

Feb. 6, 1923.

1,444,658

A. C. BUTLER

DRAWING MECHANISM FOR SLIVERS OR ROVINGS

Filed May 10, 1921

Fig. 2.

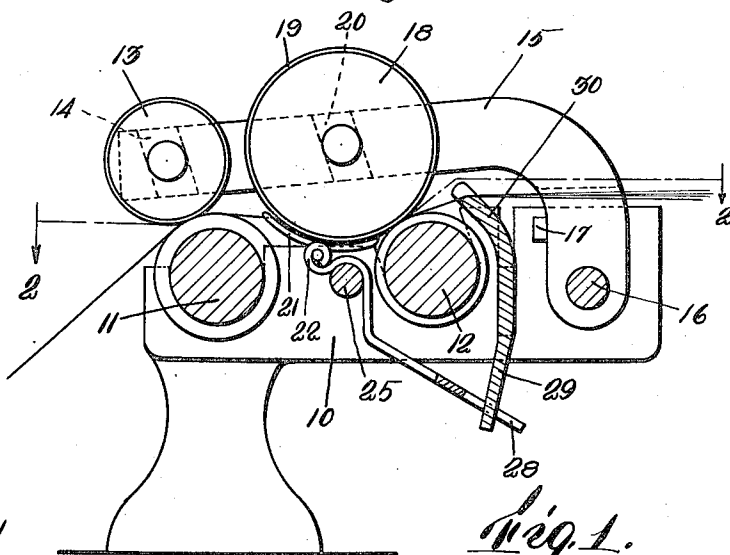
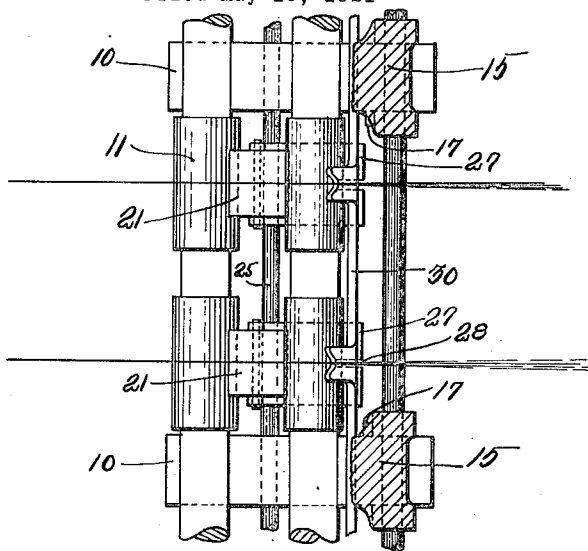


Fig. 1.

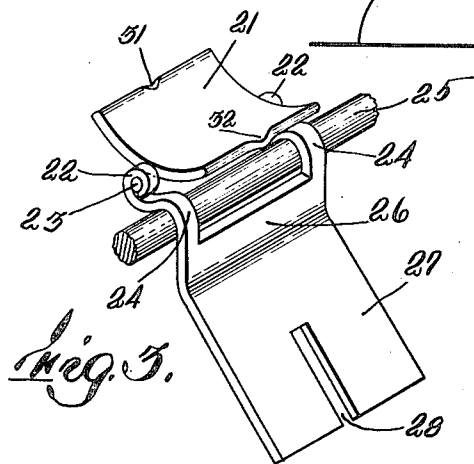


Fig. 3.

Inventor:
Arthur C. Butler
by *Wm. Brown Dunning, Jr.*
Attys.

UNITED STATES PATENT OFFICE.

ARTHUR CECIL BUTLER, OF BOSTON, MASSACHUSETTS.

DRAWING MECHANISM FOR SLIVERS OR ROVINGS.

Application filed May 10, 1921. Serial No. 468,446.

To all whom it may concern:

Be it known that I, ARTHUR CECIL BUTLER, a subject of the King of Great Britain, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Drawing Mechanism for Slivers or Rovings, of which the following is a specification.

This invention has relation to drawing or drafting mechanism for fibrous materials, such as may be employed in drawing or spinning frames, and it has for its object to produce a mechanism by which the sliver or roving may be attenuated and elongated without the formation of thin and thick spots.

