(No Model.) 2 Sheets—Sheet 1.

E. WHITTUM.

SEPARATOR MECHANISM FOR SPINNING FRAMES.

No. 491,276. Patented Feb. 7, 1893.

Fig. 2.

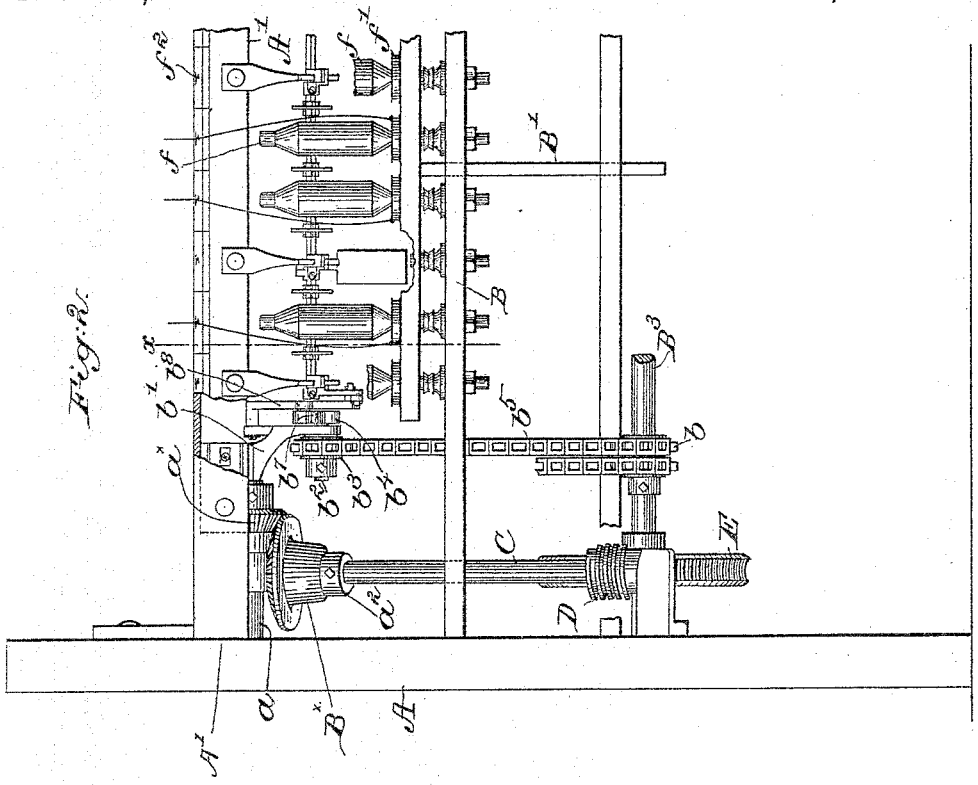
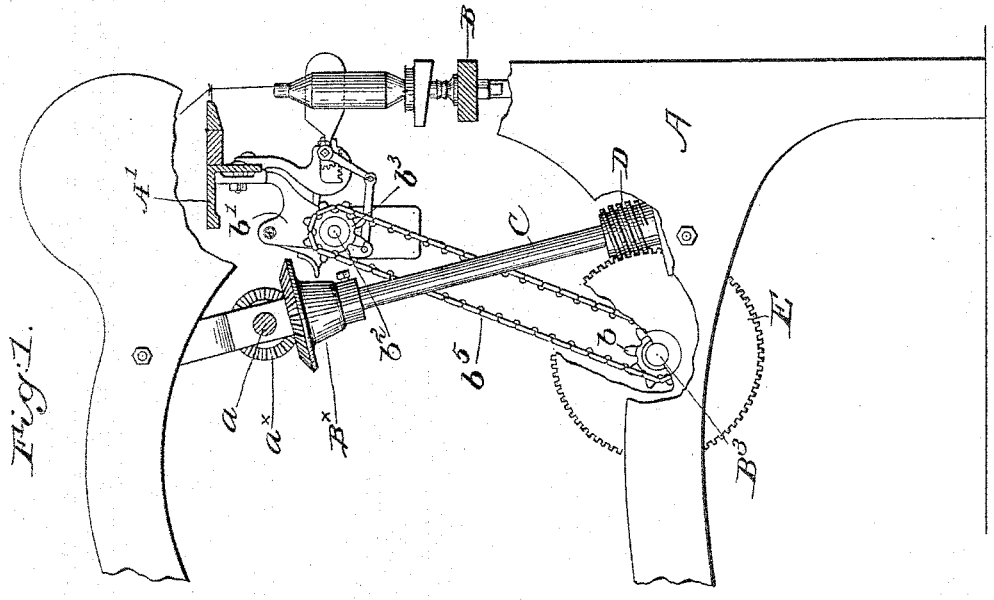


