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R. COTTAM ET AL

ROLLER FOR DRAWING MECHANISM FOR FIBROUS MATERIAL

Original Filed Jan. 26, 1923

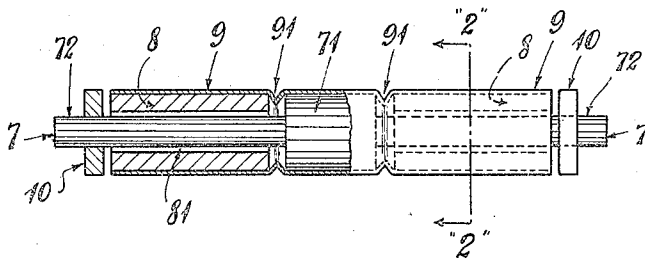


Fig. 1.

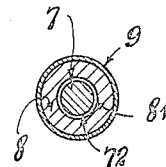


Fig. 2.

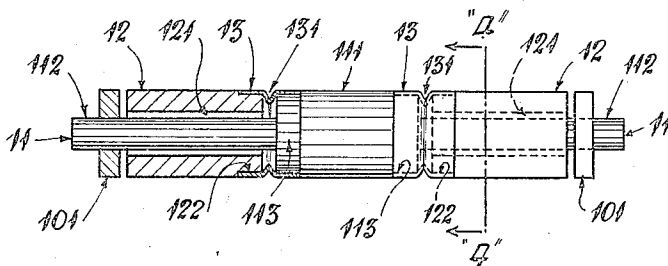


Fig. 3.

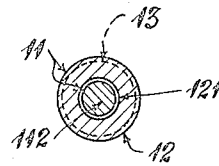


Fig. 4.

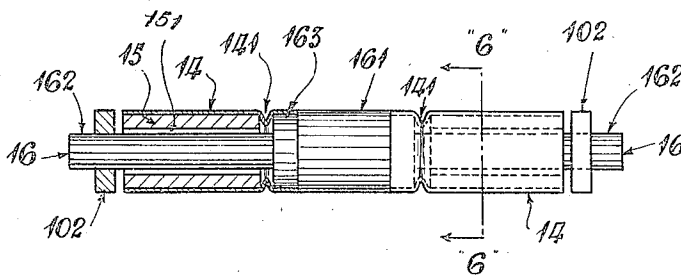


Fig. 5.

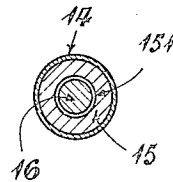


Fig. 6.

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UNITED STATES PATENT OFFICE.

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ROLLER FOR DRAWING MECHANISM FOR FIBROUS MATERIAL.

Original application filed January 26, 1923, Serial No. 615,177. Divided and this application filed July 5, 1923. Serial No. 649,749.

To all whom it may concern:

Be it known that we, ROBERT COTTAM, THOMAS SEFTON, and JAMES EDWARD LEES, subjects of the King of the United Kingdom of Great Britain and Ireland, and residents of 55 Worcester Street, Oldham, in the county of Lancaster, England; 10 Oak Street, Shaw, in the county of Lancaster, England; and 41 Queens Road, Oldham, in the county of Lancaster, England, respectively, have invented new and useful improvements in Rollers for Drawing Mechanism for Fibrous Material, of which the following is a specification.

This case is a division of our application filed January 26, 1923, Serial No. 615,177.

This invention consists in improvements in the rollers ordinarily called "self-weighted rollers" which are made to bear with only their own weight on fibrous material in the form of strands, slivers or rovings in drawing or drafting mechanisms of any kind in order to press such fibrous material against rollers made to revolve or against other surfaces made to revolve or to travel and particularly relates to self weighted rollers for drawing or drafting mechanisms used to effect high drafting or great extensions of fibrous material.

The principal object of this invention is to obviate the defects experienced in the use of self weighted rollers in the methods hitherto customary in drawing or drafting mechanisms especially in cases in which the self weighted rollers are very light, through such rollers failing to be revolved with approximate regularity by friction against the fibrous material on which they are made to bear or the rollers or surfaces with which they co-operate.

With this principal object, this invention consists in "self weighted rollers" formed of sleeves which are mounted freely around and eccentrically movable relatively to axles made to revolve in use for holding them in position and are connected to such axles by flexible tubular connecting means and so compelled constantly to turn with the axles on which they are mounted while bearing on fibrous material by their own weight only or substantially by their own weight only and without or substantially without the axles imparting or transmitting pressure to them.

