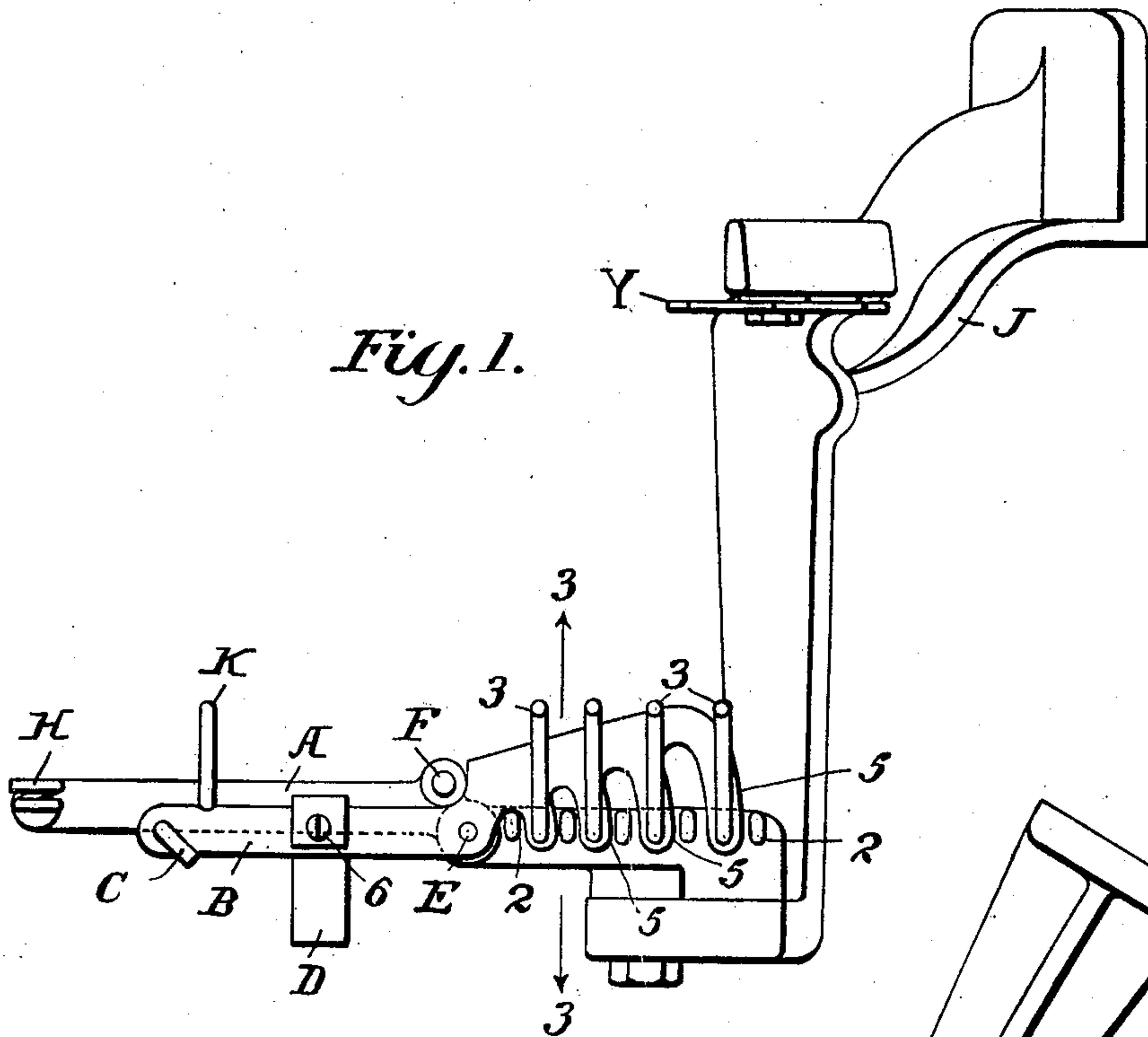


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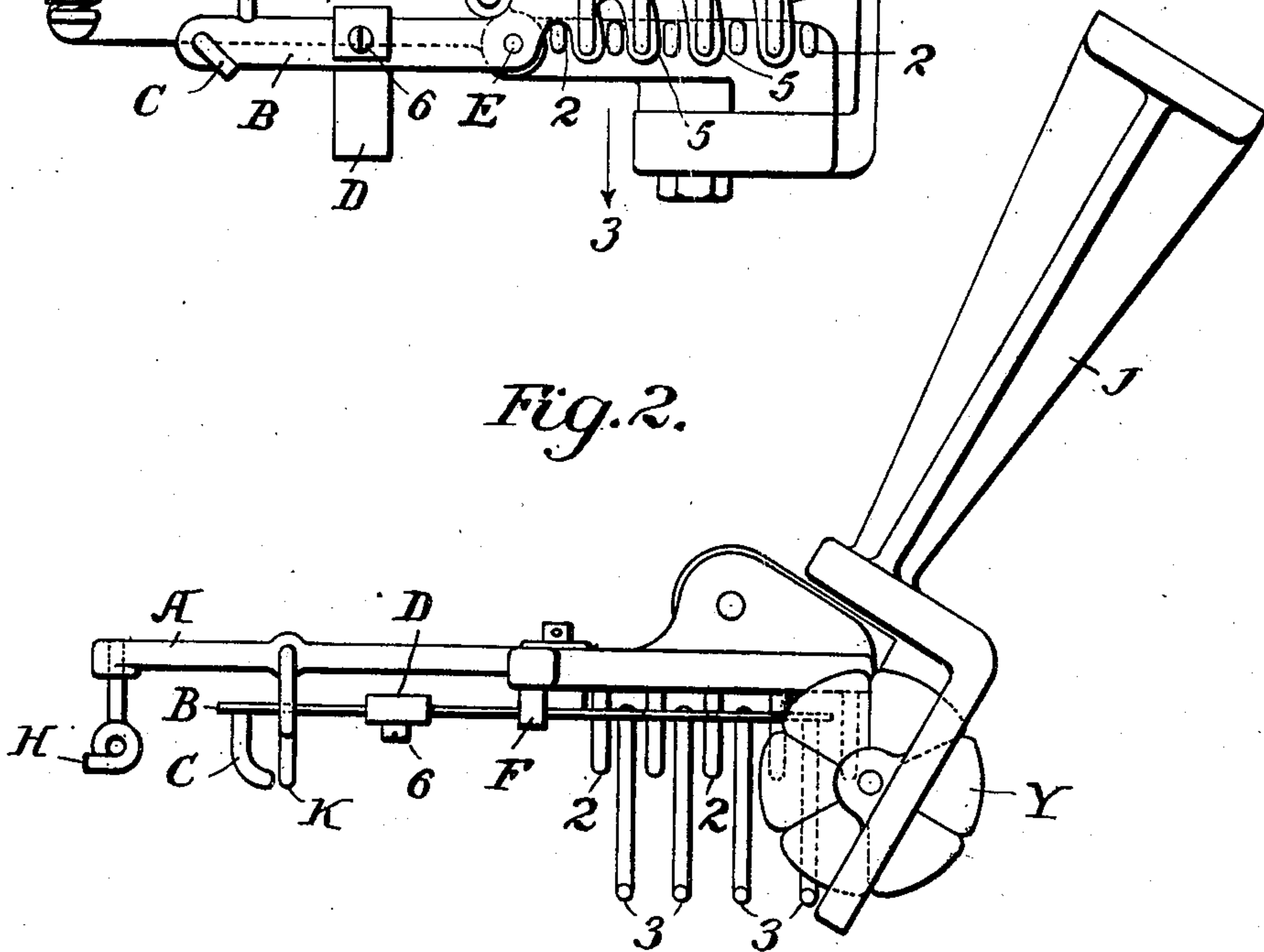
PATENTED AUG. 7, 1906.