One of the principal objects of the invention is further to provide an instrumentality which may cooperate with a top roll for ensuring the accurate delivery of the fiber under the tension of the front rolls so that the fibers may be drawn out so as to produce a strand which is even in diameter throughout.

In accordance with the present invention, I employ an instrumentality which takes the form of a concavo-convex plate or cap arranged to engage the under side of one of the top rolls and located between the nip of said roll with its coacting lower roll and the nip of the next pair of drawing rolls. One of the advantages which I secure by a construction of this character is the ease with which the roving or sliver may be initially passed through the rolls, since the top roll may be easily removed to permit the passage of the roving or sliver over the plate, with which the top roll when in place normally engages. The top roll may be of the self-weighted type and is preferably shod or covered with leather or equivalent frictional material.

On the accompanying drawings,—

Figure 1 represents an end elevation and more or less conventionally a roll stand for a spinning machine embodying my invention.

Figure 2 represents a section on the line 2—2 of Figure 1 on a reduced scale and shows the bottom rolls of the pairs in plan view.

Figure 3 represents in perspective view

one of the caps or plates for cooperation with one of the top rolls.

As I have indicated, the drawing is more or less conventional. The roll stand as a whole is indicated at 10, and it is illustrated as provided with two bottom rolls 11 and 12 which are driven as ordinarily at different speeds, and the sliver-engaging peripheries of which are fluted as ordinarily. For cooperation with the front bottom roll 11, I employ a usual self-weighted front top roll 13 which rests by gravity on the roll 11 and the trunnions of which are arranged in guides 14 in arms 15, said arms being hinged to a rod 16 and being limited in their movement by stops 17. For cooperation with the rear bottom roll 12, I employ a top rear roll 18 which is preferably of large diameter when used for long staple cotton, wool, etc., and which, like the front roll 13, may be covered with leather 19 or other equivalent frictional material. The trunnions of this roll 18 are arranged in guideways 20 formed in the arms or cap bars 15, so that by gravity the roll 18 may engage the sliver or roving as it passes over the roll 12. Preferably the axis of the roll 18 lies in front of a vertical plane including the axis of the roll 12, as best shown in Figure 1, so that the periphery of the roll 18 approaches the front lower roll 11. The two rolls 13 and 18 are respectively rotated or driven by the bottom rolls 11 and 12 with which they engage. The roll 18 occupies, as it were, a portion of the space between the two lower rolls 11 and 12 and projects through a plane tangential to said rolls.

For cooperation with the roll 18, I employ a retarding member comprising a yielding cap or plate which is located between the rolls 11 and 12, and which engages what may be called the under side of the roll 18. One end of this plate extends towards the nip of the rolls 11 and 13, and the plate itself is concavo-convex so as to fit the cylindrical periphery of the roll 18. This cap or plate is indicated at 21 and it is hinged or loosely swiveled to a supporting member, which itself is mounted to tilt about an axis in such manner as to permit of a relative bodily movement of the said plate or cap towards and from the axis of the roll 18. The sup-

port as illustrated may consist of a lever having at one end eyes 22 to receive trunnions or the ends of a pintle 23, projecting from the ends of the cap or plate 21 by which the plate is thus hinged to the lever. As illustrated, the lever may be bifurcated at its ends so as to afford the two arms 24 which terminate in the eyes 22. The lever itself is hung upon a fulcrum so as to permit it to tilt. This fulcrum may consist of a rod 25 secured in the roll stand and located between the rolls 11 and 12 and directly below the roll 18. For the purpose of hanging the tilting supporting member, which is indicated as a whole at 26, upon the fulcruming rod 25, the arms 24 thereof may be curved so as to rest upon and partially encircle the rod so as to swing or tilt thereabout. The member 26 has an offset or bent portion 27 which is of sufficient weight as to over-balance the plate 21 and press it yieldingly against the roll 18. On removing the top roll 18, the cap plate 21 and its weighted tilting support 26 may be lifted bodily and easily from the fulcruming rod 25, and may be easily replaced in position. When it is desired initially to feed the rovings between the rolls, the top roll 18 may be easily lifted out of place and the roving passed over the roll 12 and the cap plate 21, and presented manually to the nip of the rolls 11 and 13, after which the roll 18 may be placed in position and engage the roving in its course between the roll 12 and the front rolls. If desirable, the tilting support for the cap plate 21 may be caused to traverse with the roving, and for this purpose it may be slotted as at 28 to be engaged by a finger 29 on a traverse bar 30. The plate or cap 21 may be provided with guides 31, 32, as best shown in Figure 3.

