

(No Model.)

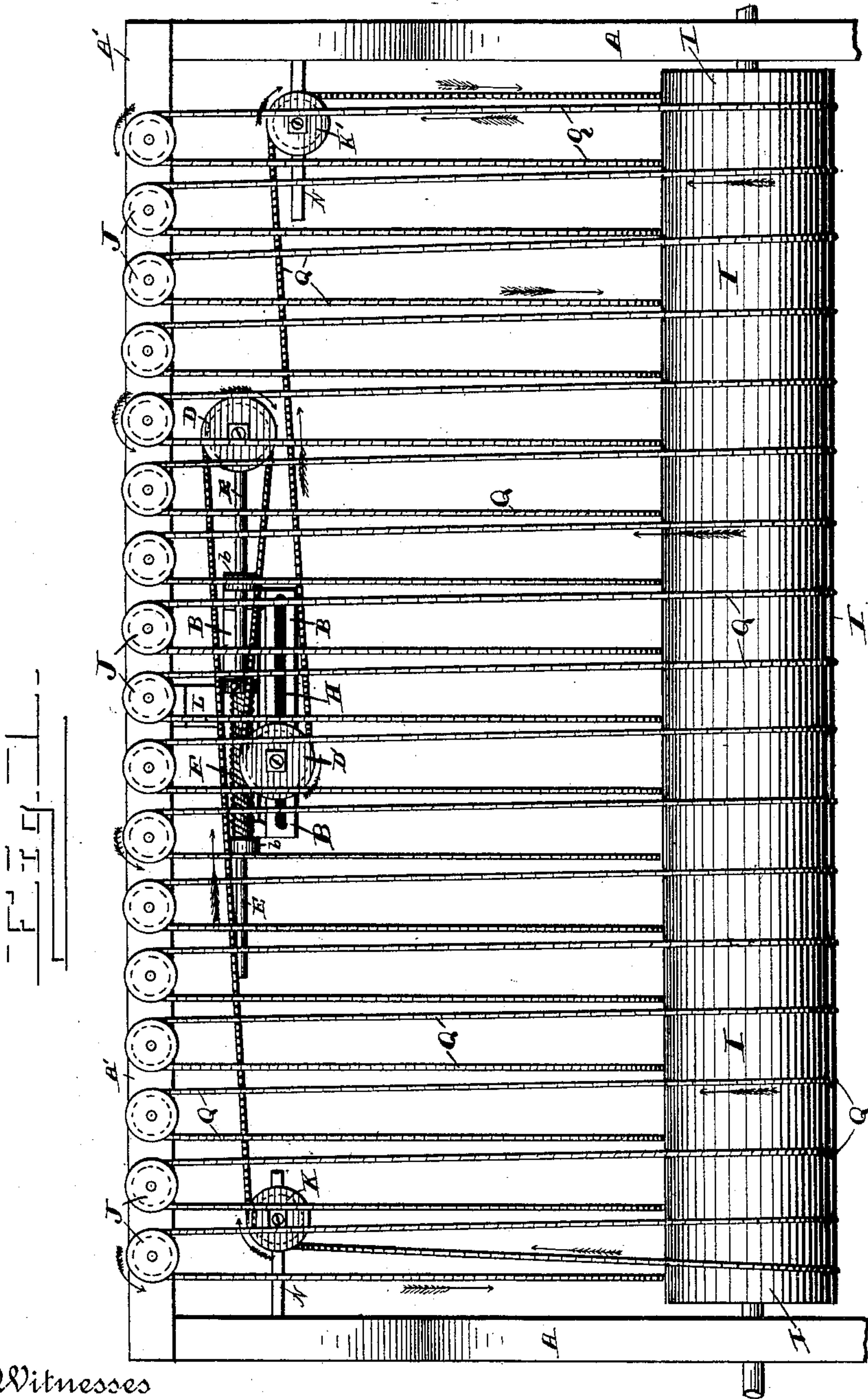
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TENSIONING DEVICE FOR ENDLESS BANDS OF SPINNING MACHINES.

No. 434,820.

Patented Aug. 19, 1890.



Witnesses

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A. E. Towell.

Inventor

Samuel Booth.

