No. 798,254. PATENTED AUG. 29, 1905.

V. BÉLANGER.

SPINDLE.

APPLICATION FILED NOV. 4, 1903.

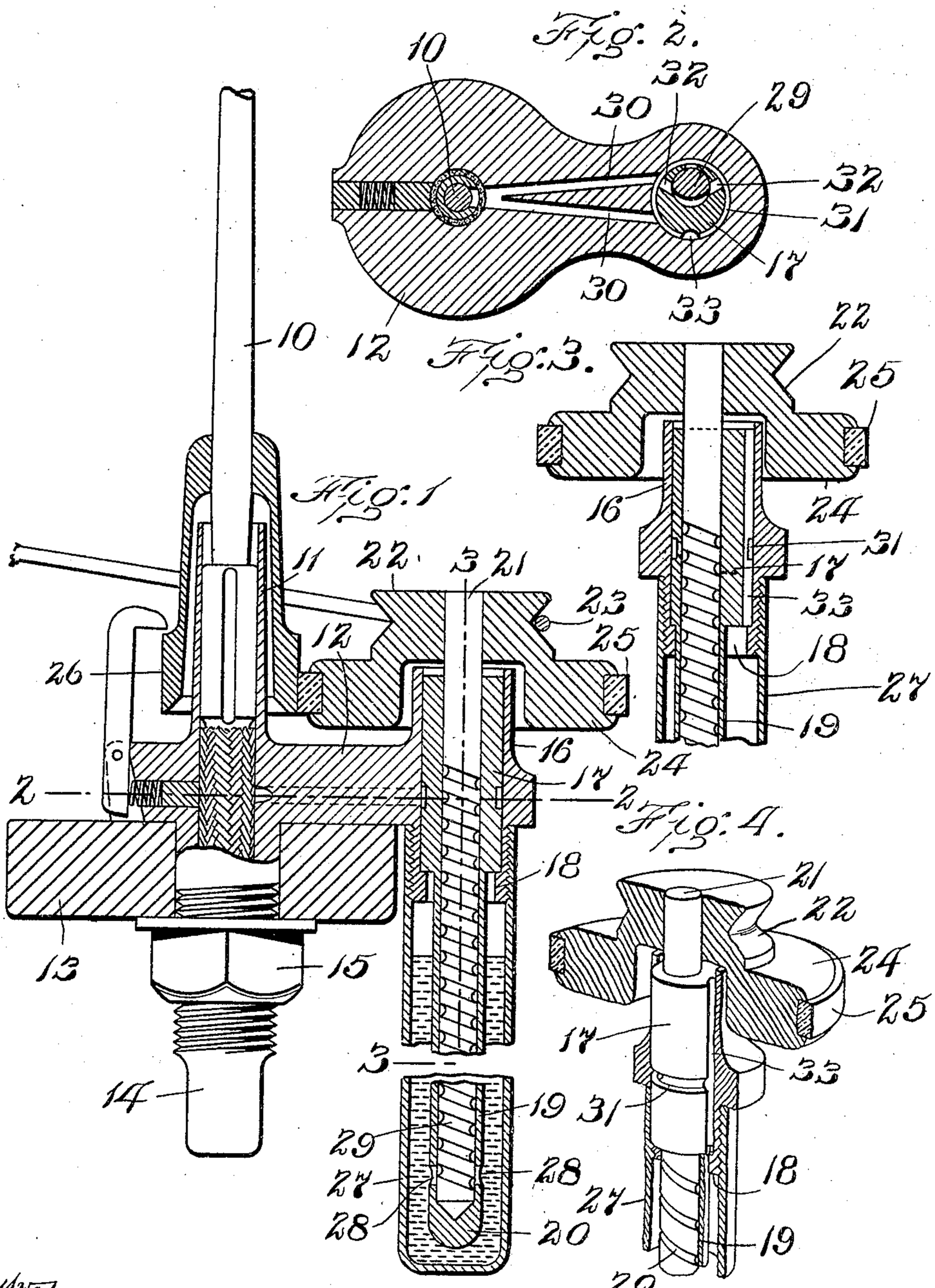

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses:

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SPINDLE.

No. 798,254. Specification of Letters Patent. Patented Aug. 29, 1905.

Application filed November 4, 1903. Serial No. 179,775.

To all whom it may concern:

Be it known that I, VICTOR BÈLANGER, of Seaview, in the town of Marshfield, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Spindles, of which the following is a specification.

This invention has relation to spinning-machines, and has for its object to produce mechanism by means of which the spindle-blade may be driven at a higher rate of speed than heretofore without a corresponding increase in the speed of the drum.

One of the chief difficulties met with in the attempt to increase the production of the frame by an increase in the speed of the spindles is that the rapid rotation of the drum so vibrates the rails that the operation of the travelers on the rings is disturbed and the yarn as a result is frequently broken.

According to the present invention the speed of the spindles may be greatly increased without increasing the speed of the drum by interposing between the spindles and the driving-band power-transmitting devices constructed and arranged to multiply the speed in translation.

On the accompanying drawings, Figure 1 represents an embodiment of the invention which illustrates a spindle, a driving-band, and a power-transmitting device. Fig. 2 represents a section on the line 2 2 of Fig. 1. Fig. 3 represents a section on the line 3 3 of Fig. 1. Fig. 4 represents in perspective view and partially in section a power-transmitting mechanism interposed between the band and the spindle.

Referring to the drawings, the spindle-blade is indicated at 10. It is journaled in the usual manner in the bearing 11, formed on the base 12. Said base is shown as supported upon a spindle-rail 13, being provided with an externally-threaded portion 14, which passes through said rail and upon which may be screwed a nut 15 for securing the spindle-base in place.

