

(No Model.)

2 Sheets—Sheet 1.

C. L. HILDRETH.

SEPARATOR MECHANISM FOR RING SPINNING FRAMES.

No. 498,268.

Patented May 30, 1893.

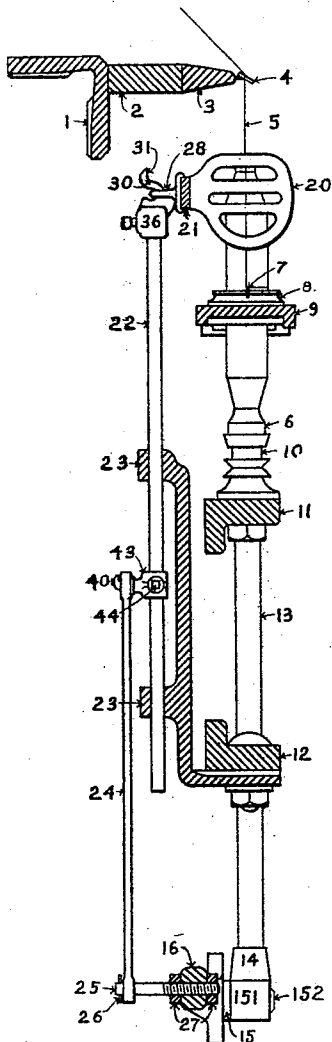


FIG. 2

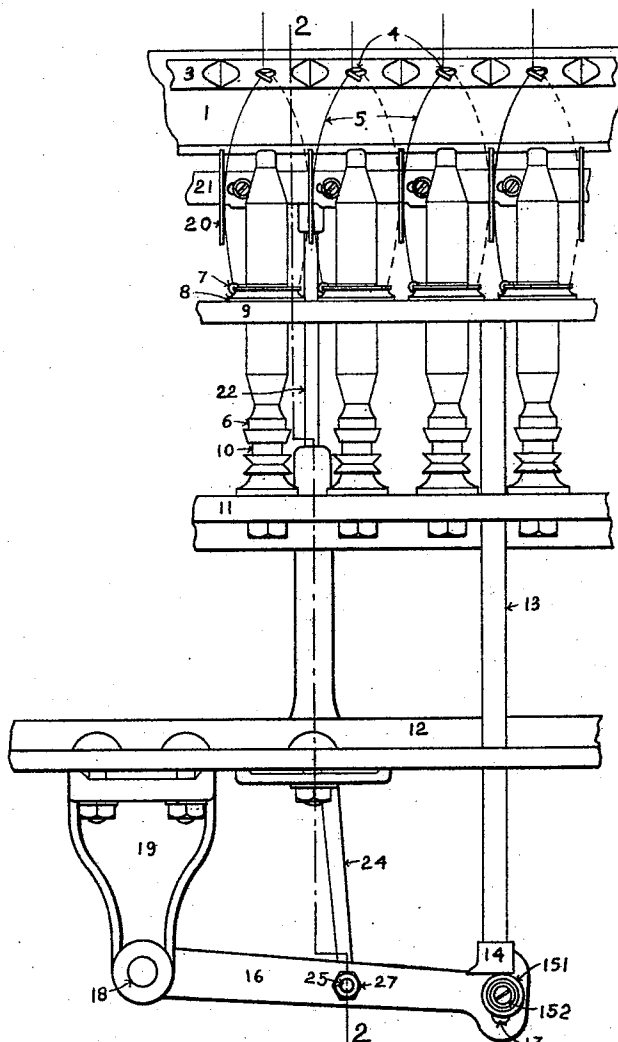


FIG. 1

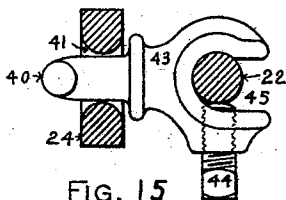


FIG. 15

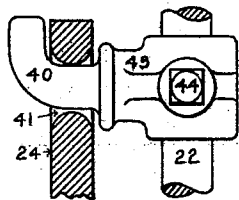


FIG. 14

WITNESSES:

Channing Whitaker.
Sam'l. T. Stephens.