By his Attorney Alexander

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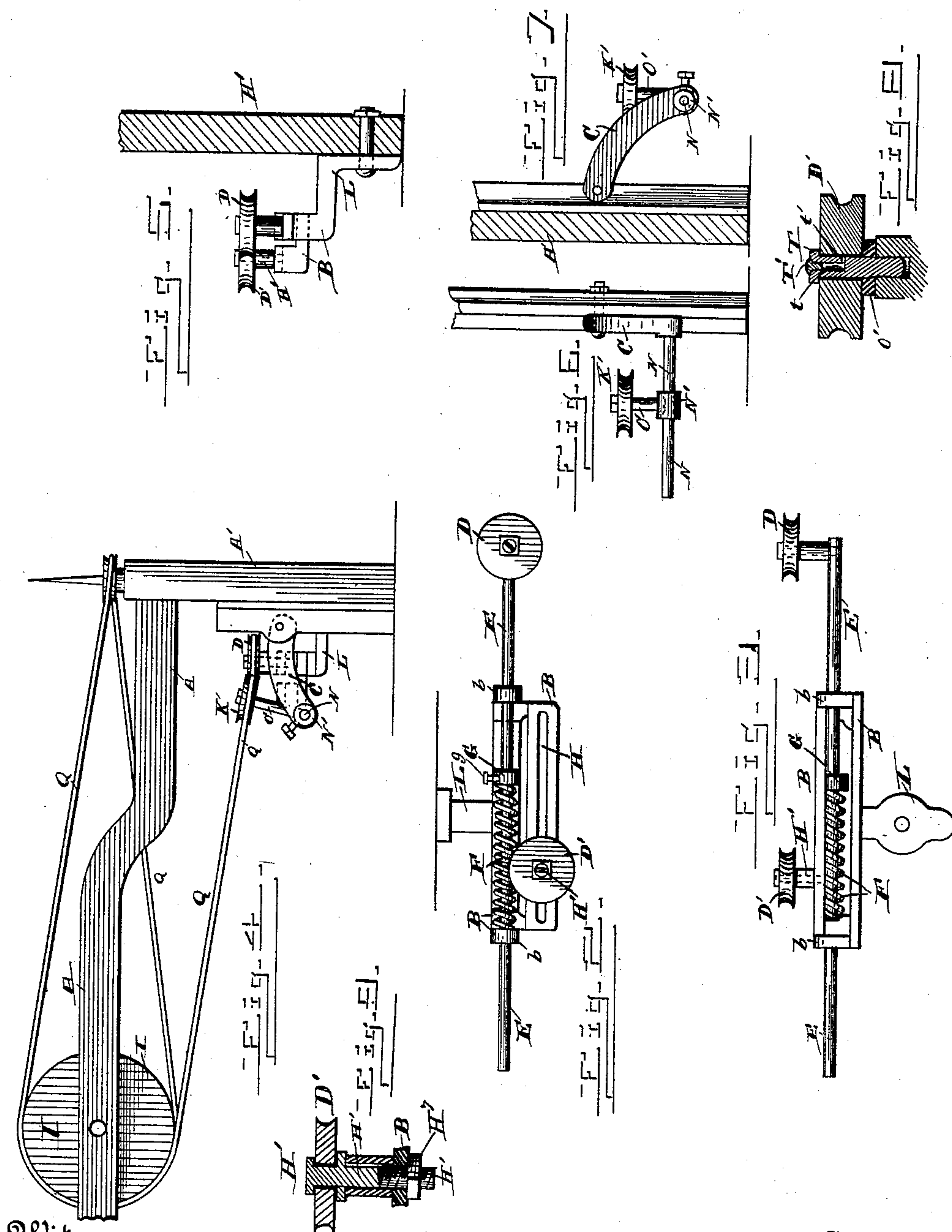
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UNITED STATES PATENT OFFICE.

SAMUEL BOOTH, OF CLINTON, MASSACHUSETTS.

TENSIONING DEVICE FOR ENDLESS BANDS OF SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 434,820, dated August 19, 1890.

Application filed October 9, 1889. Serial No. 326,361. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL BOOTH, of Clinton, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Tensioning Devices for Endless Bands of Spinning-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a detail plan view of the twisting-frame of a spinning-machine, showing the devices for driving the spindles and the tension device or regulator for the band thereof. Fig. 2 is a detail plan view of the regulator detached. Fig. 3 is a front view thereof; Fig. 4, an end view of the machine; Fig. 5, an enlarged end view of the tension device detached. Fig. 6 is a side view of one of the adjustable end pulleys for the band. Fig. 7 is an end view thereof. Fig. 8 is a detail sectional view of a journal-pin. Fig. 9 is a detail enlarged sectional view of the stud H' and its connection to frame B.