The accompanying drawing shows rollers forming illustrative embodiments of this invention. Figs. 1, 3 and 5 are side elevations partly in longitudinal section and Figs. 2, 4 and 6 are transverse sections the lines numbered in correspondence with figures indicating the several planes on which sections are taken. The same numerals of reference indicate corresponding parts.

In the roller shown in Figs. 1 and 2, 7 is the axle formed with a central boss 71 and two cylindrical arbors or rods 72 extending from that boss 71. The axle 7 is provided with two sleeves 8 loose around the arbors 72 and free to move for a convenient distance eccentrically in relation to them. A tube 9 of leather such as is ordinarily used for roller coverings is made to extend over and secured to both sleeves 8 and the boss 71 so as ordinarily to hold the sleeves 8 a little away from the boss 71 and is subjected as is preferable to pressure and friction in the parts 91 between the sleeves 8 and the boss 71 so as to be made more flexible or capable of yielding to allow the sleeves 8 to move eccentrically in relation to the axle 7.

The boss 71 is made of a diameter such that with the part of the tube 9 surrounding it, it will hold up the axle 7 by bearing upon the fluted roller or other surface with which the roller shown is to co-operate while the diameters of the arbors 72 and the external diameters of the sleeves 8 and the diameters of the longitudinal holes 81 through them are made such that the sleeves 8 can move so far eccentrically in relation to the arbors 72 as to bear by only their own weight and that of the attached portions of the tube 9 on fibrous material on the fluted roller or other co-operating surface on which fibrous material is to be pressed and the arbors 72 are prevented by the boss 71 and attached portions of the tube 9 from applying pressure to the sleeves 8 and so serve practically only to keep the sleeves 8 in position. The leather covering formed by the portion of the tube 9 surrounding the boss 71 bears on the fluted roller or other co-operating surface on which fibrous material is to be pressed and promotes or ensures the turning of the axle 7 by friction thereagainst and the tube 9 compels the sleeves 8 to turn with the axle 7 while bearing by only their own weight and that of the surrounding portions of the tube

9 on fibrous material or against the co-operating roller or surface and without or substantially the axle 7 imparting or transmitting pressure to them.

- 5 Two collars 10 of the same circumference as the portion of the tube 9 surrounding the boss 71 so as like it to bear on the fluted roller or other co-operating surface and to transmit movement to the axle 7 are pushed
10 tightly or otherwise secured on the arbors 72. The arbors 72 project through the collars 10 so that the roller can be revolved in guides similarly to ordinary top rollers of drawing or drafting mechanisms.
- 15 In Figs. 3 and 4 and axle 11 generally similar to that shown in Figs. 1 and 2 with a central boss 111 from which extend cylindrical arbors 112 is provided with two sleeves 12 which are applied around arbors
20 112 and made movable eccentrically relatively to them by having longitudinal holes 121 larger than the arbors 112 and are connected to the axle 11 by means of short tubes or rings 13 of flexible leather, such as
25 is ordinarily used for roller coverings, secured on short parts 113 and 122 of less diameter formed respectively at the ends of the boss 111 and at the adjacent ends of the sleeves 12. Friction and pressure are preferably applied to the tubes 13 as is indicated
30 at 131 in the parts between the sleeves 12 and the boss 111 so that the tubes 13 will yield more easily in allowing the sleeves 12 to be moved eccentrically in relation to the axle
35 11. Collars 101 similar to the collars 10 and of diameter equal to that of the boss 111 are secured upon the arbors 112.

- In Figs. 5 and 6 extensions of tubular leather coverings 14 of sleeves 15 intended
40 to bear on fibrous material like the sleeves 8 mounted to be eccentrically movable about and having longitudinal holes 151 larger than the cylindrical arbors 162 extending from the central boss 161 of an axle 16 generally similar to that shown in Figs. 1 and
45 2, are secured to parts 163 of less diameter formed at the ends of the boss 161 and preferably the leather is subjected to friction and pressure in the parts 141 between
50 the sleeves 15 and the boss 161 so that it will yield more readily in allowing the sleeves 15 to be moved eccentrically in relation to the axle 16. Collars 102 similar to the collars 10 and 101 and of diameter equal to that of
55 the boss 161 are secured on the arbors 162.