INVENTOR.

C. L. Hildreth

C. L. HILDRETH.

SEPARATOR MECHANISM FOR RING SPINNING FRAMES.

No. 498,268.

Patented May 30, 1893.

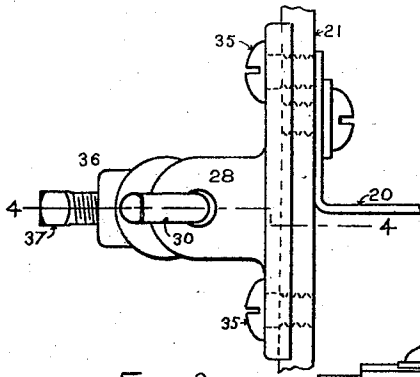


FIG. 3.

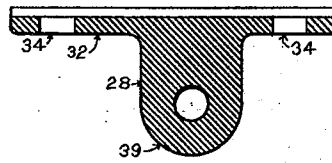


FIG. 9.

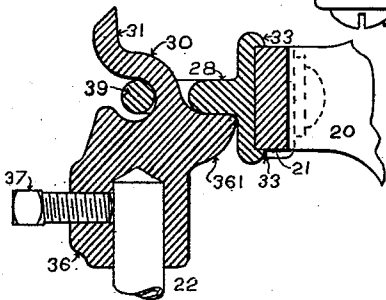


FIG. 4.

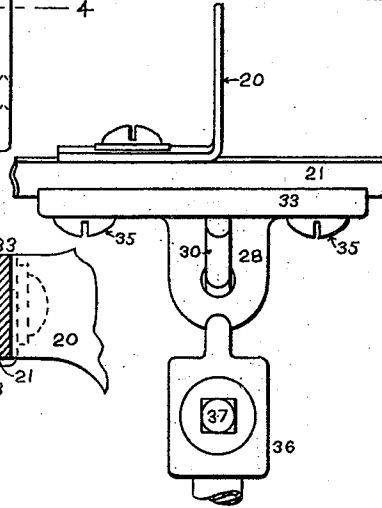


FIG. 5.

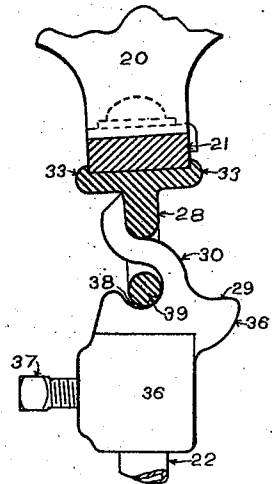


FIG. 6.

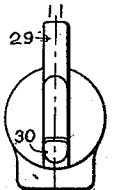


FIG. 10.

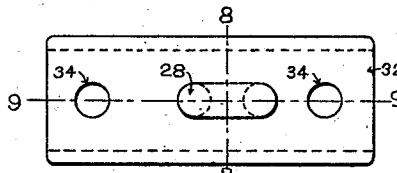


FIG. 7.

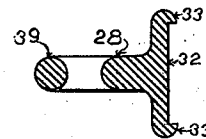


FIG. 8.

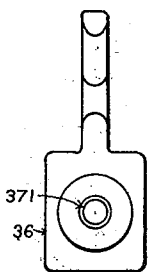


FIG. 13.

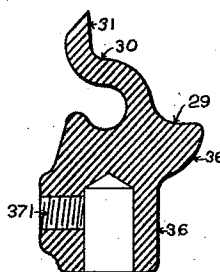


FIG. 11.

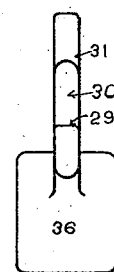


FIG. 12.

