

(No Model.)

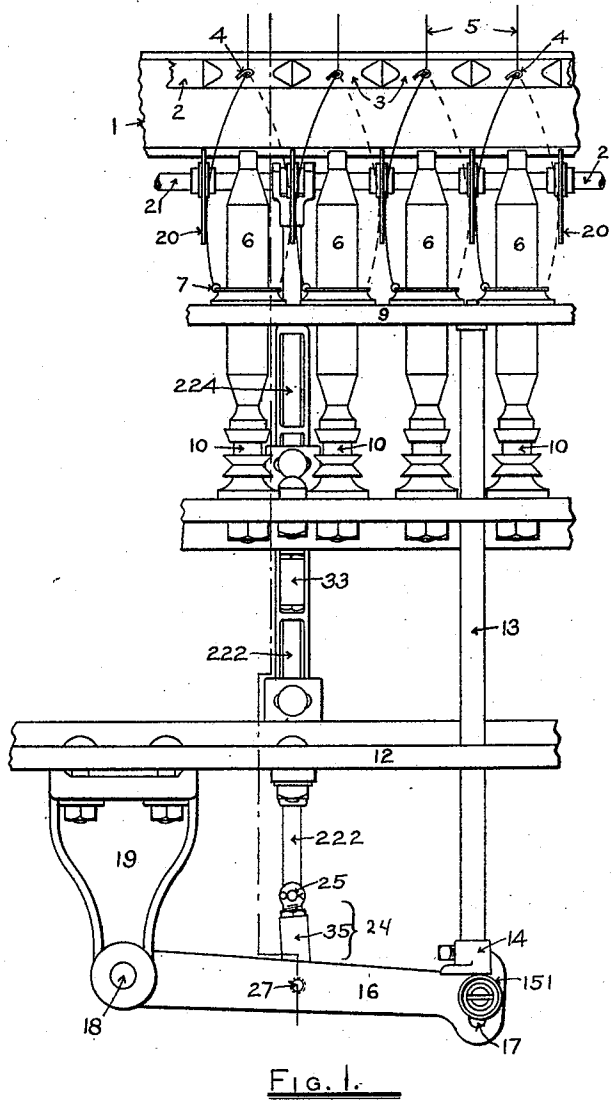
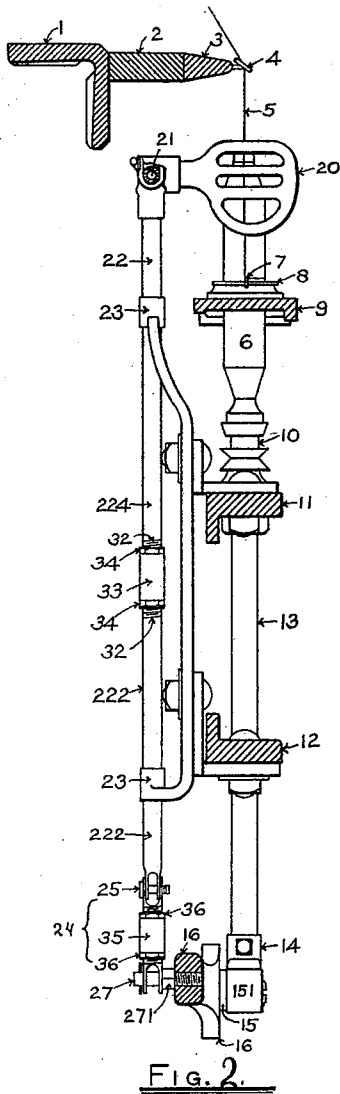
2 Sheets—Sheet 1.

C. WHITAKER.

SEPARATOR MECHANISM FOR RING SPINNING FRAMES.

No. 498,339.

Patented May 30, 1893.



WITNESSES.
Mary Beverly
Sam'l G. Stephens.

INVENTOR.
Channing Whitaker.

