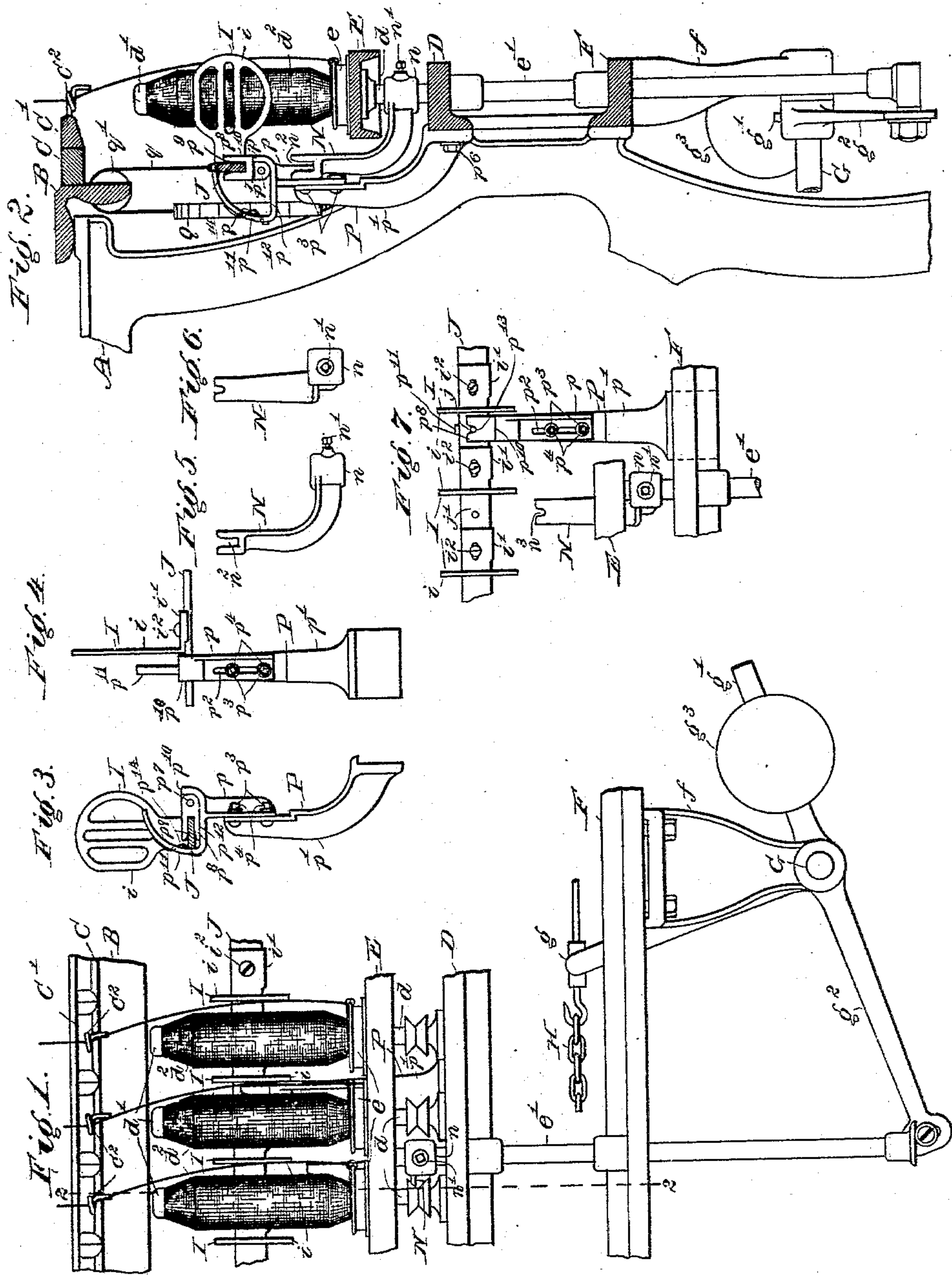


(No Model.)

G. E. CHANDLER.
YARN SEPARATOR FOR SPINNING FRAMES.

No. 553,102.

Patented Jan. 14, 1896



WITNESSES.

Kirkley Hyde.

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UNITED STATES PATENT OFFICE.

GEORGE E. CHANDLER, OF FALL RIVER, MASSACHUSETTS.

YARN-SEPARATOR FOR SPINNING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 553,102, dated January 14, 1896.

