

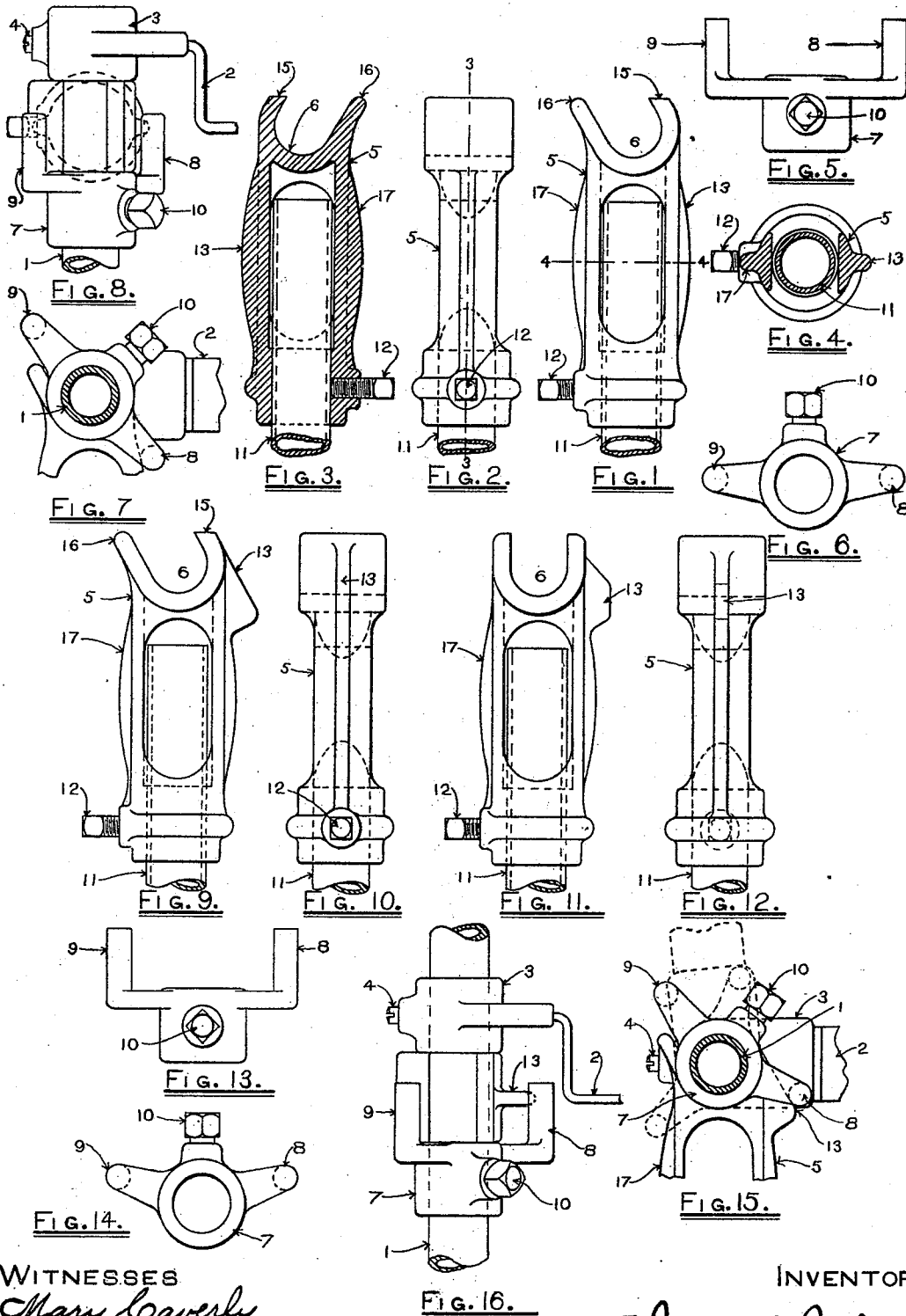
(No Model.)

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SEPARATOR MECHANISM FOR RING SPINNING FRAMES.

No. 498,341.

Patented May 30, 1893.



WITNESSES

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SEPARATOR MECHANISM FOR RING-SPINNING FRAMES.