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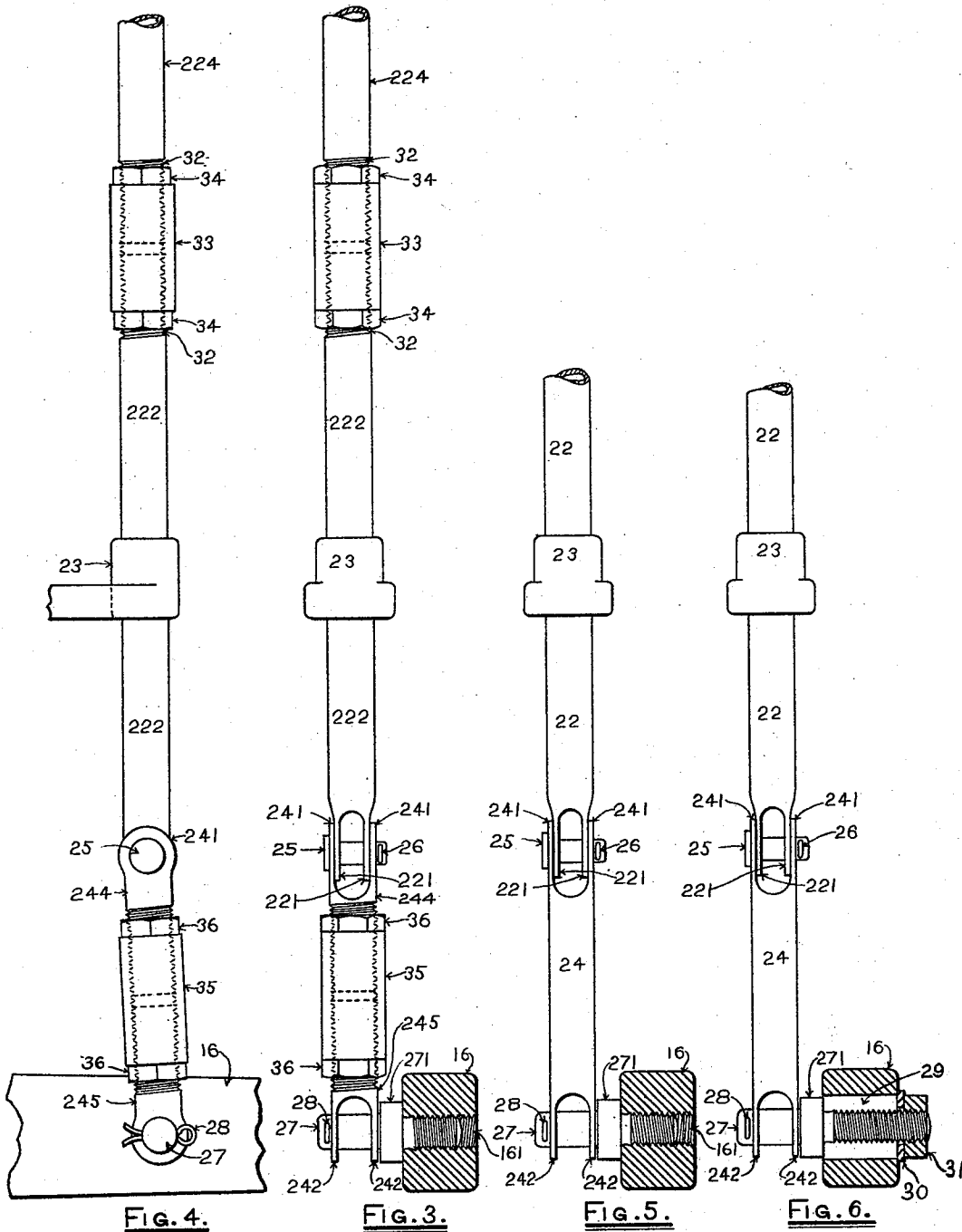
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SEPARATOR MECHANISM FOR RING SPINNING FRAMES.

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Patented May 30, 1893.



WITNESSES.

Mary Caverly
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INVENTOR.

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UNITED STATES PATENT OFFICE.

CHANNING WHITAKER, OF TYNGSBOROUGH, ASSIGNOR TO THE LOWELL MACHINE SHOP, OF LOWELL, MASSACHUSETTS.

SEPARATOR MECHANISM FOR RING-SPINNING FRAMES.

SPECIFICATION forming part of Letters Patent No. 498,339, dated May 30, 1893.

