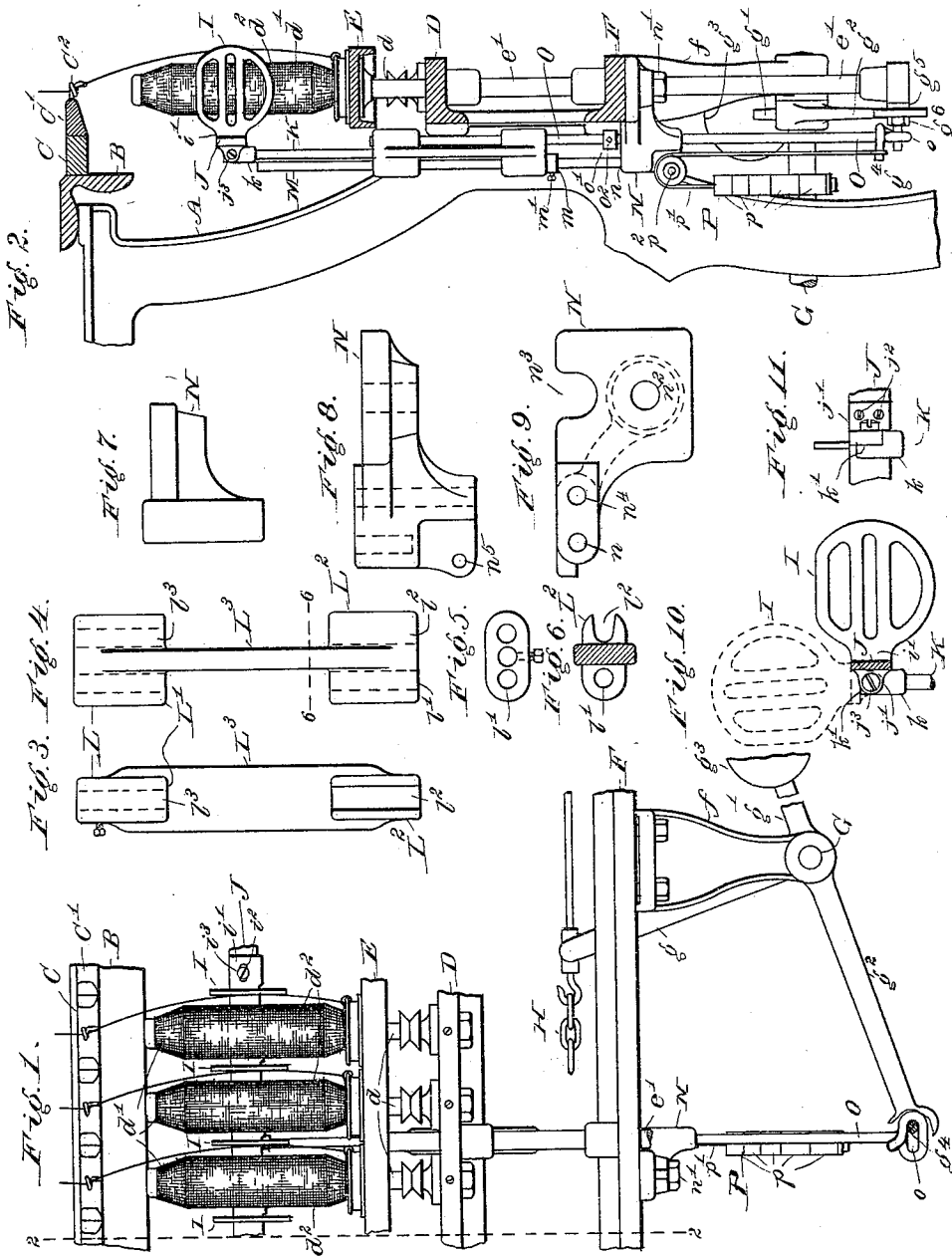


(No Model.)

G. E. & W. A. CHANDLER.
YARN SEPARATOR FOR SPINNING FRAMES.

No. 544,286.

Patented Aug. 13, 1895.



WITNESSES.

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UNITED STATES PATENT OFFICE

GEORGE E. CHANDLER, OF CHELMSFORD, AND WALTER A. CHANDLER, OF
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YARN-SEPARATOR FOR SPINNING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 544,286, dated August 13, 1895.

Application filed November 14, 1892. Serial No. 451,882. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. CHANDLER, residing at Chelmsford, and WALTER A. CHANDLER, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, citizens of the United States, have invented a certain new and useful Improvement in Yarn-Separators for Spinning-Frames, of which the following is a specification.

Our invention relates to yarn-separators for spinning-frames; and it consists in the devices and combinations hereinafter described and claimed, the main objects of said invention being to lessen the cost of the separator-operating devices, to prevent any backlash of the same, and to take the weight of the separators and their connected parts off from the cross-shaft arm.

