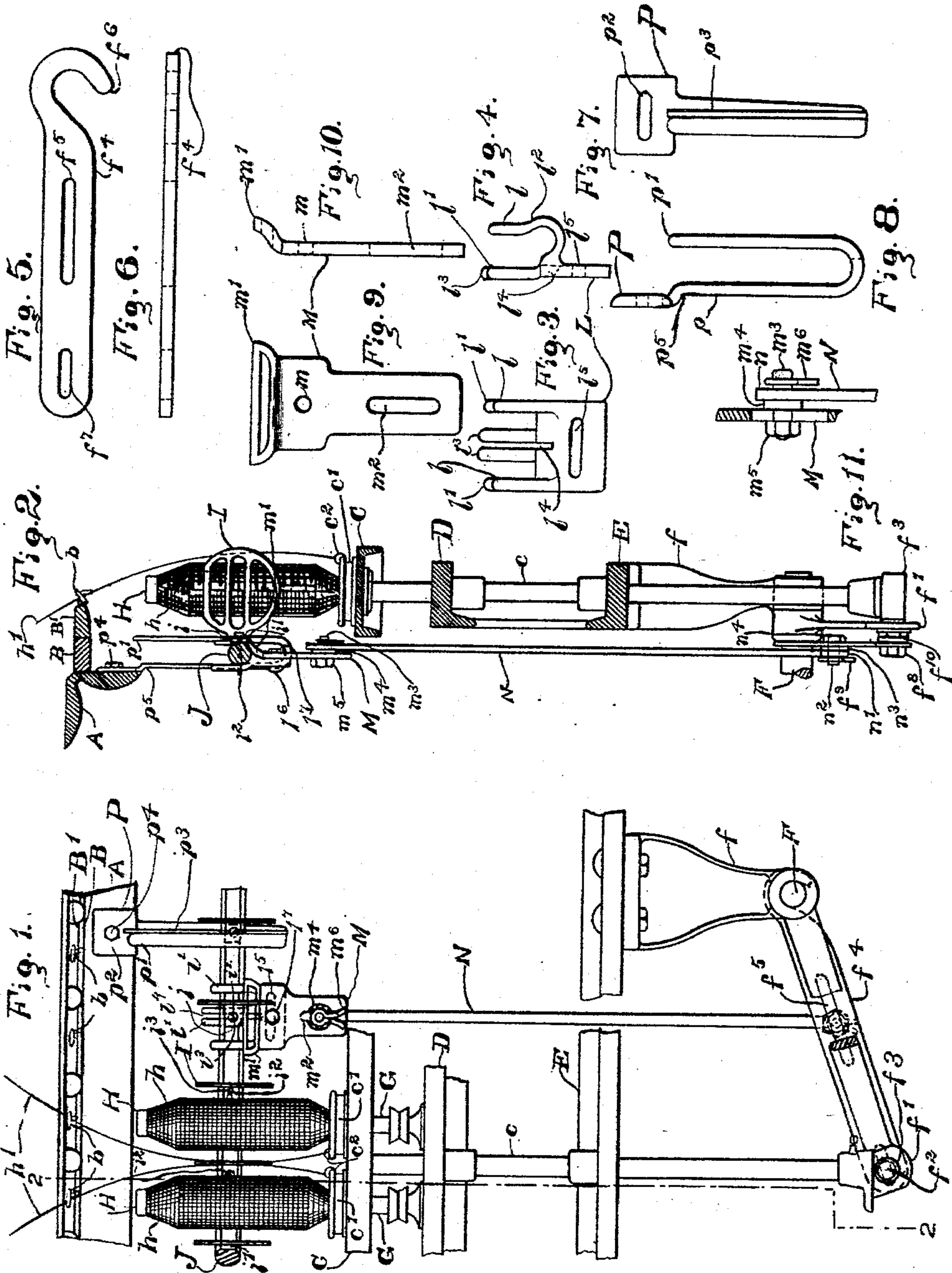


(No Model.)

A. D. CHANDLER.
YARN SEPARATOR FOR SPINNING MACHINES.

No. 551,431.

Patented Dec. 17, 1895.



WITNESSES.

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UNITED STATES PATENT OFFICE.