Application filed April 18, 1893. Serial No. 470,819. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. CHANDLER, a citizen of the United States, residing at Fall River, in the county of Bristol and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Yarn-Separators for Spinning-Frames, of which the following is a specification.

My invention relates to yarn-separators for spinning-frames; and it consists in the devices and combinations hereinafter described and claimed, the principal objects of said invention being to lessen the cost of the separating devices, to enable them to be applied readily to any spinning-frames without alteration of said frame, and said invention including means of partly counterbalancing the weight of the separators and separator-bar, means of regulating the upper and lower limits of the traverse of the separators, and means for moving the separators out from between the bobbins for the purpose of doffing.

In the accompanying drawings, Figure 1 is a front elevation of parts of a ring-spinning frame, showing the roller-beam, thread-board, finger-board, ring-rail, spindle-rail, guide-rail, a lifting-rod, the cross-shaft and its arms and weight, a part of the chain which actuates said rock-shaft in one direction and a part of the rod which connects the upper arms of the different cross-shafts, showing also spindles, bobbins, cops, showing also the separator-bar, separators, and one of the separator-lifting brackets attached to said lifting-rod; Fig. 2, a vertical section on the line 2 2 in Fig. 1, showing also a side elevation of a part of the frame, the counterbalancing-weights and their pulley; Fig. 3, a side elevation of one of the adjustable separator-supporting brackets and a vertical cross-section of a separator-bar, showing in side elevation a separator attached thereto, in the position it occupies in doffing; Fig. 4, a front elevation of the parts shown in Fig. 3; Fig. 5, a side elevation, and Fig. 6 a front elevation, of the separator-lifting bracket; Fig. 7, a front elevation of a part of a spindle-rail, part of a ring-rail and lifting-rod, part of a separator-bar, separators secured thereto, a separator-lifting bracket and a separator-supporting bracket.

The frame A, roller-beam B, thread-board

C, finger-board C', yarn-guides C², spindle-rail D, spindles *d*, supported on said rail, bobbins *d'*, on which the yarn is wound in the form of cops *d*², the ring-rail E, spinning-rings supported on said ring-rail, the lifting-rod *e'*, guided vertically in the spindle-rail D and guide-rail F and with other such rods (only one being shown) supporting the ring-rail E, the cross-shaft G, supported in brackets *f*, secured to the guide-rails at opposite sides of the machine, said cross-shaft having arms, one, *g*, of which is connected to the building-chain H to rock said cross-shaft arm in one direction, another, *g'*, of said arms carrying a weight *g*³ to rock said cross-shaft in the other direction, and the third, *g*², of said cross-shaft arms reaching under the lifting-rod *e'* to raise the ring-rail when the cross-shaft arm is rocked by the descent of its weighted arm *g'*. These parts are all of the usual construction and operation and form no part of my invention.

The separator I is a thin blade *i* of sheet metal having a shank *i'* secured to a horizontal separator-bar J by means of a screw *i*², substantially as shown in United States Patent No. 476,731, granted June 7, 1892, to Alfred D. Chandler. The separators I may be the same in form as those described in said patent, or of the form shown in the drawings, the shape of said separators not forming any part of my invention, but being the invention of said Alfred D. Chandler. In the patent referred to the separator-bar J is represented as being raised by the direct action of the same cross-shaft arm on vertical rods (therein called "separator-rods") similar to the lifting-rods E which support the ring-rail, these separator-rods having adjustable feet and adjustable collars which, with said separator-rods, the separator-bar, the sockets which connect said separator-bar and separator-rods and the separators secured to said separator-bar, as shown in said patent, impose an extra duty upon the cross-shaft during a portion of the traverse of the ring-rail and have some tendency to cause an uneven traverse of said ring-rail at the time when said separator-rods and the parts supported thereby begin to traverse. I dispense with these separator-rods and raise the separator-bar J and attached separators I by means of lifting-brackets N, the same be-

ing provided with sleeves n , each having a sliding fit on a lifting-rod e' and adjustably supported on said lifting-rod by a set-screw n' which turns in said sleeve n against said lifting-rod. Each bracket N , of which there are as many as there are lifting-rods, is curved upward and backward, as shown in Figs. 2 and 5, from a horizontal to a vertical position, and is provided in its upper end above the ring-rail E with a vertical slot n^2 of a suitable size to receive the separator-bar J when the latter is in position for use and said lifting-bracket rises high enough to raise said separator-bar off the supporting-bracket P , (hereinafter described,) on which said separator-bar rests during the operation of doffing and during the first part of the upward movement of the ring-rail.