Contrary to the usual constructions, the spindle-base is provided with a forwardly-projecting portion, as shown in Fig. 2, which serves as a bearing 16 for the reception of an eccentric sleeve or bushing 17, the lower end of which rests upon the shoulders 18, formed at the lower end of the bearing 16. Formed on or secured to the eccentric sleeve or bushing 17 is a tube 19, which extends downwardly therefrom and is provided with a closed lower end 20. Placed within the sleeve 17 there is a shaft 21, whose upper end projects beyond the sleeve and beyond the bearing 16 to receive a driving whirl or pulley 22, which is rigidly secured thereto. This whirl or pulley is provided with a circumferential V-shaped groove and is adapted to be driven by the usual cord, band, or tape 23 from the driving-drum, forming a portion of the spinning-frame. To the pulley is secured, either by forming it integrally therewith or attaching it thereto, a driving member 24, having a shoe 25, of frictional material, for engaging and driving a member 26 on the spindle-blade 10. This member 26 takes the place of the usual whirl, which is attached to the blade.

It will be observed from Figs. 1, 2, and 3 that the major axis of the eccentric sleeve is substantially at right angles with a line connecting the shaft 21 with the blade 10. The purpose of this construction is that the tension of the band on the whirl may move the driving member or friction-wheel 24 bodily toward the spindle, so as to effect a firm frictional contact of the driving-wheel 24 with the wheel or member 26 on the spindle, and as the contacting surfaces become worn the tension of the band will be sufficient to move the friction-wheel still farther toward the blade, so as to compensate for wear. Furthermore, the rotation of the shaft 21 tends to rotate the eccentric sleeve 17, and thus carry the friction-wheel 24 toward the member 26 on the spindle. It will be observed that the ratio of the driving-wheel 24 with the driving-wheel 26 on the spindle is substantially as two to one, so that the spindle may be driven at twice the speed of the pulley 23. This ratio, however, may be varied to suit particular requirements.

The lower portion of the bearing 16 is exteriorly threaded for the reception of an elongated oil-cup 27. This cup entirely surrounds the tube 19, and said tube communicates therewith by the ports 28 28 in the lower end thereof, as shown. Oil is inserted in the well after withdrawing the eccentric sleeve and the shaft 21. The shaft 21 is provided with a helical groove 29, so as to lift the oil in the lower end of the tube 19 vertically until it reaches ducts 30 30, which extend from the bearing 11 for the spindle to the bearing 16 for the sleeve 17. The said sleeve 17 is further provided with a peripheral groove 31 in the same plane as the ducts 30

and also with substantially radial ducts 32 32, so that oil carried up through the bore of said sleeve will pass outward through ducts 30 30 to the spindle for the lubrication thereof. In order that the surplus lubricant may be returned to the well, the eccentric sleeve 17 is provided with a groove 33 substantially parallel to its axis, as shown in Figs. 2 and 4.

From the foregoing description it is apparent that by the construction illustrated a spindle may be driven at a high rate of speed without increasing the speed of movement of the driving-bands or drum, that the friction-wheel 24 may be automatically adjusted toward and from the spindle without disturbing the parallel relation of the axes of the said wheel and spindle, and that the parts are thoroughly lubricated, so that there is no danger of heating.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. In a ring-spinning machine, the combination with a spindle having a wheel, of a whirl adapted to be driven by a band, a driving-wheel connected to said whirl, and provisions whereby said driving-wheel rotates the spindle-wheel at an accelerated speed.

2. In a ring-spinning machine, the combination of a spindle, a spindle-base, a band-driven spindle-driving wheel, a wheel connected to said spindle to rotate therewith and being smaller in diameter than said driving-wheel in consequence of which the spindle is driven at an accelerated speed, and provisions whereby said base affords a bearing for said wheel and said whirl.

3. In a ring-spinning machine, the combination of a spindle, a band, a whirl driven by said band and arranged out of axial alinement with the spindle, and speed-multiplying power-transmitting mechanism intervening between said whirl and said spindle.

4. In a ring-spinning machine, the combination of a spindle, a spindle-base, a relatively small wheel on said spindle, a relatively large power-transmitting wheel for driving the spindle-wheel mounted on said base, and means for rotating said power-transmitting wheel.

5. In a ring-spinning machine, the combination of a spindle, a driven member on said spindle, a driving-band, and speed-multiplying power-transmitting devices actuated by said band for driving said spindle member at an accelerated speed, said devices being loosely mounted whereby they are maintained in engagement with the spindle member by the tension of the driving-band.

6. In a ring-spinning machine, the combination of a spindle, a spindle-driving wheel mounted on an axis parallel with the axis of said spindle, a driving-band, and a loosely-journaled rotary eccentric member on which said wheel is mounted, whereby said wheel is bodily movable toward the spindle under the stress of the driving-band.

7. In a ring-spinning machine, the combination of a spindle, a driving-wheel, a driving-band engaging said wheel and speed-multiplying power-transmitting devices between said driving-wheel and the wheel on the spindle, and provisions whereby said driving-wheel is held yieldingly against said spindle-wheel under the tension of the driving-band.

8. In a ring-spinning machine, the combination with a driving-band, of a spindle, a spindle-driving wheel having its axis substantially parallel to that of the spindle, and provisions whereby said band moves said wheel bodily and rectilinearly relatively to said spindle.

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

VICTOR BÈLANGER.

Witnesses:
C. F. Brown,
P. W. Pezzetti.