No. 751,894. PATENTED FEB. 9, 1904.

M. T. BENTLEY.

BELT SHIFTER FOR SPINNING MACHINES.

APPLICATION FILED AUG. 12, 1903.

NO MODEL.

Fig. 1.

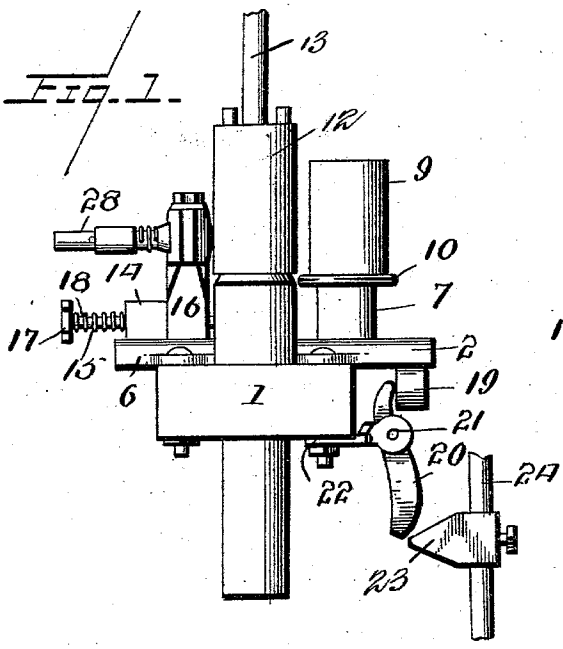
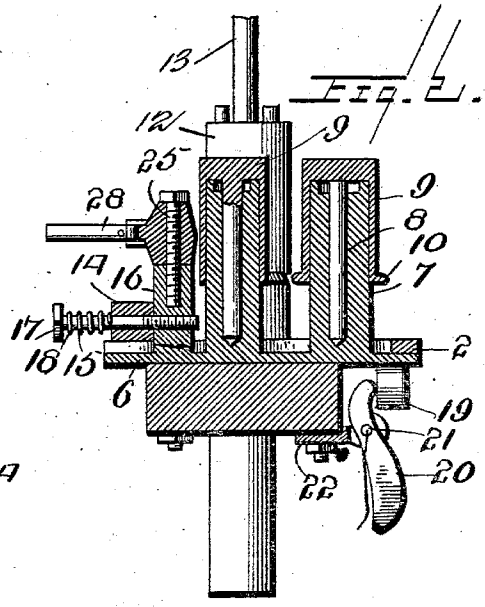


Fig. 2.



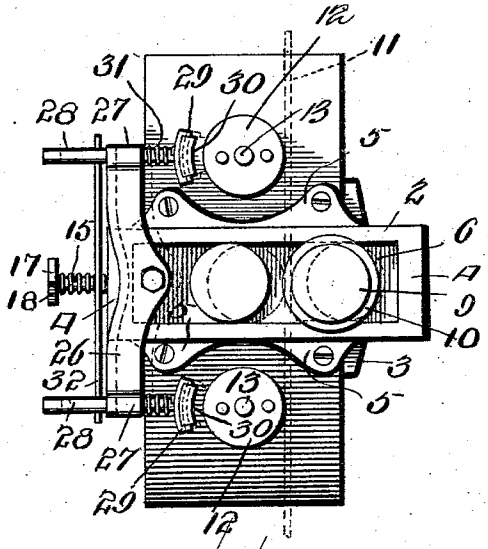


Fig. 3.

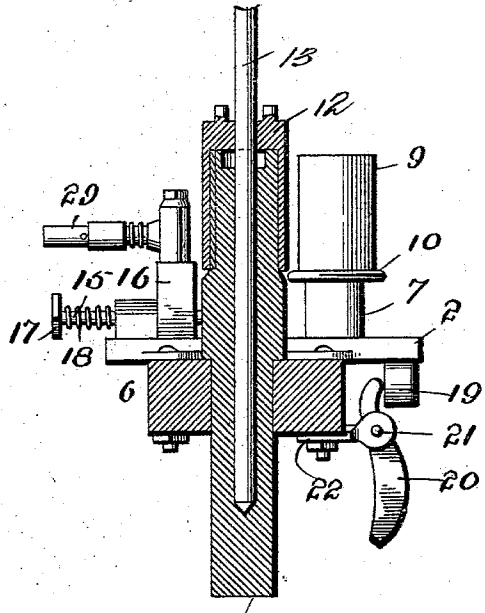


Fig. 4.