This invention is an improvement in spinning-machines, and it has especial reference to the spindle-driving devices of such machines, and its objects are to drive the several spindles on the twisting-frame equally and simultaneously by a continuous single band, and to automatically regulate the tension of said band at all times.

The invention consists, essentially, in a novel tension device or regulator for the band, having a movable pulley mounted on a spring-controlled shifting-rod, and another adjustable pulley which can be fixed in various positions with relation to the first pulley to primarily tension the band and take up slack therein, the band passing around both said pulleys between the ends of the main driving-cylinder, and the working-tension of the band is yieldingly maintained by the pressure of the spring controlling the movable pulley, the tension of the spring being regulated by an adjustable collar on the rod.

The invention further consists in combining with the tension device adjustable pulleys at the ends of the machine and cylinder

whereby chafing of the band upon itself is prevented, all of which will be hereinafter clearly described and claimed.

Referring to the drawings by letters, A designates portions of the main frame of a spinning-machine, and A' is a spindle-supporting bar, upon which is mounted a series of spindles J J, having whirls, as ordinarily arranged.

I designates the main drum or driving cylinder, driven by suitable devices, (not shown,) and Q designates a continuous band or belt, arranged, as hereinafter explained, to drive several spindles J directly from the said cylinder.

B designates a rectangular frame mounted upon a bracket L, bolted to the frame A, below the spindles J, and about centrally of the width of the machine, and lying between the spindles and cylinder, but below them. This frame B has two upstanding ears *b b* at its ends, which are perforated for the passage of a rod E, which plays longitudinally there-through and carries on one end a pulley D.

F is a coiled spring placed on rod E, preferably between the ears *b b*, and bearing against the ear *b* farthest from pulley D, and against a collar G, adjustably secured on rod E by a set-screw *g*. The object of this spring is to force rod E outward to further separate pulley D from the frame, or to prevent pulley D being moved inward toward the frame unless the spring is thereby tensioned, and obviously the spring could be placed in various positions on the frame and connected to the rod to effect this purpose. The inner side of frame B is longitudinally slotted at H, and H' is a stud engaging said slot and adjustable longitudinally of frame B, being secured by a nut H', as shown in Fig. 9, or in other convenient manner. Upon this stud is mounted a pulley D', standing in the same horizontal plane as pulley D.

CC designate inwardly-projecting arms, one of which is secured to each end of the main frame, and N N are rods secured to the free ends of arms C and projecting horizontally inward toward frame B.

N' N' are collars adjustably secured on rods N by set-screws N³ and having projecting studs O' rising from them, on the ends of

which are mounted pulleys K K', as shown. It will be observed that the pulleys K K' can be set in varying positions on rods N by adjusting the collars.

5 The band Q is continuous. But to describe its adjustment let it start from pulley K', pass under cylinder I, back over the same to the whirl of the first spindle J, thence back under and over the cylinder to the next spindle, and
10 so on until it has passed successively from the cylinder to each spindle-whirl and back; and from the last spindle J the band passes back under and over the cylinder to and partly around pulley K, passing thence to pulley D,
15 partly around the same, back to pulley D', partly around the latter, and then to pulley K', thus forming a continuous circuit. It will be observed that the band runs exactly similarly from each spindle to the cylinder, so
20 that all are uniformly speeded. The pulleys K K' lie below the cylinder and spindles; but owing to their peculiar mounting they can be properly adjusted to receive and direct the band from the cylinder to the regulator or
25 tensioning device. The band is tensioned in its passage from one end of the cylinder to the other after it has driven the spindles, so that no variation of tension on the band between any two spindles is caused, and the tension of the band at each end of the cylinder
30 is equal. In passing from pulley K' to K the band makes an N-loop around pulleys D D', the length of this loop being regulated by the adjustment of pulley D' and maintained with
35 uniform tension by the spring-controlled rod E and its pulley D, as is obvious from the drawings. The pulleys K K' can be adjusted on rods N, so as to prevent abrasion of the band where it passes itself and also to assist
40 in taking up slack in the band if it stretches more than can be readily compensated for by the pulleys D D'. The slack of the band being taken up at the middle of the frame instead of at the ends, the slipping of the belt
45 or band on the end of the spindles, which would produce defective work, is overcome. The pulley D' might be mounted like, but oppositely to, pulley D; but this I do not deem requisite.

