(No Model.)

# J. DUFFY.

## DUPLEX SPINDLE.

No. 489,292. Patented Jan. 3, 1893.

Fig: 1.

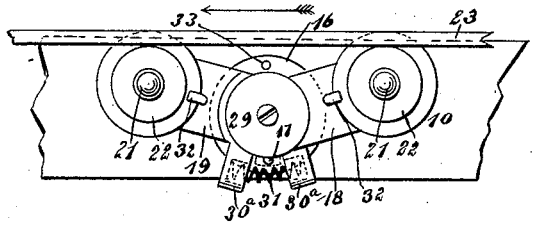



Fig: 3.

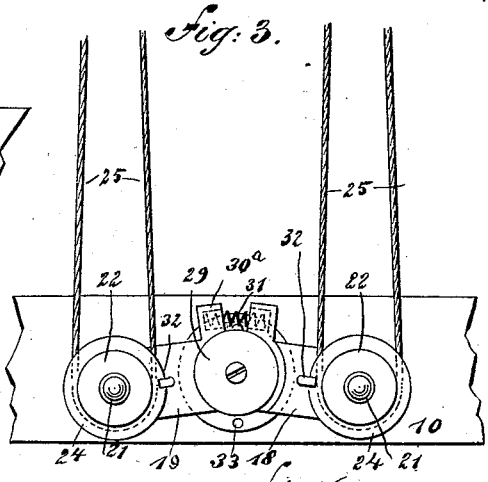



Fig: 4.

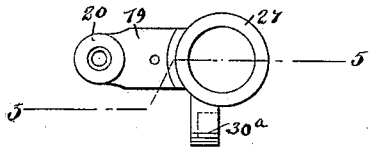



Fig: 6.

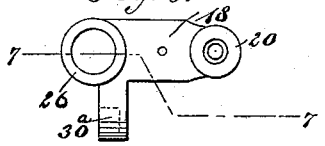



Fig: 5.

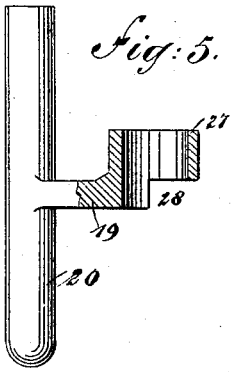



Fig: 7.

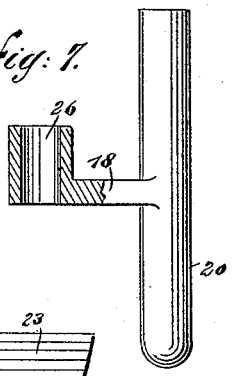
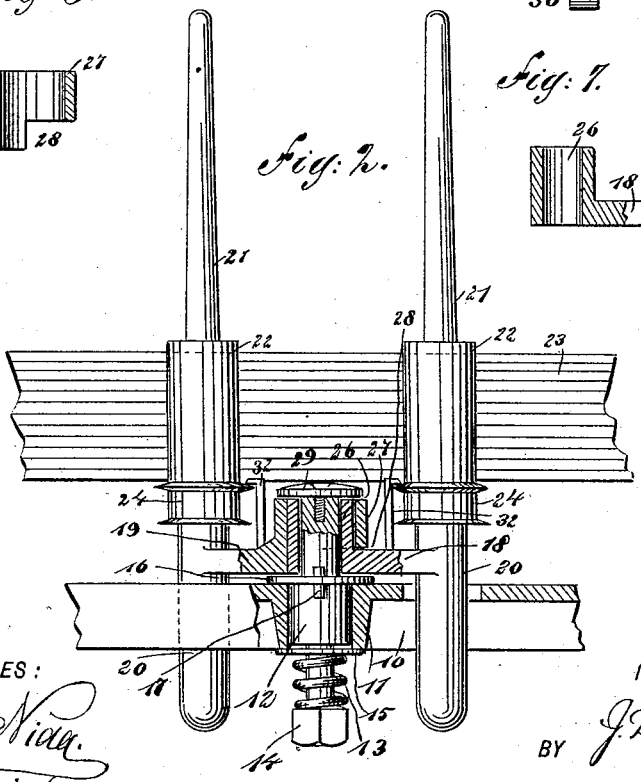



Fig: 2.

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# UNITED STATES PATENT OFFICE.

JOSEPH DUFFY, OF PATERSON, NEW JERSEY.

## DUPLEX SPINDLE.

SPECIFICATION forming part of Letters Patent No. 489,292, dated January 3, 1893.

Application filed March 23, 1892. Serial No. 426,043. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH DUFFY, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and Improved Duplex Spindle, of which the following is a full, clear, and exact description.

My invention relates to improvements in duplex spindles of the kind shown in Letters Patent of the United States issued to me January 27, 1891, No. 445,500. Spindles of this class which are arranged in pairs and driven by either belts or continuous bands, and in fact, the ordinary spindles driven by the usual belts have different rates of speed, and are driven with different power, owing to the change in tension of the belts or bands, this change being usually produced by different atmospheric conditions. It is essential to good work that the spindles of a spinning frame be driven with substantially the same speed and power and the object of my invention is to provide means for accomplishing this result, which result I attain by arranging the spindles in pairs and providing a spring mechanism which will take up the slack of the belts or bands and cause the several spindles to press the bands or belts with equal friction.