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UNITED STATES PATENT OFFICE.

MANTON T. BENTLEY, OF YORK, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO YORK SILK MANUFACTURING COMPANY, OF YORK, PENNSYLVANIA.

BELT-SHIFTER FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 751,894, dated February 9, 1904.

Application filed August 12, 1903. Serial No. 169,269. (No model.)

To all whom it may concern:

Be it known that I, MANTON T. BENTLEY, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented a certain new and useful Belt-Shifter for Spinning-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to belt-shifters for spinning-machines, the object of the invention being to provide a simple, durable, positive, and reliable device for automatically shifting the belt out of operative contact with the whirls of the spindles and at the same time applying a brake, the spindles being thus brought to a standstill whenever a thread breaks or a spool runs empty.

With the above general objects in view the invention consists in the novel construction, combination, and arrangement of parts, as hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a belt-shifter constructed in accordance with the present invention and shown applied to the spindle-whirls of a spinning-machine. Fig. 2 is a central vertical cross-section through the same. Fig. 3 is a plan view thereof, and Fig. 4 is a vertical cross-section taken in line with one of the spindles.

Like reference-numerals designate corresponding parts in all the figures of the drawings.

Referring to the drawings, 1 designates one of the stationary rails of a spinning-machine, upon which is mounted the belt-shifting device to be described.

The belt-shifting device comprises a base or holder 2 in the form of a rectangular frame comprising the sides 3 and ends 4, also the outwardly-projecting ears 5, by means of which the base or holder is secured firmly to the upper side of the rail 1. Within the base or holder 2 is arranged a slide 6, adapted to reciprocate lengthwise of the holder and transversely across the top of the rail 1. The side portions 3 of the holder are undercut or rabbeted to receive the side edges of the slide 6, which is thus guided in its reciprocatory movements within the holder. Extending upward from the slide 6 are tubular standards 7, in which are journaled the spindle portions 8 of a pair of guide-pulleys 9, one or both of which is provided at its lower end with a flange 10 for the purpose of limiting the downward movement of the driving-belt 11 of the spinning-machine. The guide-pulleys 9 are located a distance apart sufficient to receive the driving-belt 11 between them, and as the slide is moved in one direction or the other it will be obvious that that portion of the driving-belt which passes between the pulleys 9 will be deflected laterally in a direction corresponding with the direction of movement of the slide. The belt 11 normally works in driving contact with the whirls 12 of a pair of spindles 13, located at opposite sides of the belt-shifting device, as shown in Fig. 3, and mounted upon the rail 1 in the usual manner.

The base or holder 2 is provided at or near one end with a lug 14, through which passes a guiding-stem 15, connected at its inner end to a post 16, extending upwardly from the slide 6, as shown in Fig. 2. The stem 15 is provided at its outer end with a head or shoulder 17, while a coiled spring 18 encircles the stem 15 between the head 17 and the lug 14. The spring 18 serves by expansion to force and hold the slide 6 toward the lug 14, and thereby causes the outer guide-pulley 9 to bear against the driving-belt 11 and holds said belt in contact with the whirls 12, thus imparting motion to the whirls.

At the end opposite the post 16 the slide 6 is provided with a pendent lug or shoulder 19, against which the upper end of an operating or tappet lever 20 bears. This lever is fulcrumed at 21 intermediate its ends on a bracket 22, secured to the rail 1, as shown, while the lower arm of said lever, extending below the fulcrum 21, is suitably beveled along one edge, so as to be acted upon by a tappet 23, carried by a vertical reciprocating rod 24 on the spinning-machine. It may here be noted that the rod 24 is normally stationary, but is thrown

into operation or, in other words, moved upward upon the breakage of a thread. When such action takes place, the tappet 23 vibrates the tappet-lever 20, and the latter by coöperating with the lug 19 shifts the slide 6, and with it the guide-pulleys 9, with the result that the driving-belt 11 is moved laterally out of driving contact with the whirls 12, which actuate the spindles 13.