In the accompanying drawings, Figure 1 is a front elevation of a part of a ring-spinning frame, showing a part of the thread-board, some finger-boards, yarn-guides, three spindles, with the corresponding whirles, bearings, bobbins, cops, and spinning-rings, a part of the ring-rail and one of its lifting-rods, a part of the spindle-rail, a part of the guide-rail, a cross-shaft and its arms, operating-chain and weight and one of its supporting-brackets, together with separators, a separator-bar, a separator-rod, its guide-sleeve, and overbalancing-weights constructed in accordance with our invention; Fig. 2, a vertical section on the line 2 2 in Fig. 1 of the ring-rail, spindle-rail, guide-rail, roller-beam, thread-board, and finger-board, showing a left side elevation of our improved separating devices; Fig. 3, a front, and Fig. 4 a side, elevation of the guide-sleeve; Fig. 5, a plan of said sleeve; Fig. 6, a horizontal section of said sleeve on the line 6 6 in Fig. 4; Fig. 7, a rear elevation of the bracket which supports the guide-rod; Fig. 8, a left side elevation of the same; Fig. 9, a plan of the same; Fig. 10, a side elevation of a separator-blade or separator proper, the upper part of the separator-rod, the head secured thereto, the bracket secured to the separator-bar and the pivot-screw of said bracket, and a vertical cross-section of said separator-bar; Fig. 11, a rear elevation of the parts shown in Fig. 10.

The frame A, roller-beam B, thread-board C, finger-boards C', yarn-guides C², spindle-rail D, spindles *d*, supported on said rail D and carrying bobbins *d'*, on which the yarn is wound in the form of cops *d²*, the ring-rail E, supporting the spinning-rings *e* and supported on vertical lifting-rods *e'*, said rods *e'* being guided vertically by the spindle-rail D and the guide-rail F, the cross-shaft G, supported in brackets *f*, bolted to opposite guide-rails and provided with three arms *g g' g²*, the upper one *g* of which is connected with the building-chain H, which draws said arm *g* to rock said cross-shaft in one direction, another arm *g'*, which carries a weight *g³* to rock said cross-shaft in the other direction when the chain H yields, a third arm *g²*, which reaches under the lifting-rod *e'* to raise the ring-rail when the cross-shaft is rocked by the descent of the weighted arm *g'*; all these parts are of the usual construction and operation, the chain H being drawn in one direction by the builder-lever, to which it is attached, and which is well understood and forms no part of this invention, and is therefore not shown.

The separator I is a thin blade *i*, of sheet metal, having a shank *i'* bent at right angles to said blade and provided with a slot *i²*, through which a cap-screw *i³* is driven into the horizontal separator-bar J, substantially in the manner shown in United States Patent No. 476,731, granted June 7, 1892, to Alfred D. Chandler.

We do not claim the form of the separator, as that is shown in another application of said Alfred D. Chandler, filed May 23, 1892, Serial No. 434,070.

To the back of the separator-bar J are secured brackets *j'*, as by screws *j²*, which brackets receive and turn on pivot-screws *j³*, entering heads *k*, cast on or otherwise secured to the tops of separator-rods K, there being as many such separator-rods K as there are lifting-rods, said heads having flat sides *k'* to form bearings for said brackets *j'*. The top of each head K is flattened on top in the rear of the pivot *j³* to support and to limit the backward movement of the separator-bar J when the separators are turned up, or in the

position shown in dotted lines in Fig. 10, for doffing or other purposes. The lower end of each separator-rod K fits in a hole l in the top of the guide-sleeve L, and is retained therein by friction. Each guide-sleeve L is substantially of the form shown in Figs. 3 to 6, and consists of two blocks L^1 L^2 or short sleeves rigidly connected to each other by a web L^3 and having a vertical hole l' continuous through both of said blocks L^1 L^2 , which hole l' loosely receives a vertical rod M, which limits said guide-sleeve L and the separator-rod to a vertical movement. Each guide-rod M fits in a hole n in the bracket N, and is retained therein by friction and surrounded by a collar m , loose thereon and adjustable on said guide-rod by means of a set-screw m' to limit the downward movement of the guide-sleeve L and of the parts supported thereby. Each bracket N is secured to the under side of the guide-rail F by a bolt n' , which passes up through a hole n^2 in said bracket N into said guide-rail, said bracket having a lateral slot n^3 to admit the adjacent lifting-rod e' .