ALFRED D. CHANDLER, OF CHELMSFORD, ASSIGNOR TO GEORGE DRAPER & SONS, OF HOPEDALE, MASSACHUSETTS.

YARN-SEPARATOR FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 551,431, dated December 17, 1895.

Application filed March 2, 1893. Serial No. 464,410. (No model.)

To all whom it may concern:

Be it known that I, ALFRED D. CHANDLER, a citizen of the United States, residing at Chelmsford, in the county of Middlesex and Commonwealth of Massachusetts, have invented an 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, some of the objects of said invention being to give a traverse to the separators equal in duration to the traverse of the ring-rail, but of less extent and variable in length, the extremes of the traverse of the separators being also variable in distance from the yarn-guides; to guide the separators vertically by guides secured on the roller-beam; to enable the separating devices to be readily and economically applied to spinning-frames of any ordinary construction, and to connect the separator-rod to the cross-shaft arm without alteration of the latter.

In the accompanying drawings, Figure 1 is a front elevation of a part of a ring-spinning frame, showing a part of the roller-beam, guide-rail, spindle-rail, ring-rail, spindles, rings and travelers, bobbins and cops, thread-boards, finger-boards, a bracket secured to the guide-rail, the cross-shaft supported in said bracket, the lifting-arm of the cross-shaft, a lifting-rod raised by said arm and supporting the ring-rail, part of a separator-bar, separators secured thereto, the separator-guide secured to the roller-beam, a separator-rod, means of connecting the same to the separator-bar, and a supplementary cross-shaft arm to which the lower end of the separator-rod is adjustably secured, the cross-shaft arm being partly broken away to show said supplementary arm, showing also means of adjusting the parts which connect said separator-rod to said separator-bar to vary the distance between the extreme points of the traverse of said separators and the yarn-guides, showing also said yarn-guides; Fig. 2, a vertical section on the line 22 in Fig. 1, showing a left-side elevation of a separator and the devices which support, guide, and render adjustable said separators; Fig. 3, a front elevation, and Fig. 4 a side

elevation, of the socket which receives the separator-bar; Fig. 5, a side elevation, and Fig. 6 a plan, of the supplementary cross-shaft arm; Fig. 7, a front elevation, and Fig. 8 a side elevation, of the guide-stand which limits the movement of the separator-bar to a vertical direction; Fig. 9, a front elevation, and Fig. 10 a side elevation, of the plate which connects the socket and the separator-rod; Fig. 11, a side elevation of the upper end of a separator-rod and the bolt which connects the same to said plate and the spring-pin which holds the upper end of said connecting-rod on said bolt, the nut on said bolt, and a vertical central section of the lower part of said plate.

The following parts are of any usual construction: The roller-beam A, thread-board B, finger-boards B', yarn-guides or "pig-tails" b, the ring-rail C, lifting-rod c, spindle-rail D, guide-rail E, cross-shaft F, turning in brackets f, secured to the guide-rails E at opposite sides of the machine and caused to rock by the usual means, the cross-shaft arm f', carrying at its outer or free end a horizontal stud f², on which turns an antifriction-roll f³, on which rests the lifting-rod c, spindles G, spinning-rings c', ring-traveler c², and bobbins H, on which are wound the cops h from the yarns h'.

To economize space the spindles are set as near together as possible, and the yarns on adjacent spindles being thrown outward by centrifugal force would become entangled and broken were it not for the separators I, which are commonly plates of thin material, as sheet metal, arranged in the intervals between the spindles. Such separators are commonly employed. The form of the separators I do not herein claim, as separators of this form are shown, described and claimed in United States Letters Patent No. 496,186, granted April 25, 1893, to me.