Evidently the limit of the upward movement of the separator-bar and separators may be varied by varying the distance of the collar n from the under side of the ring-rail. The supporting-bracket P is formed in two parts p p' , one of which is provided with a vertical slot p^2 , through which bolts p^3 are driven into the other of said parts, said slot p^2 being long enough to allow, when the nuts p^4 on said bolts p^3 are loosened, a considerable vertical adjustment of the upper part, p , on the lower part, p' , to vary the lower limit of the traverse of said separators. The lower part of the bracket P is rigidly secured by bolts p^6 to the spindle-rail D .

To the top of the part p of the bracket P is pivoted, at p^7 , a fork p^8 or slotted piece which normally stands vertically, as shown in Fig. 2, the slot p^9 in said fork being of a suitable size to receive said separator-bar J and to allow the same to be raised out of said slot p^9 by the above-described action of the lifting-bracket N . The top of the upper part of the bracket P is provided with a vertical front stop p^{10} , which prevents the fork p^8 from falling forward from the vertical position, with a back stop p^{11} , which prevents the separator-bar from being removed from said fork when the separators I are in the position for doffing, (shown in Fig. 3,) and with a horizontal stop p^{12} or table on which said fork rests when said separators are in their vertical or doffing position. The back stop p^{11} is also curved forward, as shown in Figs. 2 and 3, concentrically with the pivot of the fork p^8 far enough to prevent the separator-bar from being removed from said fork, except when the separators are in their horizontal or working position.

The separator-bar is held in position for doffing by the friction thereon of a leaf-spring p^{14} , secured to said back stop, as shown in Figs. 2 and 3.

The separator-bar is prevented from any longitudinal movement, and the proper lateral intervals between the separators I and the bobbins d' are maintained by pins j , which project from the front or the rear face or from

both the front and the rear faces of said separator-bar and enter and loosely fit notches p^{13} in the top of the fork p^8 , and by other similar pins j' , which enter and loosely fit similar notches n^3 in the top of the lifting-bracket N , one set of the pins j or j' being at all times in engagement with their appropriate notches p^{13} or n^3 .

The weight of the separator-bar J and separators I is so small and so nearly counterbalanced by the weights Q , connected by a cord q , chains or other flexible connections passing over pulleys q' journaled on the roller-beam B , that very little power is required to raise them, the excess of the weight of said bar J and separators I over that of the weights Q being just sufficient to cause said bar J and separators to move with the lifting-bracket N in its descent until said bar is stopped by the fork p^8 .

I claim as my invention—

1. The combination of the separator-bar, separators secured thereto, the ring-rail, a lifting-rod, a lifting-bracket, secured to said lifting-rod and movable therewith and adapted to engage said separator-bar, and a stationary supporting-bracket, to receive said separator-bar, in the descent of said lifting-bracket, as and for the purpose specified.

2. The combination of the separator-bar, separators secured thereto, the ring-rail, a lifting-rod, a lifting-bracket, secured to said lifting-rod and movable therewith and adapted to engage said separator-bar, and a stationary supporting-bracket provided with a slot to receive said separator-bar in the descent of said lifting-bracket, as and for the purpose specified.

3. The combination of the separator-bar, separators secured thereto, the ring-rail, a lifting-rod, a lifting-bracket, secured to said lifting-rod and movable therewith and provided with a slot to receive said separator-bar, and a stationary supporting bracket, to receive said separator-bar in the descent of said lifting-bracket, as and for the purpose specified.

4. The combination of the separator-bar, separators, secured thereto, the ring-rail, a lifting-rod, a lifting-bracket, secured to said lifting-rod and movable therewith and adapted to engage said separator-bar, and a stationary supporting-bracket, adapted to engage and stop said separator-bar in the descent of said lifting-bracket, the engaging surfaces of said brackets being vertically-adjustable, to limit the traverse of said separator-bar and separators in either direction, as and for the purpose specified.

5. The combination of the separator-bar, provided with a pin, separators, secured to said bar, the spindle-rail, spindles, the lifting-rod, the ring-rail, rings, supported on said ring-rail, and a lifting-bracket secured to said lifting-rod and adapted to engage and raise said separator-bar and provided with a

notch to receive said pin, to prevent an end-wise movement of said separator-bar and separators, as and for the purpose specified.