In connection with the belt-shifting mechanism hereinabove particularly described I employ means for braking or stopping the spindles simultaneously with the shifting of the belt. The brake mechanism consists of the post 16, which extends upward from the slide 6 and upon the upper end of which is journaled, by means of a pin, screw, or its equivalent 25, a brake-arm 26. Where two spindles are to be simultaneously acted upon by the brake, the brake-arm 26 is doubled or consists of two arms and is in the form of a cross-head, as shown in Fig. 3, the same being pivotally connected about centrally to the post 16 by means of the pin 25. Said double brake-arm is provided at its opposite end with slots 27, in which are slidingly mounted stems 28, provided at their inner ends with brake-shoes 29, which may be faced with rubber, leather, or other suitable material, as shown at 30, for direct frictional contact with the whirls 12. Spiral springs 31 encircle the stems 28 between the brake-shoes 29 and the slots 27 and hold the brake-shoes yieldingly toward the whirls, but normally out of contact therewith, the inward movements of the stems 28 being limited by means of a stop 32, shown for convenience in the form of a pin or rod extending through transverse openings in the stems. As the brake-arm is carried by the slide 6 whenever said slide is moved to shift the belt 11 out of engagement with the whirls 12, the brake-shoes are simultaneously moved into braking engagement with the whirls 12, thereby immediately stopping the latter. In case only one spindle, 13, is used, a single brake-arm is substituted for the double brake-arm 26, and such single brake-arm is rigidly connected to the post 16 instead of being pivotally connected therewith, as shown in the drawings and hereinabove described.

From the foregoing description it will be understood that when the belt-shifting device hereinabove described is used in connection with a spinning-machine the driving-belt is held normally in driving engagement with the spindles and that upon the breakage of the thread or yarn the stop mechanism of the machine acts upon the operating-lever of the belt-shifter to actuate the slide and throw the driving-belt out of engagement with said spindles. At the same time the brakes are applied to the spindles, bringing the same to a stop. This enables the attendant to reunite the broken ends of the thread or yarn preparatory to again starting the machine. The belt-shifter is also thrown into operation whenever a spool runs empty.

It is obvious that the construction hereinabove described is susceptible of changes in the form, proportion, and minor details of construction, which may accordingly be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new is—

1. A belt-shifter for spinning-machines comprising a slide, means controlled by the stop mechanism of the spinning-machine for actuating the slide in one direction, means for holding said slide with a yielding pressure in the opposite direction, and a guide-pulley on the slide for engaging the driving-belt and shifting the same out of contact with the spindles.

2. A belt-shifter for spinning-machines comprising a slide, means carried thereby and adapted to shift the driving-belt out of contact with the spindle, means controlled by the stop mechanism of the spinning-machine for reciprocating said slide, and a yielding brake-shoe carried by the slide, and arranged to come in contact with the spindle as the belt is shifted away from the spindle.

3. A belt-shifter for spinning-machines comprising a slide, means controlled by the stop mechanism of the spinning-machine for actuating said slide in one direction, means for holding said slide with a yielding pressure in the opposite direction, and guide-pulleys carried by the slide between which the driving-belt passes.

4. A belt-shifter for spinning-machines comprising a holder mounted on the machine-frame, a reciprocatory slide movable in the holder, belt-guide pulleys carried by the slide, a spring for urging the slide in a direction which will hold the driving-belt in engagement with the spindles, a lever controlled by the stop mechanism of the spinning-machine for throwing the slide in an opposite direction, and belt-guide pulleys carried by said slide and between which the driving-belt passes.

5. A belt-shifter for spinning-machines comprising a holder, a reciprocatory slide mounted therein, a stop-mechanism-actuated lever for throwing said slide in one direction, a spring device for throwing the slide in an opposite direction, and belt-pulleys carried by the slide and arranged adjacent to one of the spindles of the machine.

6. A combined belt-shifter and brake for spinning-machine spindles comprising a reciprocatory slide, guide-pulleys thereon, means for holding the slide in one direction with a yielding pressure so as to force the driving-belt against the spindles, stop-mechanism-controlled means for moving the slide in an opposite direction for throwing the belt off, and

a brake carried by the slide and comprising a yielding brake-shoe adapted to be moved into and out of contact with one of the spindles.

7. A belt-shifter for spinning-machines comprising a reciprocatory slide provided with guide-pulleys between which the driving-belt runs, spindles arranged at opposite sides of the slide, and a pivotally-mounted brake-arm provided with a plurality of yielding brake-shoes movable into and out of engagement with the spindles, substantially as described.

8. A belt-shifter for spinning-machines comprising a holder, belt-guide pulleys carried thereby, means for automatically shifting the slide back and forth, a double brake-arm pivotally mounted on the slide, brake-shoes having stems slidingly related to the double brake-arm, springs for urging the brake-shoes toward the machine-spindles, and means for limiting such movement whereby the brake-shoes are adapted to bear with a yielding pressure against the spindles, substantially as described.

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

MANTON T. BENTLEY.

Witnesses:
J. E. PHILLIPS,
J. HARRY WOOLRIDGE.