Application filed February 10, 1893. Serial No. 461,732. (No model.)

To all whom it may concern:

Be it known that I, CHANNING WHITAKER, a citizen of the United States, residing at Tyngsborough, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Separator Mechanisms for Ring-Spinning Frames, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to separator-mechanisms of the class in which the separators are carried by a rail, rod, or shaft that is applied to suitable supports which are carried by vertical rods, termed separator-rods, the said rods having communicated thereto a vertical reciprocating movement resembling that which is communicated to the lifting-rods which support the ring-rail with its rings.

More particularly, the invention relates to the separator-rods, and to the means for imparting thereto the vertical reciprocating movement aforesaid.

The main object of the invention is to provide a simple, inexpensive, and convenient arrangement and construction of parts for communicating movement to the separator-rods.

Another object of the invention is to provide a simple, inexpensive, and convenient means of effecting the vertical shift or translation of the traverse of the separators which sometimes it is desired and necessary to make without altering the extent of such traverse, and also of effecting the adjustment of the parts which may be found necessary in fitting the separator-mechanism to different ring-frames.

The invention consists in novel combinations of parts, and in certain novel features of construction, all as hereinafter is fully described with reference to the accompanying drawings, and as is particularly pointed out and clearly defined in the claims at the close of this specification.

In the accompanying drawings, Figure 1 is a view in front elevation showing a portion of a ring-spinning frame, and one embodiment of my invention applied thereto. Fig. 2 is a view in vertical section on the line 2—2 of Fig. 1. Fig. 3 is a detail view, partly in section, illustrating certain features of the

invention. Fig. 4 is a view in rear elevation showing the devices represented in Fig. 3. Figs. 5 and 6 are views showing modifications.

In Figs. 1 and 2, 1 is the roller-beam, 2 the thread-board hinged thereto as usual, 3 the finger-board hinged as usual to the thread-board, 4 the yarn-guides secured to the finger-boards, 5 the yarns passing from the yarn-guides 4 to the bobbin 6, through the travelers 7 on the rings 8 supported by the ring-rail 9, 10 the spindles on which the bobbins are mounted, 11 the spindle-rail, 12 the lower or guide-rail, 13 the lifting-rod for the ring-rail, 14 the shoe or foot at the lower end of the said rod, 16 the cross-shaft arm carrying the stud or pin 15, the latter either acting directly upon the said shoe or foot or being provided with the roller 151 which acts against the said shoe or foot and fits upon the stud or pin 15. At 17 is shown the cross-slot in the free end of the said cross-shaft arm 16 in which the said stud or pin is adjustably mounted, and at 18 the cross-shaft on which the said arm is secured, the said cross-shaft turning in bearings in brackets 19 (only one of which brackets is shown) and being caused to rock by usual means for the purpose of moving the ring-rail up and down. At 20 the separators are shown, and at 21 the rail on which the separators are mounted.

All of the foregoing parts may be of any usual or preferred construction.

At 22 is shown one of the separator-rods by the upper ends of which the separator-rail 21 is supported, the said rod being held in upright position by a guide or guides 23. Provision for actuating the rod 22 from the cross-shaft arm 16 simultaneously with the actuation of the ring-rail from the said arm, and in the same direction but through a traverse of less extent, is made as follows, reference being had to Figs. 3 and 4. The separator-rod 22 is made, preferably, of hollow pipe, and the lower end of the same is forked as shown, each part 221 of the fork being flattened. Through each of the projecting parts or lugs 221 a pin-hole is made.

At 24 is represented a link or connecting-rod which at its upper end is pivotally connected with the separator-rod 22 and at its lower end is connected in like manner with the cross-shaft arm 16. Each end of the link

24 is forked. Through holes in the projecting parts 241, 241, at the upper end of the link, and also through the holes formed in the projecting parts or lugs at the lower end of the separator-rod, the pin 25 is passed, the said pin serving to pivotally connect the link and separator-rod. A flattened head at one end of the pin 25 and a split-pin 26 passing through a hole in the other end of the said pin 25, keep the pin 25 in place in the holes in the lugs. The lugs or projecting parts 242, 242, at the lower end of the link 24 have holes therein to receive the projecting end of the stud or pin 27, the said stud or pin having a screw-threaded end which enters the threaded hole 161 formed in the cross-shaft arm 16, and a collar 271 which takes bearing against the side of the said arm. Through a hole in the projecting end of pin 27 passes the split-pin 28, which keeps the end of the link in place on the pin. The link 24 may be either solid or made of hollow pipe.