The separator-bar J is preferably a round rod slightly flattened on the front or outer face i', to receive the bent inner end of the shank i of the separator I, and to afford a suitable bearing therefor. To the separator bar J the separators are secured by means of screws i², passing through slots i³ in the shanks of the separator and into or through

the separator-bar J. The separator-bar J is supported in a socket L, (see Figs. 3 and 4,) having upwardly-projecting ears l l' , the front ears l being curved outwardly at their lower ends at l^2 , to fit the curved surface of the separator-bar and to prevent the separator-bar from rising in said socket when the separators are turned up vertically from between the spindles in the operation of doffing. The socket-piece L is also provided with an upward projection l^3 at the back thereof and with a vertical slot l^4 from the top of said projection l^3 to a point below the lower end of said projection, and one of the screws i^2 extends entirely through the separator-bar into said slot l^4 and prevents any endwise movement of the socket L on the separator-bar J. The socket-piece is provided near its lower end with a transverse horizontal slot l^5 to enable said socket-piece to be attached by means of a bolt l^6 and nut l^7 to the stop-piece M, said bolt passing through the hole m in said stop-piece, and the slot l^5 allowing the socket-piece and stop-piece to be adjusted laterally with respect to each other in an obvious manner. The stop-piece M is provided at its upper end (see Figs. 9 and 10) with a forwardly-projecting and upwardly-curved stop m' , against which the shank of the separator strikes when restored from its vertical position to its horizontal operative position, the curvature of the shank on the under side thereof where said shank joins the blade or body of the separator causing the separators in descending to slide forward, drawing the separator-bar J into the curvature l^2 of the ears l , above described, and preventing said separator-bar from being thrown upward in the socket by the weight of the attached separators. The lower part of the stop-piece M is provided with a vertical slot m^2 , (see Figs. 1, 2, 9, 10, and 11,) by means of which and by means of a stud m^3 (having about midway between its ends an annular collar m^4 drawn against the front face of said stop-piece by means of a nut m^5 , turning on the threaded rear end of said stud m^3 against the rear face of said stop-piece) said stop-piece is connected to the separator-rod N, said separator-rod having at its upper end an eye n through which passes said stud m^3 , said eye being arranged in front of the collar m^4 and being held against said collar by a split spring-pin m^6 , passing through a hole in the front end of said stud in a well-known manner. The lower end of the separator-rod N is provided with an eye n' through which passes another stud n^2 , which may be precisely like the stud m^3 , above described, said stud n^2 having a collar n^3 and a nut n^4 , by means of which collar and nut said stud is secured to the slotted supplementary arm f^4 , said stud passing forward through the slot f^5 in said supplementary arm up to said collar n^3 and the nut n^4 being turned up against the front face of said supplementary arm, and said eye n' being re-

tained on said stud n^2 back of said collar n^3 by a split spring-pin f^9 . The supplementary arm f^4 is provided at its inner end with a hook f^6 , which engages the cross-shaft F, and near its outer end with a slot f^7 through which passes the stud f^2 , above described, said slot f^7 being of sufficient length to enable the supplementary arm to be applied to cross-shaft arms f^1 of different lengths, and the slotted end of said supplementary arm being retained on said stud f^2 by a nut f^8 , which turns on the outer threaded end of said stud f^2 and holds said supplementary arm up against a shoulder f^{10} with which said stud f^2 is provided, as shown in Fig. 2. By loosening the nut n^4 the stud n^2 may be moved in the slot f^5 nearer to or farther from the cross-shaft F to vary the length of traverse of the separators. The separator-bar J is guided vertically by a guide-stand P of the form shown in Figs. 7 and 8. Said stand P is provided with a horizontal slot p^2 through which a bolt p^4 is passed into the roller-beam A, said slot p^2 allowing the guide-stand to be adjusted laterally, to avoid the necessity of extreme care in making the hole for the bolt p^4 . The guide-stand P is provided with two vertical guides p p' , arranged at such a distance apart as to receive and loosely fit the separator-bar J. The rear guide p is provided with a vertical slot p^3 which extends from the bottom of the guide to the top of the same to receive the projecting rear end of one of the screws i^2 and to prevent an endwise movement of the separator-bar J, said last-named screw also acting as a stop and by striking against the front lower end of said slot p^3 holding the separators in a vertical position in the operation of doffing. The rear guide p is offset forward at p^5 just below the upper end of the slot p^3 to enable the separator-bar to be lifted out of said guide-stand P.

The projecting rear ends of the screws i^2 which enter the slots p^3 l^4 are turned down to the bottoms of their screw-threads to produce less friction on the sides of said slots and to prevent said screws from becoming loose in said slots.

