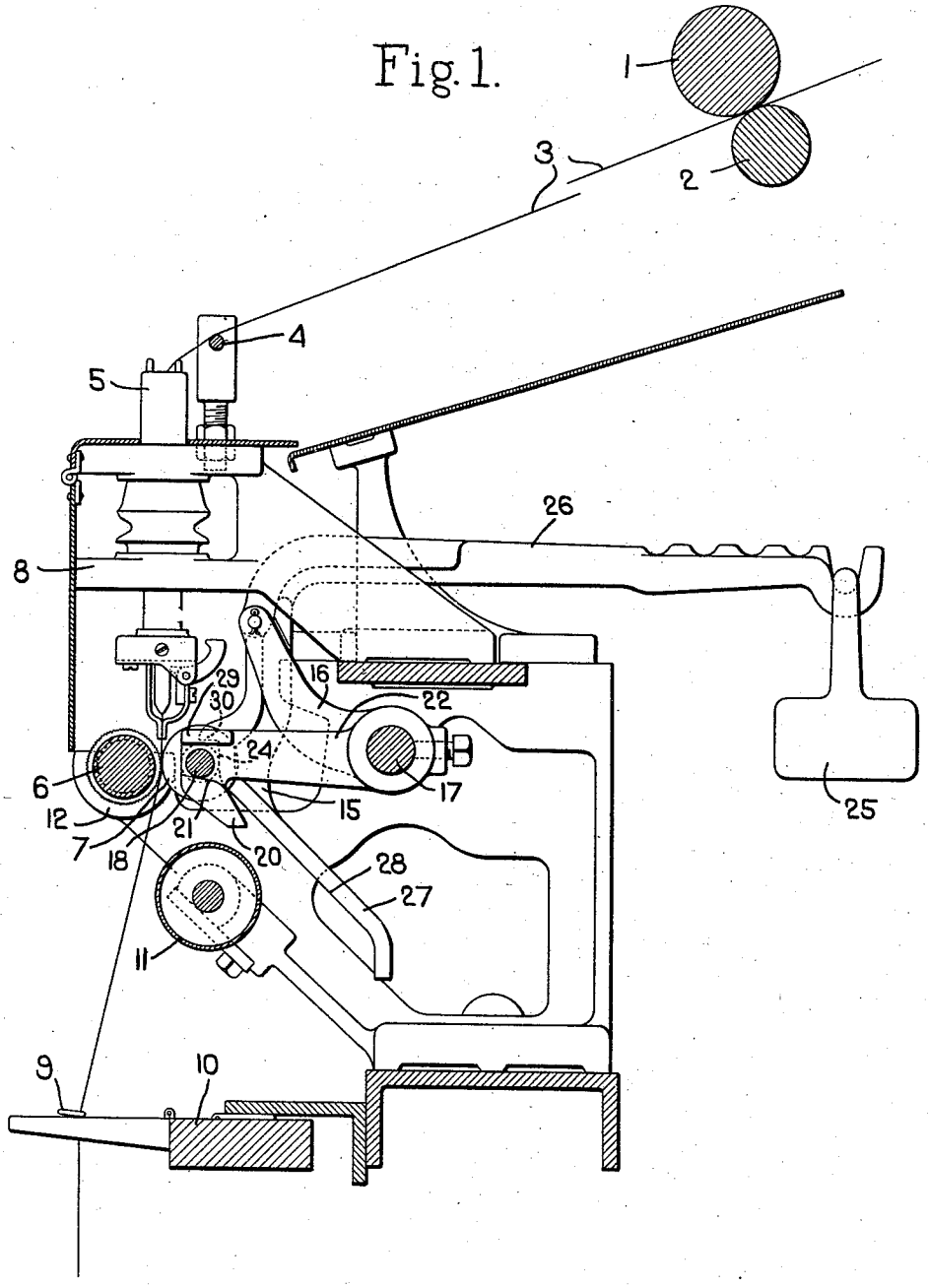
May 6, 1930. H. A. OWEN 1,757,586

DRAFT ROLL CONSTRUCTION FOR SPINNING FRAMES

Filed Dec. 16, 1929 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

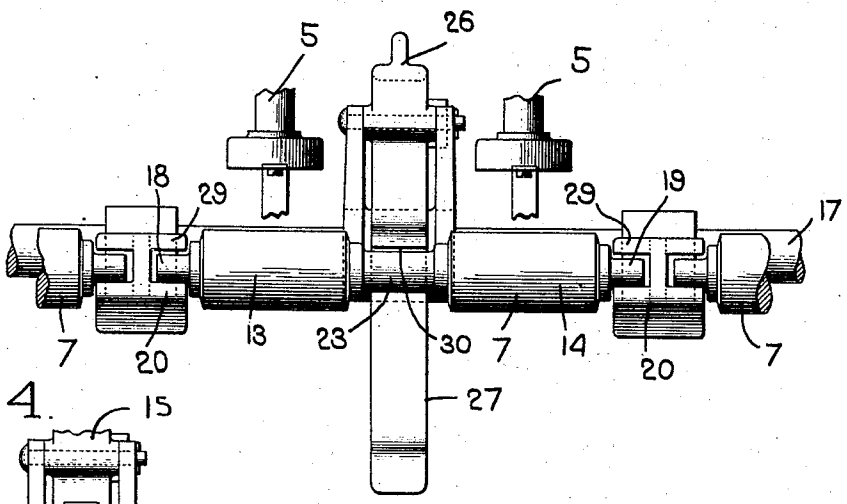


Fig. 4.

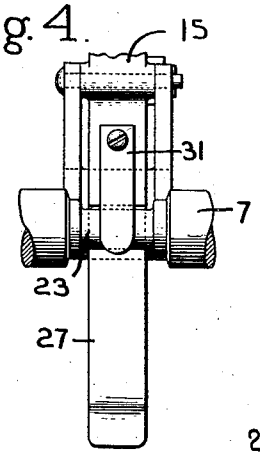


Fig. 3.

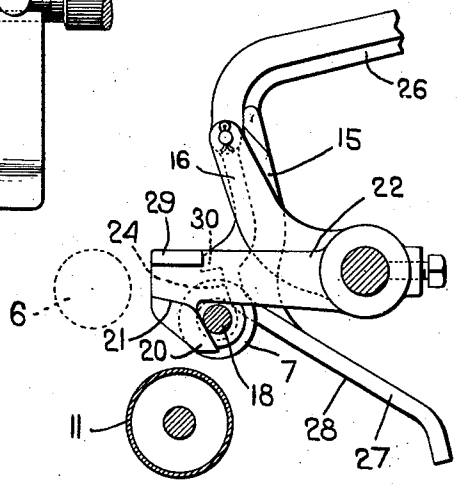
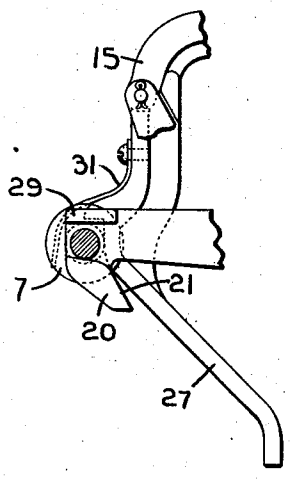


Fig. 5.



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UNITED STATES PATENT OFFICE

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DRAFT-ROLL CONSTRUCTION FOR SPINNING FRAMES

Application filed December 16, 1929. Serial No. 414,307.

This invention relates to ring spinning frames, and particularly to an improved method of mounting the drawing rolls in that type of frame wherein a twister tube is employed to induce a false twist in the roving during the drawing operation.

The general object of the invention is to facilitate the insertion and removal of the loose or presser roll of the lower draft roll couple.

A more specific object of the invention is to provide means which will accurately guide the presser roll into its running position, thereby enabling the operator to readily install the roll in proper position without danger of damaging the roll or other parts of the machine by accidental contact therewith.