G. W. FOSTER.  
TENSION DEVICE.  
APPLICATION FILED JULY 12, 1905.

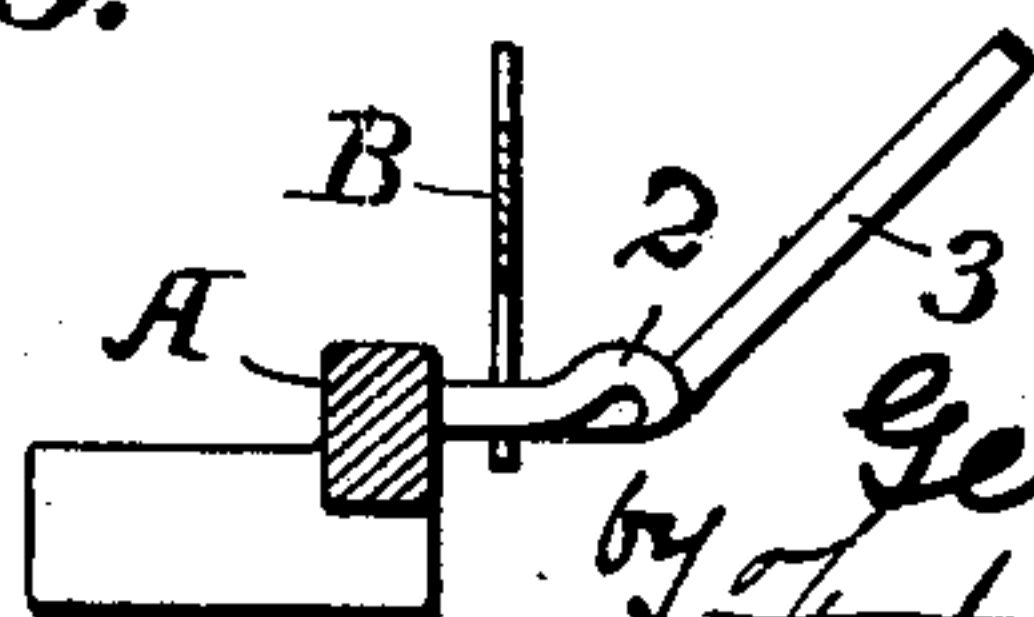
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