SPECIFICATION forming part of Letters Patent No. 498,341, dated May 30, 1893.

Application filed February 10, 1893, Serial No. 461,734. (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 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.

The invention relates to separator-mechanisms of the class in which the separators are applied to a rail, rod, or shaft which is mounted on supports provided therefor on vertical rods, termed separator-rods, to which is communicated 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 supports or sockets in which are formed the bearings for the journals or pivots of the separator-rail, rod, or shaft, to the bearings themselves, and to the stop-devices which are provided for the purpose of determining the limits of the rotation of the separator-rail, rod, or shaft.

One object of the invention is to provide in simple and convenient manner for enabling the traverse of the separator-rail and separators to be shifted or translated vertically as may be required from time to time in practice, without the extent of such traverse being altered.

Another object of the invention is to provide an improved construction of bearings and stop-devices whereby the separator-rail and separators shall be sustained conveniently and securely in proper position in the ring-spinning frame to which the devices are applied, and which, while permitting the separators to be turned from their lowered and working or operative position between the spindles to their raised and idle or inoperative position remote from the spindle, when required, also shall permit the separator-rail and separators to be taken directly from the supports and from the machine at any time while the separators stand undisturbed in the position occupied by them when at work, or without having been moved to a material extent from such normal position, whereby it

shall be rendered unnecessary to provide for the disengagement of the rail from its supports by first turning the separators into their raised or idle position as sometimes has been necessary heretofore in order to unlock the rail so that it may be raised.

The invention consists in certain features of novel and improved construction, and in certain novel and useful arrangements and combinations of parts, all as is hereinafter set forth fully, and it first will be described with reference to the accompanying drawings, and then will be particularly pointed out and clearly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a view in side elevation of the upper end of the vertical rod which is termed the separator-rod, and the socket which is mounted on the said end and provided with a bearing for the journal or pivot of the separator-rail. Fig. 2 is a view of the same parts in rear elevation, or from the left-hand side in Fig. 1. Fig. 3 is a view in vertical section on the dotted line 3—3 in Fig. 2. Fig. 4 is a view in horizontal section on the line 4—4 in Fig. 1. Fig. 5 is a view in plan of the stop-collar which is mounted on the separator-rail adjacent to the socket shown in the preceding figures, and is provided with stops that engage with the front and rear sides of the said socket in order that the rocking movement of the separator-rail may be limited in extent. Fig. 6 is a view of the said stop-collar in side elevation. Fig. 7 is a view in side elevation, with the separator-rail in section, representing the upper part of the socket shown in Figs. 1 to 3, the separator-rail mounted in the bearing in such socket, and the stop-collar and a separator mounted on the said rail, the blade of the separator being broken away. Fig. 8 is a view in plan of the parts which are shown in Fig. 7. Figs. 9, 10, 11 and 12, are views illustrating modified forms of socket. Figs. 13 and 14 are views showing in plan and in side elevation a modified form of stop-collar. Fig. 15 is a view corresponding in character with Fig. 7, but showing the form of socket which is represented in Figs. 9 and 10 and the form of stop-collar which is shown in Figs. 13 and 14. Fig. 16 is a view in plan of the parts which are shown in Fig. 15.

At 1 in Figs. 7, 8, 15 and 16 is shown part of a separator-rail, at 2 part of the blade of a separator, at 3 the hub to which the said blade is attached, the said hub fitting the separator-rail as usual, at 4 the clamping screw passing through a threaded hole in the hub and taking bearing at its end against the surface of the separator-rail, whereby to clamp the separator in place upon the separator-rail, at 5 the socket containing the bearing 6 which receives the journal of the separator-rail, at 7 the stop-collar fitted upon the separator-rail and provided with the stops 8 and 9, and at 10 the clamping-screw passing through a threaded hole in the collar and taking bearing at its end against the surface of the separator-rail to clamp the collar in place upon the separator-rail. The stop 8 comes to rest upon a portion of the socket 5 at the front of the latter when the separators have been swung forward into their working or operative position, which is represented by the full lines of Figs. 7 and 15, and thereby arrests the rotation of the separator-rail and separators in that direction. The stop 9 comes to rest upon a portion of the said socket at the rear of the latter when the separators have been swung upward and rearward into the idle position which is indicated by the dotted lines in Fig. 15, and thereby arrests the rotation of the separator-rail and separators in the reverse direction.

