(No Model.) 2 Sheets—Sheet 1.

J. M. DUNHAM & J. McKEMMIE.

DRAWING ROLLS FOR SPINNING FRAMES, &c.

No. 392,950. Patented Nov. 13, 1888.

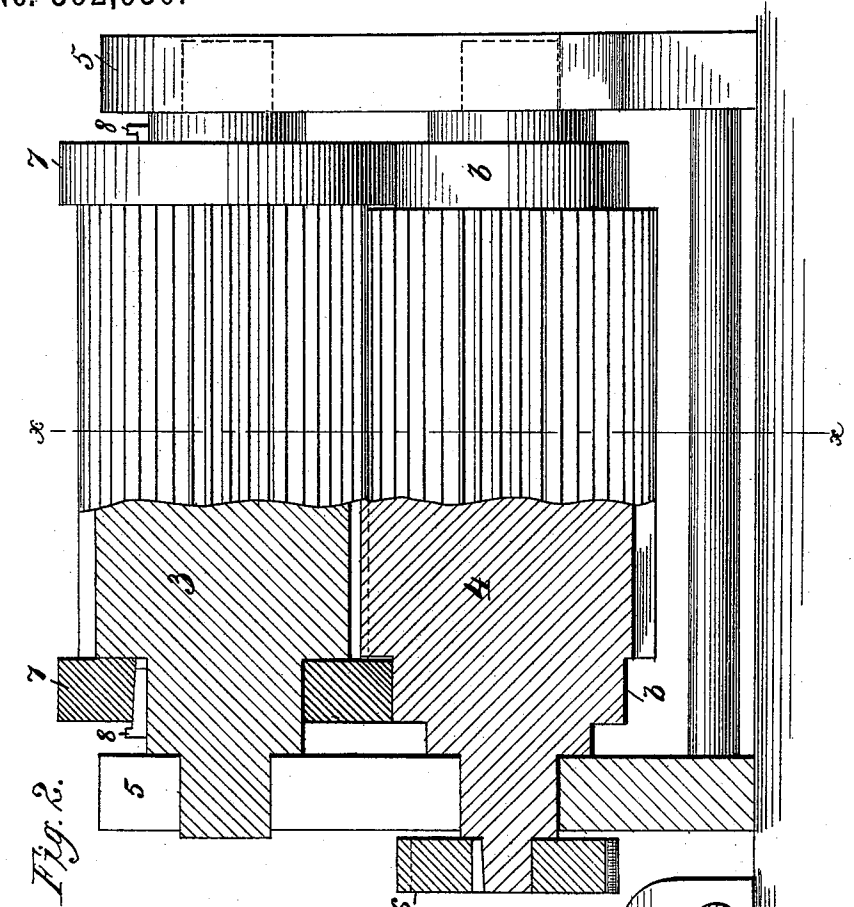

Fig. 2.

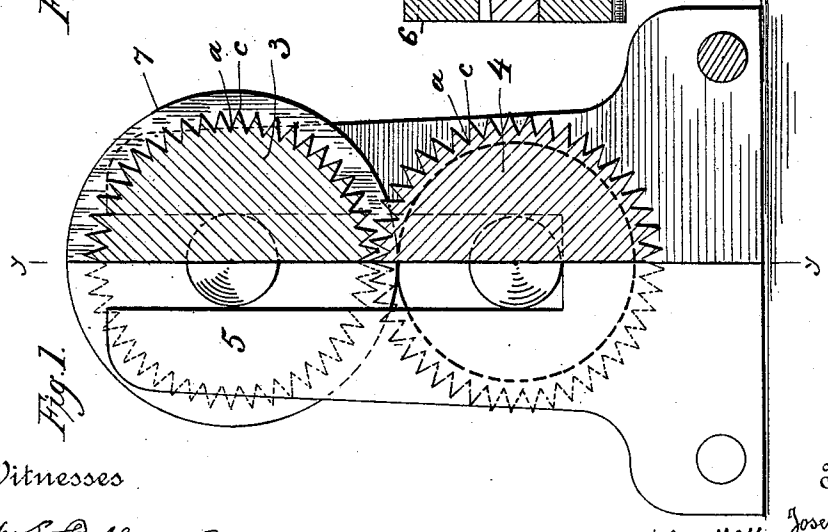

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

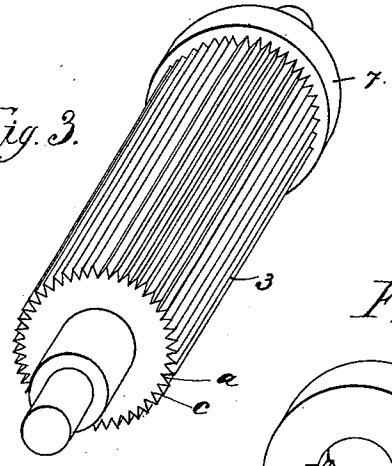
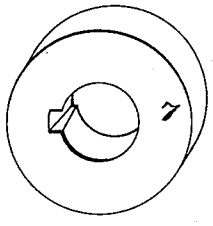


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DRAWING-ROLLS FOR SPINNING-FRAMES, &c.

SPECIFICATION forming part of Letters Patent No. 392,950, dated November 13, 1888.

Application filed May 9, 1888. Serial No. 273,325. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH M. DUNHAM and JOHN MCKEMMIE, citizens of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Drawing-Rolls for Spinning-Frames, &c., of which the following is a specification.