GEORGE W. FOSTER, OF PAWTUCKET, RHODE ISLAND.

## TENSION DEVICE.

No. 828,203.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed July 12, 1905. Serial No. 269,364.

*To all whom it may concern:*

Be it known that I, GEORGE W. FOSTER, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Tension Devices, of which the following is a specification.

This invention relates to tensions for winding and other machines, and has for its object to compensate for variations in tension resulting from uneven delivery when the thread is drawn from different parts of the spool or as the thread on the spool decreases; and the invention consists in the construction and arrangement fully set forth hereinafter and as shown in the accompanying drawings, in which—

Figure 1 is a side elevation of the improved device. Fig. 2 is a plan view. Fig. 3 is a section on the line 3 3, Fig. 1.

The parts are supported on a frame or bracket J, of any suitable construction, according to the character of the machine to which the device is to be applied. Adjustably attached to this frame is an arm A, from which extends a series of bars or fingers 2. Near the inner end and at the outer end is a thread-guide H and thread-supporting guide-wire K.

To one side of the arm A is pivoted by a pivot E a plate B, having a series of curved fingers 5, from which extend the bars or fingers 3, each bent upward at the outer end. The bars 3 can be carried upward between the bars 2 to an extent limited by a stop-pin F and with a force determined by the position or amount of a counterweight D. This may be a sectional weight, but, as shown, is a block secured adjustably on the plate by a set-screw 6. At the outer end of the plate B is a thread-guide or controlling-wire C. The thread is carried from the spool to the guide H, then beneath controlling-wire guide C, over the supporting-wire K, under the bars 2, and over the bars 3, and thence through the slot of a slub-catcher Y to the winding-spindle, the inclined ends of the bars 3 and wires K and C facilitating the threading of the yarn or thread.

When the loop or bend of yarn is delivering freely from the supply, the supporting

influence of the yarn beneath the wire C is lessened, and the weight D will carry the bars 3 upward between the bars 2, imparting a tortuous course to the thread, thus securing the friction determined by the adjustment of the counterweight.

When there is an abnormal resistance to the delivery of the thread, the latter will be tightened between the guide H and supporting-wire K, thus lifting the intermediate controlling-wire C, swinging the plate B and its bars 3 away from the bars 2, thus reducing the extent of bends in the thread and reducing the tension proportionately to the said resistance.

Without limiting myself to the construction shown, I claim—

1. The combination in a tension device, of a series of fixed bars, a pivoted plate carrying at one side of the pivot a series of bars alternating with the fixed bars, a guide on the plate on the opposite side of the pivot, and fixed guides arranged to form a loop or bend in the thread passing to the guide on the plate.

2. The combination in a tension device, of a series of fixed bars, a pivoted plate carrying at one side of the pivot a series of bars alternating with the fixed bars and bent upward at the ends, a guide on the plate on the opposite side of the pivot, and fixed guides arranged to form a loop or bend in the thread passing to the guide on the plate.

3. The combination in a tension device, of a series of fixed bars, a pivoted plate having fingers 5, carrying at one side of the pivot a series of bars alternating with the fixed bars, a guide on the plate on the opposite side of the pivot, and fixed guides arranged to form a loop or bend in the thread passing to the guide on the plate.

4. The combination in a tension device, of a series of fixed bars, a pivoted plate carrying at one side of the pivot a series of bars alternating with the fixed bars, a guide on the plate on the opposite side of the pivot, fixed guides arranged to form a loop or bend in the thread passing to the guide on the plate, and a weight movable on the plate between its pivot and the guide carried by the plate.

5. The combination with a tension device



having a series of bars and a pivoted lever  
carrying near one end a series of bars alter-  
nating with the fixed bars, of a thread-guide  
carried by the lever near the opposite end,  
5 and fixed guides arranged to form a bend in  
the thread passing therefrom to the guide on  
the lever.

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

GEORGE W. FOSTER.

Witnesses:

JOHN E. CANNING,  
FRED A. WILDE.