My invention admits of being embodied in several different constructions. The simplest form of construction thereof is shown in Fig. 5. This differs from the forms or constructions which are shown in the remaining figures in having no provision embodied therein for enabling a vertical shift or translation of the traverse of the separators to be made without changing the extent of such traverse. As it is convenient to have such provisions, I contemplate providing for the said shift by constructing the parts so as to permit of adjustment. Thus, for instance, the stud or pin 27 may be secured to the cross-shaft arm 16 in a manner to enable it to be adjusted vertically or cross-wise thereof. In Fig. 6 I have shown the threaded end of the said stud or pin extending through a slot 29 formed vertically or cross-wise in the cross-shaft arm, and receiving upon its free end the washer 30 and nut 31 by which it is secured in the desired position of adjustment. This construction shown in Fig. 6 will be combined with the simple form of separator-rod and link shown in Fig. 5.

I prefer to secure the vertical shift aforesaid by employing the construction which is represented in Figs. 1, 2, 3 and 4. There are two reasons why it is advantageous to make provision in the separator-mechanism for such vertical shift, and the said construction has been designed with especial regard to such reasons. In the first place it is necessary to fit the mechanism to the different sizes, &c., of ring-spinning frames to which the separator-mechanism is applied; and in the second place, in a given ring-spinning frame it occasionally is found or deemed to be necessary for various reasons to make such shift, in order to secure a desired readjustment of the parts. It sometimes is found convenient to adapt the separator-mechanism to a given frame by employing a separator-rod of a given length which is different from the length of rod that would be employed in another ring-frame, and sometimes it is

thought to be best that, in a given frame, the position of the separators should be changed vertically, in order that the traverse of the separators may have the desired relation to the traverse of the ring-rail. The desired results sometimes are secured by making a change in the length of the separator-rod that is employed. In some cases it is preferred that, when the parts of the separator-mechanism have been applied to a ring-spinning frame, the vertical shift of these separators in such spinning frame should be secured by making suitable adjustment of the connections by which the separator-rod is supported and actuated, instead of disturbing the separator-rod. I contemplate, in the most complete embodiment of my invention, embracing both a separator-rod which is made extensible or variable in length so as to enable it to be fitted properly to the frame in which it is used, and a link or connecting-rod which is made extensible or variable in length so as to enable it to be adjusted in a manner to effect a vertical shift or translation of the traverse of the separators, without any change being effected in the length of such traverse. This embodiment is represented in Figs. 1 to 4, aforesaid, in which the separator-rod 22 is shown divided at an intermediate point in its length, the adjacent or meeting ends of the two sections 224, 222, thereof being threaded at 32, 32, and being turned or screwed into the opposite ends of the tubular internally-threaded coupling-piece 33, lock-nuts 34, 34, being applied to the said threaded ends to prevent the adjustment from being disturbed after once having been fixed by screwing or turning the said ends into or out of the coupling-piece to the proper extent. The link or connecting-rod 24 is formed similarly in two sections 244, 245, having threaded ends which are turned or screwed into the opposite ends of the tubular internally-threaded coupling-piece 35, lock-nuts 36, 36, being applied to the said threaded ends to prevent the adjustment from being disturbed after once having been fixed.

It will be observed that either of the adjustments shown in Figs. 1 to 4 may be used independently of the other, or may be employed alone in a separator-mechanism, and it will secure measurably the desired shift of the separators vertically, both for the purpose of fitting the separator-mechanism to a given spinning-frame, and for the purpose of varying the vertical position of the separators in the spinning-frame from time to time.

A special feature of advantage to be observed in connection with the devices which are shown in the drawings is the fact that the power which acts upon the separator-rod to move the same vertically is applied in line with the separator-rod and without any tendency to twist or turn the same in its bearings so as to necessitate the use of a guiding device to restrain the separator-rod from undesired rotation.