6. The combination of the separator-bar, 5 provided with a pin, separators, secured to said bar, the spindle-rail, spindles, the lifting-rod, the ring-rail, a lifting-bracket, secured to said lifting-rod and adapted to engage and raise said separator-bar and provided with a notch to receive said pin, and a supporting-bracket, also provided with a notch to receive another pin, with which said separator-bar is provided, to prevent an end-wise movement of said separator-bar and to 15 maintain the proper intervals between said separators and said spindles, as and for the purpose specified.

7. The combination with the separator-bar and separators secured thereto, of the supporting bracket having a horizontally pivoted fork, adapted to receive said separator-bar and to hold said separators in an operative position and to be turned in a vertical plane to throw said separators into the position for 25 doffing, as and for the purpose specified.

8. The combination with the separator-bar and separators secured thereto, of the supporting-bracket, having a fork pivoted thereto and adapted to receive said separator-bar, 30 said supporting-bracket having also a stop, to prevent said fork from falling forward and bringing said separators below their operative position, as and for purpose specified.

9. The combination with the separator-bar 35 and separators secured thereto, of the supporting-bracket, having a fork pivoted thereto and having a stop, to prevent said fork from falling forward and bringing said separators below their operative position, and having 40 another stop to limit the backward movement of said fork and to hold said separators in the position for doffing, as and for the purpose specified.

10. The combination of the separator-bar 45 and separators secured thereto, of the supporting-bracket, having a fork, pivoted thereto and adapted to receive said separator-bar, said supporting-bracket having a stop, to limit the forward movement of said fork and to 50 hold said fork in a vertical position, and another stop curved concentrically with the pivot of said fork and, except when said fork is in a vertical position, extending over said separator-bar and preventing the removal of 55 the same from said fork, as and for the purpose specified.

11. The combination of the separator-bar, separators secured thereto, a lifting-rod, means of giving to said lifting-rod a vertical 60 traverse, a lifting-bracket, secured to said lifting-rod and movable therewith and adapted to engage said separator-bar, and a stationary supporting-bracket to receive said separator-

bar in the descent of said lifting-bracket, said lifting-bracket being adjustable on said 65 lifting-rod to vary the limit of the upward movement of said separators, as and for the purpose specified.

12. The combination of the separator-bar, separators secured thereto, a lifting-rod, 70 means of giving to said lifting-rod a vertical traverse, a lifting-bracket, provided with a collar, to surround said lifting-rod, a set-screw turning in said collar against said lifting-rod, said lifting bracket being adapted in its up- 75 ward movement to raise said separator-bar, and a stationary supporting-bracket, to receive said separator-bar, in the descent of said lifting-bracket, as and for the purpose specified. 80

13. The combination of the separator-bar, separators secured thereto, a lifting-rod, means of giving to said lifting-rod a vertical 85 traverse, a lifting-bracket, secured to said lifting-rod and movable therewith and adapted to engage said separator-bar, and a stationary supporting-bracket to receive said separator-bar in the descent of said lifting-bracket, the receiving surface of said supporting bracket being vertically-adjustable to 90 vary the limit of the downward movement of said separators, as and for the purpose specified.

14. The combination of the separator-bar, separators secured thereto, a lifting-rod, 95 means of giving to said lifting-rod a vertical traverse, a lifting-bracket, secured to said lifting-rod and movable therewith and adapted to engage said separator-bar, the spindle-rail, a supporting-bracket, formed in two 100 parts, the lower of which parts is secured to said spindle-rail and the upper of which parts is adapted to receive said separator-bar in the descent of said lifting-bracket and is vertically adjustable on said lower part, to vary 105 the limit of the downward movement of said separators, as and for the purpose specified.

15. The combination of the roller-beam, a pulley journaled thereon, the separator-bar, separators, secured thereto, a weight, a flexi- 110 ble connection, supported on said pulley and joining said weight and said separator-bar, lifting-rods, means of giving to said lifting-rods a vertical traverse, and lifting-brackets secured to said lifting-rods, said weight being 115 adapted nearly to counterbalance the weight of said separator-bar and separators, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 22d day of March, A. D. 1893. 120

GEORGE E. CHANDLER.

Witnesses:

ROSS L. REYNOLDS,
ANDREW F. MCCANN.