The object of the invention is further to provide a support for the presser roll having a downwardly extending bearing surface over which the roll moves by gravity when the pressure of the retained stirrup is released.

A further object of the invention is to provide a system of stops which engage the roll at its ends or at the point of contact with the stirrup by means of which the roll is limited in its upward movement thus preventing it from engaging the points of the adjacent twister tubes.

A further object of the invention is to provide a system of guides and stops to enable the operator to install or remove the presser roll by the sense of touch alone.

A preferred embodiment of the invention is herein shown as applied to a ring spinning frame of a well-known type. Inasmuch as the invention may be applied to various types of ring spinning frames, the construction of which are well-known to those skilled in the art, only those parts of the frame are illustrated with which the present invention is directly concerned.

In the drawings:

Fig. 1 is a transverse sectional view through a portion of a ring spinning frame embodying the invention.

Fig. 2 is a fragmentary view in elevation showing the method of supporting and guiding the removable presser rolls in running position.

Fig. 3 is a detail view illustrating the manner in which the presser roll moves by gravity out of running position when the pressure of the stirrup is released.

Fig. 4 is a detail view in front elevation illustrating an auxiliary device which aids in removing the presser roll from the machine.

Fig. 5 is a detail view showing the auxiliary device in side elevation.

In the operation of a ring spinning frame, it frequently becomes necessary to remove the loose or presser roll from the machine. To accomplish this, means must therefore be provided.

The usual means provided are not well adapted to make such removal or replacement a simple operation. In the type of frame to which this invention relates the relative position of the parts are such that it becomes a difficult and dangerous operation to remove the presser roll. A row of twister tubes prevent direct removal of the roll from above. In machines of this type not embodying the invention, it becomes necessary, therefore, for the operator to reach far into the machine and remove the roll manually from below the lower draft roll, or in some instances from below the scavenger roll. Such a method subjects the operator to injury, and furthermore, while thus removing or installing the roll the operator may accidentally permit the roll to engage the moving parts of the machine which may result in damage to the roll or to other parts of the machine. The possibility of such damage is greatly increased due to the fact that the presser roll, when in running position, is closely adjacent to the rapidly moving twister tube.

The present invention aims to minimize the difficulties thus encountered in this type of machine. In such machines a special type of driving mechanism is employed comprising a pair of feed rolls 1 and 2 between which the roving 3 is fed from a suitable source such as the usual roll or spool not shown. The roving then passes downwardly and over a fixed guide bar 4, and thence through a twister tube 5 of the type disclosed by the patent to Pease No. 983,641 where a tempo-

rary twist is induced in the roving as it passes to the lower drawing rolls 6 and 7. The tube 5 is journalled in a bracket 8 which is secured to the main frame of the machine. The roving 3 then passes through an eye 9 in the threadboard 10, and thence to a ring spinning mechanism not shown where the final twist is put in the roving.

The usual scavenger roll 11 is rotatably mounted in the frame below the drawing rolls 6 and 7 and functions in the well-known manner to retrieve the broken ends of the roving, and thus prevent the ends from fouling the spinning mechanism. The invention resides chiefly in the construction and method of supporting the rolls 7 of the lower drawing roll couple. The roll 6 is of usual construction having a fluted surface over which the roving passes. This roll 6 is driven from any suitable moving part of the frame extending throughout the length of the frame, and is supported in fixed axial position in journals 12 located at suitable intervals. Cooperating with the roll 6 are a series of removable presser rolls 7 which are usually provided with two leather covered faces 13 and 14 which are pressed against the fluted roll 6 by means of a weight-actuated stirrup 15 pivoted upon a bracket 16 rigidly secured to a supporting rod 17 extending throughout the length of the frame. The number of contacting faces upon a single presser roll is immaterial.