The separator-rod, which has the socket 5 mounted upon its upper end and is actuated as hereinbefore stated for the purpose of moving the separators up and down, is shown in Figs. 1, 2, 3, 4, 9, 10, 11, and 12, at 11.

As a simple and convenient means of setting the separator-rail and separators at any desired height, and thereby varying or shifting vertically as may be required the path traversed by the said parts in their up-and-down movement, I mount and secure the socket 5 containing the bearing for the journal or pivot of the separator-rail upon the upper end of the separator-rod 11 in such manner as to enable the position of the said socket to be adjusted vertically upon the said rod. This adjustment of the socket upon the separator-rod may be relied upon for the purpose stated, to the exclusion of such expedients as adjustable actuating mechanism, and an adjustable foot for the separator-rod. Figs. 1, 2, 3, 4, 9, 10, 11 and 12, show a simple and practical means for connecting the socket to the separator-rod in an adjustable manner. In these figures the interior of the socket, throughout the greater part of the length of the socket, is fitted for the entrance of the end of the separator-rod, and the socket is held in desired position upon the said end by suitable clamping means which will enable the socket to be held at any selected point, as, for instance, by the clamping-screw 12, which is fitted to a threaded hole in the lower end of the socket and takes bearing against the surface of the separator-rod.

Heretofore, the bearings for the journals or pivots of the separator-rail, when made open and fitted to permit the separator-rail to be lifted out of the same when it is desired to remove the separator-rail from its supports, have been so combined with the stop-devices for determining the opposite limits of the rotation of the separator-rail in the bearings as that the said stop-devices act as locking-devices and serve to hold the separator-rail from being moved out of the bearings until after the separators have been thrown out of their working position between the spindles backward and upward to their idle position. I render it unnecessary to throw back the separators into their idle position, in order to unlock the separator-rail from its supports, by the construction and arrangement of the parts which I am about to describe, which construction and arrangement, moreover, while permitting the separator-rail to be removed directly from the bearing-supports and from the machine at any time while the separators remain undisturbed in the position occupied by them when at work, or without their having been moved to a material extent from such position, also retains the separator-rail and separators firmly and securely in place while the separators occupy their working position.

To facilitate the application and removal of the separator-rail, I form the socket 5 with an open bearing 6, as shown in the drawings, the said bearing being without obstruction to interfere with the free movement of the journal of the rail while such journal is being removed from the bearing or replaced. The stop 8 provided on the stop-collar 7 takes bearing against a rest 13 on the front side of the socket 5, which rest has its surface parallel with the rear side of the adjacent wall of the bearing, and is without any locking projection or obstruction above or adjacent thereto to interfere with the said stop 8 while the separator-rail and connected parts are being removed. This permits the separator-rail to be taken from the bearing in the support by a direct movement, and without any prior rotation to carry the stop 8 around a projection above the same and thereby effect unlocking. While the stop 8 bears upon the rest 13, the weight of the parts in front of a vertical line passing through the point of contact causes the stop to take a bearing against such rest as against a fulcrum, and with the effect of impelling the journal of the separator-rail into close contact with the forward side of the bearing.

To guard against the possibility of the rail-journal rising from its seat in the bearing in the case of the forms of socket shown in Figs. 1, 2, 3, 4, 9, and 10, the front wall 15 of the bearing is inclined rearwardly slightly so as to overhang the rail-journal a little and place the upper portion of its interior surface more nearly in a plane at right angles to the plane of the lateral pressure which is transmitted

through the rail-journal. In these figures, also, the rear wall 16 of the bearing is inclined in the same direction as the front wall in order to facilitate the entrance of the rail-journal. In the case of the form of socket which is shown in Figs. 11 and 12, both walls of the bearing are made vertical, for in these figures the arrangement, relations, &c., of the rest 13 are such as to cause the lateral thrust to be communicated to the rail-journal more nearly in a horizontal plane. In Figs. 1, 2 and 3, the stop 8 takes its seat at a point below the seat for the rail-journal and at a less distance in a horizontal direction from the axis of the rail-journal than in Figs. 9, 10, 11 and 12. In Figs. 9 and 10, the rest 13 is inclined forwardly and downwardly, and, as will be understood from Fig. 15, the tendency of the inclined surface is in part to crowd somewhat the stop and rail-journal in the direction of the inclination thereof. In Figs. 11 and 12 the rest 13 is vertical and located in advance of the said bearing.