WITNESSES:

Channing Whitaker.
Sam'l C. Stephens.

INVENTOR.

C. L. Hildreth

UNITED STATES PATENT OFFICE

CHARLES L. HILDRETH, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE
LOWELL MACHINE SHOP, OF SAME PLACE.

SEPARATOR MECHANISM FOR RING-SPINNING FRAMES.

SPECIFICATION forming part of Letters Patent No. 498,268, dated May 30, 1893.

Application filed February 10, 1893. Serial No. 461,730. (No model.)

To all whom it may concern:

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

- 10 My invention relates to separator-mechanisms of that class wherein the separator-rail is carried by moving supports, sometimes constituted by vertically-moving rods known as separator-rods, the said supports being actuated by appropriate operating connections so as that the separator-rail shall rise and fall simultaneously with the ring-rail and be maintained at all times in the proper position relatively thereto.
- 20 It has for its particular objects to provide an improved means of pivotally mounting the separator-rail upon its supports or carriers, and arresting it when it has been swung by hand or otherwise to the extremes of its movement upon its pivots; and also to provide an improved means of connecting the separator-rods or equivalent moving supports with their actuating connections.

- The invention consists in the combination with the separator-rail, and a separator-rod, or equivalent moving support for the separator-rail, of an improved separable pivotal connection between the two provided with appropriate rests or detents by which the movement of the separator-rail around its pivots is stopped at the extremes of such pivotal movement; and it also consists in the combination with a separator-rod, or an equivalent moving support for the separator-rail, an actuating arm, or rod, and means for operating the said actuating arm or rod, of an improved detachable connection between the separator-rod and the actuating arm or rod. It first will be described fully in connection with the accompanying drawings, and then will be particularly pointed out and clearly defined in the claims at the close of this specification, and forming a part hereof.

- In the accompanying drawings, Figure 1 is a view in front elevation of part of a ring

frame having my present invention applied thereto. Fig. 2 is a view thereof in vertical section on about the plane indicated by the line 2—2 in Fig. 1. Fig. 3 is a view in plan showing part of the separator-rail, part of a separator, and my improved devices for pivotally connecting the said separator-rail with the separator-rod. Fig. 4 is a view in section on the plane indicated by the line 4—4 in Fig. 3. Fig. 5 is a view in rear elevation of the parts which are shown in Figs. 3 and 4, it showing the separator-rail in raised position. Fig. 6 is a view partly in side elevation, and partly in section with the separator-rail in raised position. Fig. 7 is a view in rear elevation of the part of the pivotal connections which is attached to the separator-rail. Fig. 8 is a view of the same in vertical section on the plane indicated by the dotted line 8—8 in Fig. 7. Fig. 9 is a view of the same in horizontal section on the dotted line 9—9 in Fig. 7. Fig. 10 is a view in plan of the member of the pivotal connections which is attached to the separator-rod. Fig. 11 is a view thereof in section on the plane indicated by the dotted line 11—11 in Fig. 10. Figs. 12 and 13 are views thereof in front and rear elevation, respectively. Fig. 14 is a view partly in side elevation and partly in vertical section of the connection between the separator-rod and its actuating arm or rod. Fig. 15 is a view thereof partly in plan and partly in horizontal section.

In Figs. 1 and 2, 1 is the roller-beam, 2 the thread-board hinged thereto as usual, 3 the finger-boards 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 bobbins 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 one of the lifting-rods for the ring-rail, 14 the shoe or foot at the lower end of the said rod, 16 one of the cross-shaft arms, it 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 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.

The separator-rail is mounted on the upper ends of separator-rods or equivalent moving supports or carriers, one of these separator-rods being shown at 22, the said rods being held in upright position by guides 23. The said separator-rods, or equivalent supports for the separator-rail, in practice are moved up and down simultaneously with the actuation of the ring-rail, and are caused to move always in the same direction as the ring-rail, but preferably through a traverse of less extent.