As many of these faces may be used as efficiency in design will permit. The presser rolls are arranged in axial alignment throughout the length of the frame in such position that a contacting face of the presser rolls will be located adjacent each of the twister tubes 5. The contacting faces of the rolls 7 may be covered with leather or any material suited to the particular type of product it is desired to manufacture. When in running position the axis of the presser roll is parallel to the draft roll 6 and slightly above its axis. By such arrangement more clearance is obtained between the draft rolls 6 and 7, and the scavenger roll 11. This arrangement reduces the labor of doffing the scavenger roll. A further advantage in thus positioning the presser roll rises from the fact that when a break occurs in the roving the bite of the rolls being at a slight angle will tend to direct the broken end slightly rearwardly where it will readily be picked up by the scavenger roll.

A novel method of supporting the presser roll 7 is provided. The reduced portions 18 and 19 thereof are supported upon especially constructed lugs 20 having downwardly and rearwardly extending bearing faces 21. The lugs 20 are rigid with a bracket 22 fixed to the supporting rod 17. The presser roll 7 has a reduced portion 23 against which the face 24 of the stirrup 15 contacts. The pressure may be regulated by changing the position of the weight 25 along the arm 26 of the stirrup.

The stirrup 15 has a downwardly and rearwardly extending guide arm 27 having a guiding face 28 which constitutes a continuation of the bearing faces 24 and is preferably of the same width. The guide face 28 and the bearing face 24 are of a width to fit the reduced portion 23 of the presser roll. To install the presser roll, the operator places the reduced portion against the lower end of the guide arm with sufficient pressure to raise the weight 25 slightly and cause the stirrup to assume a position as shown in Fig. 3. He then moves the roll upwardly along the bearing face 28 until the ends of the roll engage stops 29 located above the lugs 20 upon the bracket 22. The roll is thus guided longitudinally by the arm 27 and the bearing face 24 as it is put in place and limited in its upward movement by the stops 29 which are so positioned as to prevent the possibility of the roll accidentally engaging the twister tube 5. Furthermore the shape of the bearing face 21 of the lugs 20 as above described greatly assists the operator in installing the roll. If when inserting the roll it is allowed to contact with the scavenger roll the direction of rotation of the latter will tend to move the roll upwardly until it engages the lower end of the bearing surface 21. As the roll is moved upwardly from this point the surface 21 will continue to guide the roll accurately into position. It is evident that the roll may thus be installed by the sense of the touch alone, the difficulty of observing and manually guiding the roll into position being entirely avoided.

When the roll is in place, the stirrup is released and acts to move the pressure roll against the draft roll 6, at which time the end bearings 18 and 19 will rest upon the bearing surfaces 21 of the lugs 20. If desired, a stop 30 may be provided at the upper extremity of the bearing face 24. This stop 30 functions to limit the upward movement of the rolls 7 when installing by engaging the reduced portion 23 thereof. If therefore, the roll 7 should assume a position where the stops 29 would fail to engage the ends of the roll the stop 30 would effectually prevent the roll from coming into contact with the tube 5. If desired, however, the stop 30 may be relied upon entirely to prevent the roll from contacting with the twister tube and the stops 29 may be eliminated.

To remove the roll 7 it is simply necessary to release the pressure of the stirrup permitting the roll to move by gravity over the inclining surface 21 of the lug 20 as shown in Fig. 3. Upon leaving the edge of the lug 20, the roll will fall by gravity where it may be grasped by the operator.

It will be noted that the arm 27 extends

downward to a position where it is readily accessible to the operator. The operator may therefore bear against the arm to back off the presser roll thereby to permit the twister tube to be threaded in the usual manner by pushing through a pipe cleaner. The arm may be used in the same manner to permit sufficient yarn to be pulled through to piece up.

Under normal conditions the roll will by its own weight roll out of its running position when the stirrup is released. In order, however, to insure that such action will positively take place an auxiliary device may be employed which will engage the roll to positively start and assist its action due to gravity.