A slight difference in form exists between the stop-collar represented in Figs. 5 and 6, which is intended for use in connection with the socket represented in Figs. 1, 2 and 3, and the stop-collar represented in Figs. 13 and 14, which is intended for use in connection with the sockets represented in Figs. 9, 10, 11 and 12. In the former, the arms carrying the stops 8, 9, are made more nearly in line with each other than in the latter, in view of the fact that the contact-point on the rest 13 in Figs. 1, 2 and 3, is lower than in the other figures and nearer to the axis of the rail-journal. The stop 9 strikes against the surface 17 at the rear side of the socket, to arrest the movement of the parts when the separators have been thrown back to their idle or inoperative position. As will be observed, the surfaces 13, 17, are formed as narrow projecting parts of the sockets, they being located at midwidth of the sockets and of semi-cylindrical outline where the stops touch them. When the separators are in their usual operative position the stop 8 presses against the narrow projecting rest 13 while at the same time the journal of the separator-rail presses against the interior of the bearing of the separator-rail socket. From this it results that if the separator-rail socket should, from any accidental cause, become slightly turned on its axis, the pressure of the stop upon the narrow projection, and the pressure of the separator-rail journal against the interior of the bearing, will restore the socket-bearing to parallelism with the separator-rail. Preferably, the face of the stop which bears against the narrow projecting rest is made of a cylindrical curve, such curve forming part of a cylinder of small diameter which is parallel to the axis of the separator-rail.

I do not lay claim broadly herein to the combination of the separator-rail, and a stop moving in unison therewith, or carried by a collar mounted on the separator-rail, of a sup-

port provided with an open bearing for the rail-journal and also with a rest without obstruction to interfere with the stop while the rail is being removed, for this is not of my invention. Nor do I claim broadly herein the like combination having the rest located on the front portion of the support, or the support provided with a narrow projecting rest, for these are claimed in my application for Letters Patent filed February 10, 1893, Serial No. 461,731.

I claim as my invention—

1. The combination with the separator-rail, and the separator-rod, of the socket formed with a bearing for the reception of the rail and adjustable vertically upon the rod, and means for holding the socket in the desired position of adjustment on the rod, substantially as described.

2. The combination with the separator-rail, and the separator-rod, of the socket formed with a bearing for the reception of the rail and sliding vertically upon the rod, and the clamping-screw for securing the socket in the desired position of vertical adjustment, substantially as described.

3. The combination with the separators, the separator-rail, and a piece containing a bearing in which the rail is free to rock or turn, of the collar mounted upon the rail and provided with stops projecting to opposite sides of the bearing-piece into position to contact with the front and rear of the latter and thereby arrest the rail at the opposite extremes of its rocking movement, substantially as described.

4. The combination with the separators, the separator-rail, and the collar mounted thereon having a stop, of a bearing support constructed to permit the separator-rail to be removed therefrom unobstructedly before the separators have been turned out of their operative position, it having the open bearing from which the rail-journal may be removed directly and also the rest on the front thereof without obstruction to interfere with the stop while the rail is being removed, substantially as described.

5. The combination with the separators, the separator-rail, and a collar mounted thereon provided with a stop, of a support constructed to permit the rail-journal to be removed therefrom unobstructedly before the separators have been turned out of their operative position, it having the open bearing with the front wall thereof slightly inclined rearwardly and from which the rail-journal may be removed directly, and also on its front portion a surface without obstruction to interfere with the stop while the latter is being removed, substantially as described.

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

CHANNING WHITAKER.

Witnesses:

MARY CAVERLY,
SAML. G. STEPHENS.