- Tubes of flexible material may be applied in other ways as the connexions between roller sleeves and axles for holding them in position and in different constructions the
60 axles and roller sleeves may be of different materials and be formed and disposed in other ways without departure from the spirit of this invention as embodied in the claims following.

- 65 Thus the roller sleeves may be of any for-

mation and material appropriate to the ways, mechanisms or machines in which they are to be used, as for example they may be formed of metal, wood, vulcanite or other material suitable and smooth, fluted or of
70 other form or may be formed of cores of metal, wood or other material with coverings of leather or other material appropriate and one sleeve or more may be provided around one axle.

Similarly the axles may be formed or furnished in any suitable way with bosses or driving parts for revolving the axles through bearing against or being made to engage with and so to be revolved by the
75 rollers or surfaces made to travel against which the sleeves are to press fibrous material, or by parts provided on such rollers or surfaces. The bosses or driving parts provided on the axles for revolving them may
80 be smooth or plain or fluted or roughened or covered with leather or adapted in any other way for bearing against or engaging with and receiving motion from fluted rollers or other surfaces against which fibrous
85 material is to be pressed by the sleeves of the rollers. The weight of the axles and bosses or driving parts may be made to serve alone for causing the bosses or driving parts to bear against or engage with the rollers or
90 surfaces made to travel such an axle being called a self weighted axle or the axles may be weighted or made subject to spring pressure in any way convenient as for example by weights or springs applied to bear on the
95 axles in the parts between sleeves in the cases shown in Figs. 3 and 4 and Figs. 5 and 6 so that their revolution may be promoted or ensured while they will have no or approximately no part in pressing the sleeves
100 against the fibrous material and the fibrous material against the rollers or surfaces against which it is to be pressed.

The tubes or coverings 9 and 14 and tubes 13 besides compelling the sleeves and axles
105 with which they are respectively used to turn together fulfil also the function of resisting movement of the sleeves from the co-operating rollers or surfaces with which they are used and counteracting the tendency of the inertia of the sleeves to delay or hinder the return of the sleeves to proper bearing on the fibrous material against the co-operating rollers or surfaces and to interfere with the equable bearing of the
110 sleeves on such fibrous material.

The tubes or coverings 9 or 14 and tubes 13 also exclude fly or fluff from entry between the bosses and the sleeves connected with them. The rollers shown are simple
115 and advantageous in construction and application.

Rollers comprising eccentrically movable sleeves mounted around and made to turn
120 with axles according to this invention may

be employed to co-operate with any kind or form of rollers or other surfaces in any forms of drawing or drafting mechanism and may be used as the only means for pressing fibrous material against the rollers or surfaces with which they co-operate or may be used in pressing fibrous material against rollers or surfaces with which other co-operating pressing rollers or devices are used.

10 What we do claim as our invention and desire to secure by Letters Patent is:

1. In a self weighted roller for a drawing mechanism as hereinbefore indicated, a revoluble axle having means for bearing 15 against and being revolved by a moving part with which the roller is to co-operate and so supporting and bringing about the revolution of the axle, a sleeve mounted around and eccentrically movable relatively to the axle for bearing on fibrous material and tubular flexible connecting means in connexion with the sleeves and the axle.

2. In a self weighted roller for a drawing mechanism as hereinbefore indicated a revoluble axle having means for bearing 25 against and being revolved by a moving part with which the roller is to co-operate and so supporting and bringing about the revolution of the axle, sleeves mounted around and eccentrically movable relatively to the axle for bearing on fibrous material

and tubular flexible connecting means in connexion with the sleeves and the axle.

3. In a self weighted roller for a drawing mechanism as hereinbefore indicated a self 35 weighted revoluble axle having means for bearing against and being revolved by a moving part with which the roller is to co-operate and so supporting and bringing about the revolution of the axle, a sleeve 40 mounted around and eccentrically movable relatively to the axle for bearing on fibrous material and tubular flexible connecting means in connexion with the sleeves and the axle.

4. In a self weighted roller for a drawing mechanism as hereinbefore indicated a self weighted revoluble axle having means for bearing against and being revolved by a 50 moving part with which the roller is to cooperate and so supporting and bringing about the revolution of the axle, sleeves mounted around and eccentrically movable relatively to the axle for bearing on fibrous material and tubular flexible connecting means in 55 connexion with the sleeves and the axle.

In testimony, that we claim the foregoing as our invention, we have signed our names this nineteenth day of June, 1923.

ROBERT COTTAM.
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JAMES EDWARD LEES.