Any convenient means may be employed to accomplish this result. As herein shown, an arm 31 preferably made of sheet metal is attached to the front face of the stirrup above the bearing face 24 and is bent forwardly and downwardly to embrace the reduced portion of the presser roll. When, therefore, the stirrup is moved to release the presser roll, the arm will engage the front surface of the roll and move it positively backward and thus insure its disengagement from the machine.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a removable presser roll, a stirrup acting yieldingly to move the presser roll into engagement with the draft roll, means to induce a false twist in the roving during the drawing operation, and fixed supports on the frame having downwardly and rearwardly extending bearing faces upon which the ends of the roll rest when in running position, and over which the roll moves by gravity when the pressure of the stirrup is relieved.

2. In a spinning frame, a draft mechanism comprising upper feed rolls, a driven draft roll, a yielding presser roll acting therewith to produce draft in the roving, a twister tube acting to induce a false twist in the roving during the drawing operation, fixed stops above and adjacent the ends of said presser roll acting to guide and limit the upward movement of the roll when installing in running position, and supports upon which the ends of the roll rest when in running position.

3. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a removable presser roll acting therewith to produce draft in the roving, yielding means to maintain said draft and presser roll in engagement, means to induce a false twist in the roving during the drawing operation, journals for the ends of the presser roll open rearwardly, and having downwardly and rearwardly extending lower bearing faces, over which the roll moves by gravity, when the pressure of said yielding means is relieved.

4. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a removable presser roll acting therewith to produce draft in the roving, yielding means to maintain said draft roll and presser roll in engagement, means to induce a false twist in the roving during the drawing operation, stops to guide and limit the upward movement of the roll when installing in running position, and supports having downwardly and rearwardly extending bearing faces upon which the ends of the roll rest when in running position, and over which the roll moves by gravity when the pressure of the yielding means is relieved.

5. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a removable presser roll having a reduced portion midway of its length, a stirrup having a downward and rearward extending bearing face of substantially the same width as and engaging said reduced portion and acting to move the presser roll into engagement with the draft roll and guide it longitudinally when installing it in running position, fixed stops engaging the ends of the roll to limit the upward movement thereof, and supports upon which the ends of the roll rest when in running position.

6. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a presser roll having a reduced portion substantially midway of its length, a stirrup having a downward and rearward extending bearing face engaging said reduced portion, fixed stops above and adjacent the ends of the roll, a stop on said stirrup at the upper extremity of said bearing face cooperating with said fixed stops to limit the upward movement of said roll when installing in running position, and supports beneath the ends of the roll upon which it rests when in running position.

7. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower draft roll, a removable presser roll having a reduced portion substantially midway of its length, a stirrup having a downward and rearward extending bearing face engaging and cooperating with said reduced portion to guide the roll longitudinally as it is installed in running position, and acting to press the roll into yielding engagement with said draft roll, fixed stops adjacent the ends of the rolls to limit its upward movement, and supports having rearward and downward extending bearing faces upon which the ends of the roll rest when in running position, and over which the roll moves by gravity when the pressure of the stirrup is relieved.

8. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a presser roll having a reduced

portion substantially midway of its length, a stirrup having a downward and rearward extending bearing face engaging said reduced portion, a stop on said stirrup at the upper extremity of said bearing face acting to limit the upward movement of said roll when installing in running position and supports beneath the ends of the roll upon which it rests when in running position, and over which the roll moves by gravity when the pressure of the stirrup is relieved.

9. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a presser roll, a stirrup acting yieldingly to move the presser roll into engagement with said draft roll having an arm extending downwardly to a point where it may be readily manipulated to relieve the tension of the stirrup on the roll, means to guide the roll and limit its upward movement when installing, and means to support the roll when in running position.

10. In a spinning frame, a draft mechanism comprising upper feed rolls, a lower driven draft roll, a presser roll acting therewith to produce draft in the roving, a stirrup acting yieldingly to move the pressure roll into engagement with said draft roll, means to induce a false twist in the roving during the drawing operation, stops to guide and limit the upward movement of the roll when installing in running position, supports for the roll having downward and rearward extending bearing faces, and means upon the stirrup engaging the roll when the stirrup is moved to relieve its pressure on the roll acting to start and assist the roll to move by gravity out of running position over said supports.

In testimony whereof, I have signed my name to this specification.

HENRY A. OWEN.