levers for lifting and lowering the end of said means, and means for drawing said pivoted levers together.

2. In a tension device for the thread-delivery rollers in embroidering machines, the combination of a thread-delivery roller, a grooved disk rigidly connected thereto, pivoted levers arranged one on each side of said disk, a jaw fixed to each of said levers, and means pivotally connecting the ends of said levers for engaging said jaws in the groove of said disk and causing the latter to give free said disk again, means for drawing the lower ends of said pivoted levers together, lifting means and a vertically movable, loosely guided rod connected with said levers on opposite sides of said disk and a roller carried by one end of said rod for direct engagement with the lifting means.

3. In a tension device for the thread-delivery rollers in embroidery machines the combination of a thread-delivery-roller, means for passing thread to and from said

roller, a grooved disk rigidly connected thereto, pivoted levers arranged one on each side of said disk, a jaw fixed to each of said levers, levers for forcing said levers asunder, connecting the lower ends of said jaw levers, a spring for drawing the jaw levers together, a connecting rod loosely connected with said pivoted levers, a roller carried by the lower end thereof, a cam disk acting on said roller, said rod adapted to slide over the circumference of said disk and to be lifted and lowered thereby.

4. In a tension device for the thread-delivery rollers in embroidery machines, in combination a thread delivery roller, a grooved disk rigidly connected thereto, pivoted levers arranged one at each side of said disk respectively, a jaw fixed to each of said levers, a lever connecting the lower ends of said jaw-levers, adapted to force them asunder, a spring adapted to draw said jaw-levers toward each other, a rod connected to said lever and mounted for loosely guided vertical movement, a roller attached to said rod, a cam-disk, said rod adapted to slide over the circumference of said disk and to be lifted and lowered thereby.

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

ROBERT ZAHN.

Witnesses:

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ALOIS W. WITTMANN.