The function of the yielding plate 21 is to engage and press the roving or sliver against the top roll in its course from the nip of traveling surfaces of the rolls 12 and 18 to the nip of the rolls 11 and 13, so as to retard bunches of fiber from being drawn along with the fibers the ends of which are engaged by the nip of the rolls 11, 13. There are certain of the fibers which are always in suspension between the two pairs of rolls, and the tendency would be for the longer fibers, which are engaged by the front rolls, to draw with them what I might call bunches or clusters of fibers, thereby producing an uneven yarn or one with thick and thin spots or places. By providing the yielding plate for engagement with the self-weighted friction top roll, the fibers are more evenly drawn out and form an even yarn.

In the construction described, the weighted end of the lever presses the concavo-convex cap plate bodily towards and against the top roll 18, or the sliver or roving passing therebeneath, and the said plate by reason of

its hinged connection with said lever automatically adjusts and positions itself relatively to the said top roll. Preferably the curvature of the concave face of the plate is that of an arc whose radius is equal to the radius of the roll 18, so that the plate is complementary to said roll.

What I claim is:—

1. A drawing mechanism, comprising spaced pairs of drawing rolls, each pair of rolls including a bottom roll and a top roll, in combination with a yielding cap or plate located between the bottom rolls and bearing against one of the top rolls, and a pivoted lever on which said cap is hingedly mounted.

2. A drawing mechanism, comprising a pair of front rolls and a pair of rear rolls, each pair comprising a driven bottom roll and a self-weighted top roll, in combination with a fulcrumed lever or support, and a concavo-convex cap or plate hinged to said lever and pressed thereby against the rear top roll.

3. A drawing mechanism, comprising a pair of front rolls, a pair of rear rolls, the top roll of the last-mentioned pair being self-weighted and shod with frictional material and being located partly over the space between the bottom rolls of said pairs, in combination with a cap plate engaging the under side of said last-mentioned top roll and being located between said bottom rolls, and means for bodily pressing said cap plate against said top roll.

4. A drawing mechanism, comprising a pair of front rolls, a pair of rear rolls, the top roll of the last-mentioned pair being self-weighted and being located partly over the space between the bottom rolls of said pairs, in combination with a concave cap plate located between said bottom rolls, a fulcrum, a weighted lever hung on said fulcrum, and a hinge connecting said cap plate to said lever, said parts being so arranged that said cap plate is held yieldingly towards and automatically adjusts itself to the said top roll.

5. A drawing mechanism, comprising a pair of front rolls, a pair of rear rolls, the top roll of the last-mentioned pair being self-weighted and being located partly over the space between the bottom rolls of said pairs, in combination with a rod, a weighted lever hung loosely on said rod, and a concave cap plate located on said lever and pressed thereby against the under side of said last-mentioned top roll in the space between said bottom rolls.

6. A drawing mechanism comprising a pair of front rolls, a pair of rear rolls, the top roll of said rear rolls being offset toward said front rolls, a lever pivoted below said offset roll, and a concave cap plate pivoted to one end of said lever and pressed against a roving passing beneath said offset roll,

7. A drawing mechanism comprising an upper roll, a lower roll cooperating with said upper roll to feed a roving, and a retarding member cooperating with said upper roll beyond the nip of said rolls in the direction of feed.

5 8. A drawing mechanism comprising an upper roll, a lower roll cooperating with said roll to feed a roving, and a retarding member cooperating with said upper roll beyond the nip of said rolls in the direction of feed. In testimony whereof I have affixed my signature. 10

ARTHUR CECIL BUTLER.