50 In order to properly lubricate the pulleys D D' and K K', I mount or journal them on pins T, (shown in detail in Fig. 8,) which pins can be secured to the bar E, studs H' O', and to other pulley-supports.

55 In the ordinary machines of this class the sheaves or pulleys have nothing but ordinary oil-holes; and some have none, but depend entirely upon the oil working itself into the bearings, which results in a waste of oil and
60 gumming of the parts, as well as wear. By the use of pins T, I avoid these objections and thoroughly lubricate the pulley-bearings. Each pin has a bore t , closed at its lower end, and closed at top by a removable screw or cap
65 T', and at a proper point the pin is laterally perforated, as at t' , to permit the escape of oil from bore t to the exterior of the pin, and as

this perforation stands about centrally of the journal of the pulley, the oil will be delivered just where it is needed and without any possibility of its being thrown off or fouled by dust, and every particle of oil escaping is utilized to lubricate the pulley.

Having thus described my invention, I claim—

1. The combination of the cylinder, the pulleys opposite the ends thereof, the spindles, and the endless band passing around said pulleys, cylinder, and spindles, substantially as described, with a tension-regulating device for the band, comprising a frame, a longitudinally-movable rod mounted therein carrying a pulley, a spring arranged to move said rod to force the pulley from the frame, and means for adjusting the tension of said spring, and a pulley mounted on the frame, the band being looped around said pulleys in passing from one end of the cylinder to the other after having actuated the spindles, and being kept tensioned by the action of the spring-controlled rod, substantially as described.

2. The combination of the cylinder, the spindles, and the endless band, arranged substantially as described, with the pulleys K K' and the tension device between said pulleys, consisting of a frame, a longitudinally-movable rod mounted therein carrying a pulley D, and a spring acting to move said rod, a pulley D', the supports for pulley D', and the mechanism for adjusting said supports in the said frame, substantially as and for the purpose described.

3. The combination of the cylinder, the pulleys opposite the ends thereof, the spindles, and the endless band passing around them, substantially as described, with the longitudinally-movable spring-controlled rod E, mounted in a supporting-frame, a pulley D on said rod, an adjustable pulley D', mounted on the frame, and the means for adjusting the pulley D', all substantially as specified.

4. The herein-described tension device for the endless bands of spinning-machines, consisting of a frame, a longitudinally-movable spring-controlled rod E, mounted therein, a pulley D on one end of said rod, a pulley D', mounted on said frame, and the adjusting devices for said pulley D', all substantially as and for the purpose specified.

5. The combination of the cylinder, the spindles, the endless band passing from the cylinder to the spindles successively, the arms C, carrying rods N, the collars on said rods having upstanding studs, the pulleys on said studs, and the tensioning device interposed between said pulleys, substantially as described.

6. The combination of the cylinder, the series of spindles, and the pulleys opposite the ends of the cylinder, with a tensioning device consisting of a frame, a longitudinally-movable spring-controlled rod mounted therein, carrying a pulley on one end, a pulley mounted on a stud secured to the frame beside the

rod, and devices for adjusting said stud, and the belt passing from one end pulley to the cylinder and thence to the several spindles, substantially as described, to the opposite
5 end of the cylinder, and thence to the other end pulley, and thence to the pulleys on said frame and to the first end pulley, said band being tensioned by the action of the movable rod and its pulley, substantially as and for
10 the purpose specified.

7. In a spinning-machine, the cylinder, spindles, and endless band driving the spindles from the cylinder, substantially as described, in combination with the pulleys K
15 K' and a tensioning device consisting of a

frame B, having a slot H and the stud adjustably secured in said slot, said stud carrying a pulley D', and the longitudinally-movable rod E, mounted in said frame and carrying a pulley D, the spring controlling said rod, and
20 the collar G, all substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

SAMUEL BOOTH.

Witnesses:

THOMAS J. MORAN,
FRANK E. CARR.