The means which I prefer to use for actuating each of the separator-rods consists of an arm or rod 24 which at its upper end is jointed to the separator-rod and at its lower end is jointed to a cross-shaft arm 16 at a point intermediate the axis on which the said cross-shaft arm turns and the point on the said arm at which motion is transmitted therefrom to the corresponding lifting-rod. The lower end of the arm or rod 24 is shown formed with a hole therein to receive the free end of a stud or pin 25 carried by the cross-shaft arm 16, the said lower end of the arm or rod 24 being held on the said stud or pin by means of the split pin 26 that is passed through a hole in the end of the stud or pin outside of the arm or rod 24. The stud or pin 25 is threaded for a part of its length, and this part is passed through a hole in the cross-shaft arm 16, it receiving upon it on opposite sides of the said cross-shaft arm the nuts 27, 27, by means of which it may be held securely in position.

The special features of the pivotal connections between the separator-rail and the separator-rod, or equivalent moving support for the separator-rail, are a perforated lug which is affixed to the separator-rail and projects rearwardly therefrom, and a support provided with a rest to sustain the separator-rail in working position, and also with an upright retaining finger which passes through the hole in the lug and which has at the free end thereof a stop to arrest the separator-rail when the latter has been swung upward and backward into inoperative position. In the drawings, the perforated lug is shown at 28, the rest at 29, the retaining finger at 30, and the stop at the free end of the said finger is shown at 31. For connecting the lug 28 with the separator-rail it is or may be formed with a plate 32 having at its upper and lower sides lips 33—33 which fit against the upper and lower edges of the separator-rail, the said

plate 32 having therein holes 34, 34, for the passage of the screws 35, 35, which serve to attach the plate and lug to the back of the separator-rail. The rest and finger are shown formed on the socket 36, which latter is mounted on the upper end of the separator-rod, and is held thereto by means of the clamping screw 37 which passes through a threaded hole 371 in the side of the socket and at its end takes bearing against the side of the separator-rod. The sides of the hole through the lug 28 are rounded vertically as clearly shown in Figs. 4, 6 and 8 so as to conform to the curvature of the upper and lower sides of the retaining finger, both when the rail is in its working position shown in Fig. 4 and when the rail is in its elevated inoperative working position shown in Fig. 6. The free end 39 of the lug is also rounded vertically, as shown in Figs. 4, 6 and 8, in order that when, as may be the case, as the separator rail is swung from one position to another, the said free end takes bearing on the bearing surface 38, that may be formed beneath the curved finger, the said free end may answer the office of a pin and constitute, if desired, the pivot on which the rail and lug combined may turn. The main portion of the retaining finger 30 is curved to the arc of a circle which is concentric to the axis on which the parts thus turn, in order that the lug may be turned from one of the extreme positions to the other without obstruction. The stop or rest 31 at the free end of the curved finger is produced by having the said free end made at an angle to the remainder of the finger so that as the rail is raised and thrown backward the upper surface of the lug will strike against said stop. The rest 29 which sustains the separator-rail in its working position is formed by a horizontal surface at the upper side of the forwardly extending projection 361 on the upper part of the socket 36. As will be apparent from the drawings, the rail may be disconnected readily and with ease from its support.

The special feature of the detachable connection between the separator-rod and the actuating arm or rod therefor is a curved or bent finger 40 carried by the separator-rod, which finger passes through the hole 41 in the upper end of the said actuating arm or rod. In applying the upper end of the actuating arm or rod to the said pin, the said actuating arm or rod is turned to a horizontal position and the hole in its upper end is presented to the end of the curved finger, the said end of the said actuating arm or rod then being pressed down upon the said finger, the actuating rod being depressed simultaneously therewith so as to carry its lower end into its proper position. At any time thereafter, the lower end of the actuating arm or rod having been disconnected from the stud or pin on the cross-shaft arm, it is necessary, in order to detach the actuating arm or rod from the finger, only to raise the lower end of the actuating arm or rod until it reaches again a hori-

zontal position, which operation will permit it to be freed and disconnected from the curved finger.