Fig. 1.



Witnesses.
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Samuel D. Lawton.

Inventor:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

E. WHITTUM.

SEPARATOR MECHANISM FOR SPINNING FRAMES.

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Fig: 3

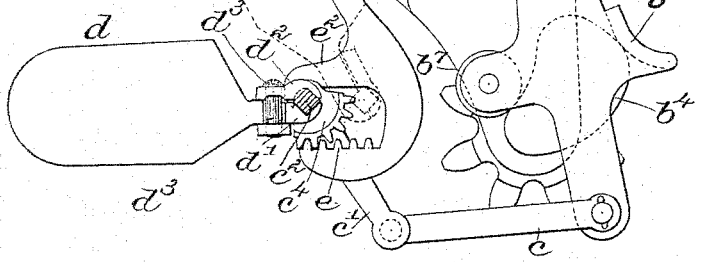


Fig: 4.

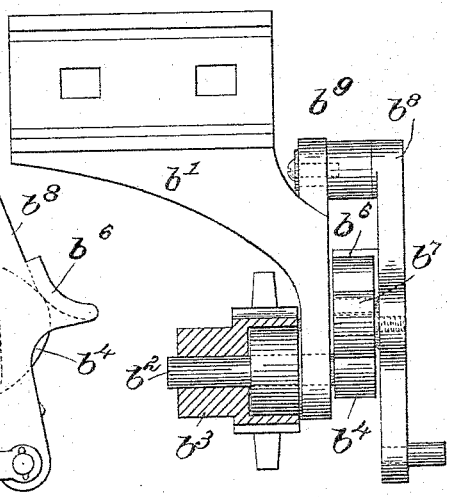


Fig: 5.

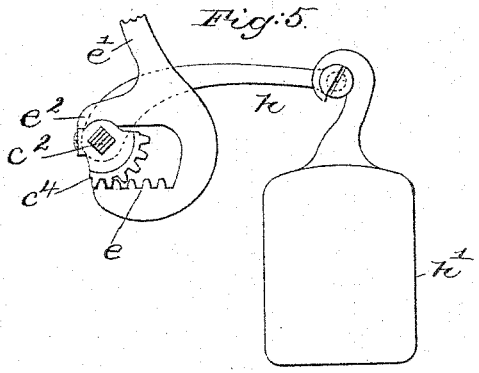


Fig: 6.

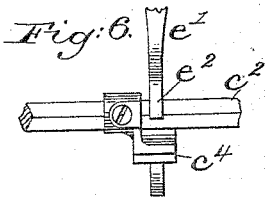
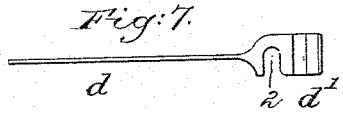


Fig: 7.



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UNITED STATES PATENT OFFICE.

EDWARD WHITTUM, OF FALL RIVER, MASSACHUSETTS.

SEPARATOR MECHANISM FOR SPINNING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 491,276, dated February 7, 1893.

Application filed March 28, 1892. Serial No. 426,647. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WHITTUM, of Fall River, county of Bristol, State of Massachusetts, have invented an Improvement in Separator Mechanism for Spinning-Frames, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

My invention has for its object to provide improved and simplified means by which to support and actuate the separators employed between adjacent spindles and bobbins.