This invention relates to drawing-rolls for drawing-heads for elongating, evening, and reducing slivers of fibrous material preparatory to spinning or twisting the same; and the invention consists in the peculiar construction of said rolls and in means for supporting them in relative operative positions while the sliver passes between them, all as hereinafter fully described, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is an end elevation, partly in section, and Fig. 2 is a side elevation, also partly in section, of two fiber-drawing rolls constructed according to our invention, said figures showing a frame or portions thereof in which said rolls are adapted to be rotated. Fig. 3 is a perspective view of one of said rolls. Fig. 4 is a perspective view of an end collar of the roll. The parts of Fig. 1 which are shown in section are taken about on line *x x*, Fig. 2, and the parts in Fig. 2 shown in section are taken about on line *y y*, Fig. 1.

In the drawings, 3 and 4 represent, respectively, the upper and lower rolls of one of the three pairs of drawing-rolls, which are usually mounted in a frame side by side and constitute a "drawing-head," the sliver operated upon passing between the several pairs of rolls in succession in a manner well-known to those familiar with such machinery. The said drawing-rolls 3 and 4 are supported one above the other in the vertically-slotted standards 5 of the roll-frame, and rotary motion is imparted to each pair, ordinarily, through a gear, 6, on one end of the lower roll, having suitable engagement with other running-gearing.

Heretofore other drawing-heads than those having rolls arranged in pairs consisting of one (the lower) made of metal, with a series of longitudinally-running flat-bottomed grooves in its surface, and the upper one, also of metal, not grooved, but covered with leather, have been but little known. The said leather-covered roll is used with said metal one in order to provide a yielding surface on the pressure-roll to avoid crushing the sliver, and the said lower roll is grooved, as described, to enable it to better engage with said sliver. Owing to the considerable cost of often re-covering said leather-covered rolls, efforts have been made to use grooved metal rolls for both top and bottom rolls, so arranging or supporting said rolls that their ribs and grooves roll in direct contact when no sliver is passing between them.

The improvements in drawing-rolls herein shown and described provide said rolls with adjustable bearings therebetween, whereby the axes of the rolls are made adjustable toward and from each other for the purpose of preventing them from rotating in contact with each other and for bringing the interoperating-surfaces of the ribs and grooves of each pair of rolls into such relation to each other that the sliver-space between them shall be of such depth or dimension as causes the sliver to be sufficiently compressed between the rolls, (within its elastic capabilities,) whereby said sliver is made to positively move or be drawn along in consonance with the surface movement thereof without danger of crushing or cutting the fibers of the sliver, whether the upper roll be weighted or not. The said drawing-rolls 3 and 4 are for the purposes of this invention made preferably with grooves *a* and ribs *c*, of V shape, as shown; or, in other words, each of said ribs is of triangular form in cross-section, as plainly seen at the end of the roll, and the formation of such ribs *c* naturally results in the production of correspondingly-shaped grooves *a* therebetween.

The practical advantages pertaining to drawing-rolls having the V-shaped ribs and grooves, as described, are that the edges of the grooves, more or less acute, afford vastly more efficient means for the requisite engagement of the ribs with the sliver than do ribs having curved or half-rounded edges, and under equal contact conditions of operation upon a sliver the rolls herein shown would draw it, while the rolls with round-edged ribs would slip over it.

The means for maintaining the rolls 3 and 4 in such positions that their axes are so separated, as shown, that the edges of the ribs of

one roll do not reach the bottoms of the grooves in the other roll are illustrated in Figs. 1 to 4, inclusive, and are as follows: One of said rolls (the upper one, 3, is shown so fitted in the drawings) has a circular collar, 7, secured on each end thereof by a key, 8, or by screws passing through said collar into the end of the roll, or by other suitable means, whereby one pair of collars may be replaced by another pair having a greater or less diameter. The peripheries of said collars 7 bear upon and rotate in contact with those portions *b* of the opposite roll between its journals and the adjoining ends of its grooved part, and said collars are of such diameter that they allow of the interlocking, more or less, of the ribs and grooves of the two rolls, but prevent the edges of the ribs from ever touching the bases of the opposite grooves, as shown. The said collars 7, attached to the said rolls, as described, provide adequate means for holding said rolls in their said partially-separated relations while they rotate or of adjusting the degree of such separation to suit the sliver to be operated upon. It is obvious that the said drawing-rolls 3 and 4 may when applied to a machine to be run unchangingly on slivers of a given weight per yard or of uniform size have said collars 7 permanently fixed thereon to maintain the roll which they support in a certain fixed but separated relation to the opposite roll; or, in other words, the rolls are so controlled that their ribs and grooves only partially interlock, as shown in Fig. 1.

What we claim as our invention is—

1. A pair of drawing-rolls for fibrous materials, having longitudinal ribs and grooves normally interlocking with each other during their rotation, combined with bearings for one of said rolls, whereby the axes thereof are held at such degree of separation that the edges of the ribs of one roll have no contact with the bottom of the grooves of the opposite roll, substantially as set forth.

2. A pair of ribbed and grooved drawing-rolls for fibrous materials, normally interlocking with each other during their rotation, combined with interchangeable bearings for one of said rolls, whereby the axes thereof are held at varying degrees of separation, substantially as set forth.

3. A pair of drawing-rolls for fibrous materials, having longitudinal ribs and grooves normally interlocking with each other during their rotation, combined with circular collars, substantially as described, secured on the ends of one of said rolls, whose peripheries engage with the opposite roll, whereby the edges of the ribs of one roll have no contact with the bottom of the grooves of the opposite roll, substantially as set forth.

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