I claim as my invention—

1. The combination of a cross-shaft, a cross-shaft arm, a separator-bar, separators, secured thereto, a socket, to receive said separator-bar, a plate, connected to said socket, and laterally adjustable thereon, a separator-rod, jointed to said plate, and a horizontal stud, movable with said cross-shaft arm and entering an eye with which the lower end of said separator-rod is provided, as and for the purpose specified.

2. The combination of a cross-shaft, a cross-shaft arm, a separator-bar, separators, secured thereto, a socket to receive said separator-bar, a plate, connected to said socket, a separator-rod, jointed to said plate, and a horizontal stud, movable with said cross-shaft arm and entering an eye with which the lower

end of said separator-rod is provided, said stud being adjustable in distance from said cross-shaft, as and for the purpose specified.

3. The combination of a cross-shaft, a cross-shaft arm, a separator-bar, separators secured thereto, a socket, to receive said separator-bar, a plate, connected to said socket and laterally adjustable thereon, a separator-rod, jointed to said plate, and a horizontal stud, movable with said cross-shaft arm and entering an eye with which the lower end of said separator-rod is provided, said stud being adjustable in distance from said cross-shaft, as and for the purpose specified.

4. The combination of the cross-shaft, the cross-shaft arm, a separator-bar, separators, secured thereto, a socket, to receive said separator-bar, a plate connected to said socket, a stud secured to said plate and vertically-adjustable thereon, a separator-rod, having an eye in its upper end to receive said stud and a horizontal stud, movable with said cross-shaft arm and entering an eye with which the lower end of said separator-rod is provided, said last-named stud being adjustable in distance from said cross-shaft, as and for the purpose specified.

5. The combination of the separator-bar, separators, a socket, receiving said separator-bar and having a vertical slot, and a stud projecting from said separator-bar and entering said slot, to prevent a lateral movement of said socket on said bar and to allow said bar to be turned in said socket, as and for the purpose specified.

6. The combination of a separator-bar, a separator having a shank, a socket, receiving said separator-bar and having a vertical slot, and a screw driven through said shank and through said separator-bar and entering said slot, to prevent a lateral movement of said socket on said bar and to allow said bar to be turned in said socket, as and for the purpose specified.

7. The combination of a separator-bar, separators, secured thereto, the roller-beam, a guide-stand, supported on said roller-beam and provided with a vertical slot, and a stud projecting from said separator-bar and entering said slot in said guide-stand, to prevent a longitudinal movement of said separator-bar, while allowing said bar to be turned in said guide-stand, as and for the purpose specified.

8. The combination of the roller-beam, a guide-stand, supported on said roller-beam and provided with a vertical slot, a separator-bar, a separator, having a shank, and a screw, driven through said shank and through said separator-bar and entering said slot, to prevent a longitudinal movement of said separator-bar, while allowing said bar to be turned in said guide-stand, as and for the purpose specified.

9. The combination of the roller-beam, a guide-stand, supported on said roller-beam and provided with a vertical slot, a separator-bar, separators secured thereto, a stud projecting from said separator-bar and entering said slot in said guide-stand, to prevent a longitudinal movement of said separator-bar, a socket, having a vertical slot, another stud, projecting from said separator-bar and entering said last-named slot to prevent a lateral movement of said socket on said separator-bar, as and for the purpose specified.

10. The combination of the roller-beam, a guide-stand, supported on said roller-beam and provided with parallel vertical front and rear guides, said rear guide having a vertical slot, a separator-bar, separators, secured thereto, and a stud, projecting from said separator-bar and entering said slot, to prevent a longitudinal movement of said separator-bar, said rear guide being forwardly offset below the top of said slot, to allow said separator-bar to be raised out of said guide, as and for the purpose specified.

11. The combination of a cross-shaft, having an arm, provided with a stud, a supplementary arm, having a hook to engage said shaft and having a slot, to receive said stud, to support said supplementary arm, the separator-rod jointed to said supplementary arm, a socket, supported by said separator-rod, a separator-bar, supported in said socket, separators, secured to said separator-bar and guides to limit said separator-bar to a vertical traverse, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 23d day of February, A. D. 1893.

ALFRED D. CHANDLER.

Witnesses:

ALBERT M. MOORE,
MYRTIE C. MANSUR.