In accordance with my invention, the hubs of the separators are clamped upon a tumbling shaft preferably other than round in cross section, and preferably a shaft square in cross section, as such a shaft enables the separator hubs to be easily and cheaply confined very securely in place. This tumbling shaft has attached to it at suitable intervals toothed legs, preferably made in segments, the teeth of which mesh with and ride on a rack supported by a stand shown as depending from the front side of the usual roller beam, a suitable finger crossing the tumbling shaft and preventing the escape of its toothed legs from the rack. The tumbling shaft has an arm, which arm is connected by a link to an arm of a lever pivoted on a suitable stand and actuated positively in both directions of its movement by a suitable cam deriving its movement of rotation from the builder-cam shaft through suitable intermediate connections, preferably a sprocket-chain and sprocket-wheels.

Figure 1, is an end view of a sufficient part of a spinning or twisting frame to enable my invention to be understood, the frame being partially broken out to show parts behind it. Fig. 2, is a partial front elevation. Fig. 3, a section in the line x, Fig. 2, to the left. Fig. 4, a partial left-hand view of the parts shown in Fig. 3, with the separator and its supports removed, the sprocket-wheel being in section. Fig. 5, is a detail showing the tumbling shaft, one of its toothed legs, and the stand and weight device. Fig. 6, is a view of the parts shown in Fig. 5, looking from the left; with arm and weight removed. Fig. 7, is a top or plan view of a separator blade and hub, showing notch for bolt.

I have chosen herein to illustrate my invention as applied to the form of machine represented in United States Patent No. 465,217, dated December 15, 1891, so herein the frame A, the spindle rail B, the lifting rod B′, the builder or heart cam shaft B^3, the worm gear E thereon, the worm D, the shaft C, provided with the bevel pinion $B^\times$, and engaging a bevel gear $a^\times$ on the shaft a, and the roller beam A′ are and may be all as represented in said patent wherein like devices are shown marked by like letters of references.

In my invention I apply to the heart cam shaft B^3 a sprocket gear b, and to the inner side of the roller beam I attach a stand b' having bearings for a short shaft b^2 provided near one end with a sprocket gear b^3 and at its other end with a cam b^4, the sprocket chain b^5 extended over the said sprocket gears rotating said shaft in unison with the movements of the ring rail, which may be made to rise and fall as provided for in said patent, or in any other usual or suitable manner. The cam b^4, best shown in Fig. 3, is of such shape that while the separators are being elevated in advance of the rising ring rail and are returning to their normal position, the said cam will contact with both a lip b^6 and a roller-stud b^7 carried by a lever b^8 pivoted at b^9 on the stand b', the latter being suitably bolted to the inner side of the roller beam A′ so that the said lever is moved by the said cam positively in both of its directions. The lever b^8 has jointed to it a link c in turn jointed to an arm c' operatively connected with the tumbling shaft c^2 to which are secured the series of separators d, the said arms being preferably fixed to or forming part of the toothed legs c^4, to be described. Each separator has at its inner end a semi-hub d' notched to embrace the under side of the said shaft which in cross section is preferably other than round, preferably square, the cap d^2 being secured to the hub d' by a suitable bolt d^3, thus confining each separator in proper position on the shaft. This tumbling shaft carrying the series of separators has secured to it at suitable intervals toothed legs c^4 made as sectors, which ride on and mesh with teeth or racks e of stands e' shown as depending from the front side of the roller beam, the said stands

having suitable fingers or projections e^2 to overlap the shaft and prevent the legs from leaving the racks.

In the use of separators where the ring rail has to lift the separators, it has been found that the contact of the rail with and to lift the series of separators adds so great a weight to the rising rail as to momentarily check the uniform speed of the rail, and consequently the yarn or thread is wound a little closer at that time leaving a harder or raised ring in the mass of yarn, which is objectionable, and further, the addition of this extra load wears the lifting rod and its bearings unevenly.

In my invention the separators are lifted positively by means independent of the ring rail, and just before the ring rail in its ascent touches the separators. The separators are lifted just in advance of the contact with them of the ring rails, and as the rail is lowered the separators are lowered, following the ring rail until the separators reach substantially the position shown in Fig. 1, when their farther downward position is arrested.