To this end my invention consists in a duplex spindle, the construction of which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the device embodying my invention showing a pair of spindles driven by a continuous band of the kind described in my former patent above referred to; Fig. 2 is a side elevation of the same with the middle portion of the bolster shown in vertical section; Fig. 3 is a plan of the spindles as driven by independent belts; Fig. 4 is a detail plan view of one of the bolster arms and the sleeve and spring socket connected therewith; Fig. 5 is a vertical section on the line 5—5 in Fig. 4; Fig. 6 is a plan view of the opposite bolster arm; and Fig. 7 is a vertical section on the line 7—7 in Fig. 6.

In the drawings the rail 10, of the spinning frame is provided with a socket 11, in which the trunnion 12, of the spindle bolster is held, the proper tension of the trunnion being effected by a spring 13, which is coiled around a bolt 14, projecting from the under side of the trunnion, the lower end of the spring pressing against the bolt head, and the upper end against the washer 15, which engages frictionally the lower end of the socket 11. This construction is of the common kind and is shown in my patent referred to above.

The trunnion is provided with a flange 16, which turns flatwise on the rail and this flange is provided with a pin 17, which extends vertically through it, and which is adapted to enter a slot in the rail and limit the oscillation of the bolster. The bolster which carries the spindles is provided with two oppositely-extending arms 18 and 19, these arms being each provided at the outer end with a socket 20, held in an aperture of the rail and adapted to support the spindle 21. The spindles 21 are provided at their lower ends with exterior plain whirls 22, adapted to fit against a continuous movable band 23, and beneath these plain whirls are grooved whirls 24, adapted to be driven by independent belts 25, as shown in Fig. 3. The spindles are journaled in the sockets 20 in the manner described in my former patent. The inner end of the arm 18 terminates in a sleeve 26 which is journaled on the vertical trunnion 12, as shown in Fig. 2, and the arm 19 of the bolster also terminates in a sleeve 27, which is adapted to fit upon the sleeve 26, as shown in Fig. 2 and to enable the two arms to have the requisite movement in relation to each other, the inner lower edge of the sleeve 27 is cut away as shown at 28, and the arm 18 projects through this cut away portion. The arms of the bolster are prevented from rising by a cap 29, which is screwed to the top of the trunnion 12 and overlaps the sleeves 26 and 27. The arms 18 and 19 have near their inner ends and at the bottoms of the sleeves 26 and 27, forwardly-extending socketed lugs $30^a$, which extend nearly parallel with each other, and which receive and support a spiral spring 31, the tension of which normally throws the sockets apart, as in Fig. 1. It will thus be seen that where the band 23 is used to drive the spindles, the pressure of the spring 31 will force the whirls 22 against the band, and the pressure of the spring will cause the whirls to fol-

low the undulations of the band, and they will both press upon it with equal pressure, and consequently both will be driven with the same speed and power. Where independent belts are used, the lugs 30ª and spring 31 are arranged so as to extend between the belts, as in Fig. 3, and the pressure of the spring will thus be against the pull of the belts, and the action will be the same as that above described; that is to say, the spring will press the bolster arms so as to hold the whirls 24 in close contact with the belts. The entire bolster is permitted to have a slight oscillating movement which is limited by the pin 17, and from the foregoing description, it will be seen that the speed and power of the spindles cannot vary.

In the drawings, I have shown the usual hooks 32, to prevent the spindles from rising, and by reference to Fig. 1, it will be seen that there is a pin hole 33, in one side of the flange 16, the pin hole being diametrically opposite the pin 17. The purpose of this is to enable the bolster to be properly centered before the pin 17 is applied. To do this, a pin is driven through the pin hole 33 and into the rail and the pressure of the belts 25 or of the band will cause the bolster to assume its proper position after which the pin 17 may be inserted.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent,—

1. A duplex spindle comprising a trunnion or support, and spindle carrying arms mounted loosely on the said trunnion or support as a common center and projecting from opposite sides of the same, substantially as described.

2. In a duplex spindle, the bolster comprising a central trunnion or support, and oppositely-extending spring-pressed arms journaled on the trunnion as a common center, the arms having their outer ends adapted to support spindles, substantially as described.

3. In a duplex spindle, the bolster comprising a central trunnion, oppositely extending arms journaled upon the trunnion as a common center, and adapted to oscillate thereon, the arms having their outer ends adapted to carry spindles, laterally-extending lugs extending from near the inner ends of the arms, and a spring held between the lugs, substantially as described.

4. In a duplex spindle, the bolster comprising a central trunnion or support, oppositely-extending arms having their inner ends terminating in sleeves journaled on the trunnion and their outer ends provided with spindle carrying sockets, lugs extending laterally from the arms, a spring arranged between the lugs, and means for limiting the oscillation of the bolster, substantially as described.

5. In a duplex spindle, the bolster comprising spindle carrying arms, journaled on a common center, and a spring pressing the arms against the tension of their driving belt, substantially as described.

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Witnesses:
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