The separator push-rod O is a small rod or large wire, the lower end of which is bent into a loop o , which loosely surrounds a stud g^4 , which is passed through the arm g^2 of the cross-shaft G, the arm g^2 being commonly called by way of distinction the "cross-shaft arm," and the stud g^4 being in this case and in said Alfred D. Chandler's said patent extended through said cross-shaft arm and projecting from each side thereof and retained in place by an annular shoulder g^5 , fixed on said stud, and a nut g^6 , turning on said stud on opposite sides of said cross-shaft arm. The push-rod O is guided vertically by the bracket N, said push-rod sliding in the hole n^4 in said bracket, and has also a sliding in the sleeve L—that is, in a vertical groove l^2 in the front of the lower part L^2 of said sleeve and in the hole 13 in the upper part of said sleeve L^1 .

The push-rod O, below the sleeve L and above the bracket N, is surrounded by a collar o' , loose thereon and held at any desired height by a set-screw o^2 , and serving to raise said sleeve L when said push-rod rises, and, by its position, to determine the highest limit of the traverse of said sleeve L and of the separators supported thereby.

The push-rod O and therefore the guide-sleeve L and the separator-rods and separators are raised by means of an overbalancing-weight P or weights p p , a number of such weights being preferably used for convenience of adjustment, these weights being strung in a well-known manner on a cord or chain p' , which passes over a pulley p^3 , which turns on a horizontal stud p^2 , securely driven into a hole n^5 , Fig. 8, in the bracket N, the lower end of said cord or chain being secured to a horizontal stud o^3 , formed by bending the lower end of the push-rod backward, as shown in Fig. 2, the rising of the cross-shaft arm g^2 allowing said weight P to operate and the

descent of said arm drawing the push-rod down and allowing the guide-sleeve L and the parts supported thereby to fall of their own weight.

The advantage of the construction above described is that there is no backlash between the push-rod and the stud g^4 of the cross-shaft arm g^2 , as there usually is between the separator-rod and said stud when the latter rests directly upon said stud, because the weight P and chain p' hold the loop p^4 against the under side of said stud at all times, and said weight P being heavy enough to more than counterbalance—that is, to overbalance the weight of the push-rod, guide-sleeve, separator-bar and separators—there is no dwell of the ring-rail, caused by the weight of the yarn-separating devices being suddenly lifted by the cross-shaft arm g^2 .

We claim as our invention—

1. The combination of the stationary vertical guide-rod, a sleeve, having a vertical hole which loosely receives said guide-rod, a collar, secured on said guide-rod, below said sleeve and limiting the downward movement of said sleeve, the cross-shaft having an arm provided with a horizontal stud, a vertical push-rod, having at its lower end a loop, which loosely surrounds said stud, said push-rod loosely fitting another vertical hole, with which said sleeve is provided, a collar, secured on said push-rod below said sleeve and adapted to raise said sleeve when said push-rod is raised by the rocking of said cross-shaft, a separator-rod, fixed in said sleeve, a separator-bar, supported on said separator-rod and separators, supported on said separator-bar, as and for the purpose specified.

2. The combination of the separators, and their supporting parts and a push-rod, adapted when lifted to raise said separators and supporting parts, and having a loop, the cross shaft, having an arm provided with a stud which enters said loop and is loose therein, and an over-balancing weight connected to said push-rod, to keep said loop at all times in contact with the under side of said stud, as and for the purpose specified.

3. The combination of the stationary vertical guide-rod, a sleeve, having a vertical hole which loosely receives said guide-rod, a collar, secured on said guide-rod, below said sleeve and limiting the downward movement of said sleeve, the cross-shaft, having an arm provided with a horizontal stud, a push-rod, having at its lower end a loop, which loosely surrounds said stud, said push-rod loosely fitting another vertical hole, with which said sleeve is provided, a collar, secured on said push-rod below said sleeve and adapted to raise said sleeve when said push-rod is raised by the rocking of said cross-shaft, a separator-rod fixed in said sleeve, a separator-bar, supported on said separator-rod, separators, supported on said separator-bar, and an over-balancing weight connected to said push-rod,

to keep said loop at all times in contact with the under side of said stud, as and for the purpose specified.

4. The combination of the separators and
5 their supporting parts, and a push-rod, adapted when lifted to raise said separators and supporting parts, and having a loop, the cross-shaft, having an arm provided with a stud which enters said loop and is loose therein, a
10 pulley, turning on a fixed horizontal axis, a weight, having a greater gravity than the push-rod and the parts raised thereby, and a flexible connection, joining said weight and

said push-rod and passing over said pulley, to keep said loop at all times in contact with 15 the under side of said stud, as and for the purpose specified.

In witness whereof we have each signed this specification, in the presence of two attesting witnesses, November 8, 1892.

GEORGE E. CHANDLER.
WALTER A. CHANDLER.

Witnesses:

ALBERT M. MOORE,
MYRTIE C. BEALS.