For the purpose of enabling the traverse of the separator-rail to be shifted vertically without any alteration in the extent of the traverse thereof, I prefer to so combine the said curved finger with the separator-rod as that a relative adjustment of the two may be made. Thus I form the curved finger on a collar 43, or attach it thereto, and I slip the said collar onto the separator-rod, securing it in the desired position of adjustment thereon by means of the clamping screw 44 which passes through one side of the collar and takes bearing against the side of the separator-rod.

By preference, and for the purpose of facilitating the application of the collar to the separator-rod as well as to enable the said application to be made after the rod has been put in place in the machine and mounted on the guides or bearings therefor, and to enable me to remove the said collar from the said separator-rod at any time without disturbing the position of the separator-rod, I form the said collar with a gap or opening 45 therein at one side of sufficient dimensions to permit of the passage therethrough of the separator-rod. This enables the collar to be applied at any time simply by slipping it sidewise onto the separator-rod, it then being secured by the clamping screw 44. The interior of the collar on the side thereof opposite to that through which the clamping screw is passed is concaved so as to fit the separator-rod quite perfectly, and the closely fitting portion of the collar fits around the separator-rod to the gap or opening on one side, and to the center line of the curved finger 40 on the other side. It is not essential that the interior of the collar should fit the separator-rod through this extent, but such fitting is preferred. When the collar 43 is made slotted or open, as is preferred, the disconnection of the upper end of the actuating arm or rod may readily be effected without detaching the lower end of the said arm or rod from the cross-shaft arm, viz: by loosening the collar from the separator-rod and then removing it from said separator-rod and turning it in a manner to withdraw the finger 40 from the hole in the upper end of the actuating arm or rod. The parts may be reunited by a reverse operation.

I do not lay claim broadly herein to a link which is pivotally connected at its one end to the separator-rod and at its other end to the cross-shaft arm, nor to actuating mechanism

for a separator-rail embodying such a link and also adjusting means whereby the position of the separator-rail and separators may be shifted vertically; nor do I lay claim broadly to a connecting-rod connecting at its lower end with the cross-shaft arm and at its upper end with a collar which is mounted adjustably on the separator-rod, for these are not of my invention.

I claim as my invention—

1. The combination with the separator-rail, and the perforated lug carried thereby, of a support provided with the rest to sustain the separator-rail in working position, and the retaining finger passing through the hole in the lug and formed at the free end thereof with a stop to arrest the separator-rail when thrown upward into inoperative position, the said lug and finger forming a separable pivotal connection, substantially as described.

2. The combination with the separator-rail, of the separator-rod carrying the said separator-rail, the curved or bent finger carried by the said separator-rod, the actuating arm or rod having a hole through its upper end through which the said finger is passed, and operating means acting upon the said arm or rod to communicate movement to the separator-rod and separator-rail, substantially as described.

3. The combination with the separator-rail, of the separator-rod carrying the said separator-rail, the slotted or open collar secured on the said separator-rod and provided with a finger, the actuating arm or rod having a hole through its upper end through which the said finger is passed, and operating means acting upon the said arm or rod to communicate movement to the separator-rod and separator-rail, substantially as described.

4. The combination with the separator-rail, of the separator-rod carrying the said separator-rail, the slotted or open collar mounted on the said rod and provided with a curved or bent finger, means for securing the said collar adjustably on the said separator-rod, the actuating arm or rod having a hole through its upper end through which the said finger is passed, and the cross-shaft arm with which the lower end of the said arm or rod is connected, substantially as described.

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

CHAS. L. HILDRETH.

Witnesses:

CHANNING WHITAKER,
SAML. G. STEPHENS.