It is found in practice, when the bearings through which the separator-rod slides vertically have been too loosely fitted to the said rod in the first instance, and also when the said bearings have become too large through the wear incident to use, that the cotton flyings which collect upon the oily surface of the rod pass in between the rod and the said bearings, thereby clogging the opening between them, and this clogging, if not relieved by the attendant, goes on increasing until the resistance due to it becomes so great as to overcome the tendency of the parts to fall of their own weight after having been raised. Heretofore it has been customary to nearly counterbalance the weight of these parts and to depend upon the unbalanced portion of such weight to carry them down after being lifted, and it has resulted in practice that the parts would not descend as intended when the bearings become clogged, but would remain for some time suspended, and then, perhaps as the result of a jar, go down suddenly with a jerk. If, at such times, through the too great flexibility of the separator-rail, some of the separators should strike against the ring-rail the regularity of the winding-on of the yarn would be disturbed. As a complete safeguard against the objectionable results of such clogging I make the movements of the separator-rod, positive in both directions, by linking the separator-rod to the cross-shaft arm 16 so that if, as the result of the clogging, the separator-rod should stick sufficiently to prevent the separators from descending because of the weight of the parts, the machinery will draw them down. It has been proposed heretofore to make the movements of the separators positive in both directions in separator-mechanisms of the same general type as that which is represented in the accompanying drawings, but in all known instances of this kind the construction adopted has been devoid of provisions for effecting adjustments of the character of those herein presented, and the character of the operating connections of the separator-rod has been such as practically to preclude the use of adjustable connections.

I have shown in Fig. 6, a stud or pin which is adapted to be adjusted cross-wise of the cross-shaft arm, but I do not lay particular claim to such feature, in this case, for it is covered by the claims in another application for Letters Patent filed by me February 10, 1893, Serial No. 461,743.

I claim as my invention—

1. The combination with the ring-rail, the lifting-rod, and the cross-shaft arm operating the said lifting-rod, of the separators, the separator-rail, the separator-rod, a guide or guides for holding the separator-rod in vertical position, and the link pivotally connected at its one end to the separator-rod and at its other end to the cross-shaft arm, substantially as described.

2. The combination with the ring-rail, the lifting-rod, and the cross-shaft arm operating the said lifting-rod, of the separators, the separator-rail, the separator-rod, a guide or guides for holding the separator-rod in vertical position, the link pivotally connected at its one end to the separator-rod and at its other end to the cross-shaft arm, and adjusting means whereby the position of the separator-rail and separators may be shifted vertically as set forth, substantially as described.

3. The combination with the separators, the separator-rail, and the cross-shaft arm, of the separator-rod made extensible in length as described and the link made extensible in length as described and pivotally connected at its one end to the separator-rod and at its other end to the cross-shaft arm, substantially as described.

4. The combination with the separators, the separator-rail, and the cross-shaft arm, of the separator-rod made in two sections having screw-threaded ends and united by a coupling-piece, and the link made in two sections having screw-threaded ends and united by a coupling-piece, the said link having one end thereof pivotally connected to the separator-rod and the other end pivotally connected to the cross-shaft arm, substantially as described.

5. The combination with the separators, the separator-rail, and the cross-shaft arm, of the separator-rod made extensible in length as described, and the link pivotally connected at its one end to the separator-rod and at its other end to the cross-shaft arm, substantially as described.

6. The combination with the separators, the separator-rail, and the cross-shaft arm, of the separator-rod made in two sections having screw-threaded ends and united by a coupling-piece, and the link pivoted at its one end to the separator-rod and at its other end to the cross-shaft arm, substantially as described.

7. The combination with the separators, the separator-rail, and the cross-shaft arm, of the separator-rod, and the extensible link having one end thereof pivotally connected to the separator-rod and the other pivotally connected to the cross-shaft arm, substantially as described.

8. The combination with the separators, the separator-rail, and the cross-shaft arm, of the separator-rod, and the link made in two sections having screw-threaded ends and united by a coupling-piece, the said link having one end thereof pivotally connected to the separator-rod and the other pivotally connected to the cross-shaft arm, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHANNING WHITAKER.

Witnesses:

MARY CAVERLY,
SAML. G. STEPHENS.