When the separators are to be raised, the cam b^4 in its rotation acts on the roller stud b^7 to swing the lever b^8 in the direction of the arrow in Fig. 3, and the lever b^8 link c and arm c', cause the tumbling shaft to be turned and the toothed legs c^4 to run over the racks e, the separators d during such movement rising in the arc of a circle in advance of the rising ring rail, the separators continuing to rise until the ring rail has reached the height of its traverse, the dotted lines in Fig. 3 showing one of the separators fully elevated. As the ring rail descends, the cam b^4 by its contact with the lip b^6 and the roller stud b^7 insures the positive descent of the separators.

The connections shown for imparting movement to the tumbling shaft work well and are simple, yet this invention is not limited to the exact devices shown for imparting motion to the said shaft to enable its toothed legs to travel on the tracks.

While I prefer for positive movements to use the sprocket chain, yet I may use a belt of other usual construction.

The spindles carrying the bobbins f, and the rings f' may be of any usual construction, as may be the thread guides f^2.

It will be understood that the parts shown will in practice be duplicated at opposite sides of the spinning or twisting frames, yet the separators at both sides the frame may be moved by links or connections actuated by one and the same lever b^8.

One great advantage of my invention, as above described, lies in the facility for the ready and cheap application of the separators to the shaft carrying them, and it will be noticed that the shaft is substantially square and that the rear end of the separator has a notch to fit substantially one half the said shaft c^2 while the cap having a like notch overlaps the other half of the said shaft and is connected to the hub d' of the separator by a single bolt. The tightening of this bolt firmly clamps the separator on its carrying bar.

By the employment of a shaft other than round, and embracing the same by a notched part of the separator and a cap piece, the separators may always be kept unerringly in line and any separator may be quickly applied to or removed from the shaft c^2 or be adjusted thereon. It will also be seen that I have provided a counterbalancing device, shown as an arm h, and a weight h' to substantially counterbalance the weight of the separators so that the cam b^4 may be run with the minimum of power. The inner end of each separator near where it embraces the shaft c^2 is shown as notched as at 2, see Fig. 7, to thus enable the bolt d^3 to be readily slipped into the notch laterally. This saves boring a hole and tends to cheapness of construction. The cap d^2, in practice, has a hole for the said bolt. In practice the cam b^4 will preferably be formed as an enlarged part of the shaft b^2.

Having described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a spinning frame a series of separators attached to a tumbling shaft having a series of toothed legs secured thereto, combined with a series of toothed racks for the said legs, and devices to turn the said shaft independently of the ring rail and cause the said toothed legs to travel on the said racks and the separators to rise in advance of the ring rail, substantially as described.

2. In a spinning frame, the stand b'; the shaft b^2 and cam b^4 thereon, and a lever shaped substantially as described to embrace and be actuated positively to and fro by the said cam, combined with a separator carrying shaft, and connections between said lever and shaft to oscillate the shaft positively in both directions of its movement for the purposes set forth.

3. The heart shaft B^3, the rotating shaft b^2 located above the ring rail and having a cam b^4, and devices between the said shafts to rotate the shaft b^2 and shafts to rotate the said cam; combined with a separator carrying shaft; its series of separators; a lever actuated positively by the said cam, and intermediate connectors between said lever and said separator carrying shaft whereby the separators are lifted in advance of and without aid from the ring rail, substantially as described.

4. A separator carrying shaft, shaped substantially as shown and described in cross section, and a series of separators having their inner ends notched to partially embrace said shaft, combined with a series of caps notched to embrace the opposite side of the said shaft, and means to connect the said caps to the separators and effect the clamping of the separators on the said shaft, substantially as described.

5. A separator carrying shaft shaped substantially as shown and described in cross

section; and a series of separators having their inner ends notched to partially embrace said shaft, and notched to receive a bolt, combined with a series of caps notched to embrace the opposite side of the said shaft, and a bolt to connect the said caps to the separators and effect the clamping of the separators on the said shaft, substantially as described.

6. In a spinning frame, a series of separators attached to a tumbling shaft having a series of toothed legs; and counterbalancing devices secured thereto; combined with a series of toothed racks for the said legs; and devices to turn the said shaft independently of the ring rail and cause the said toothed legs to travel on the said racks and the separators to rise in advance of the ring rail, substantially as described.

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

EDWARD WHITTUM.

Witnesses:

SAMUEL D. LAWTON,

GEORGE E. BAMFORD.