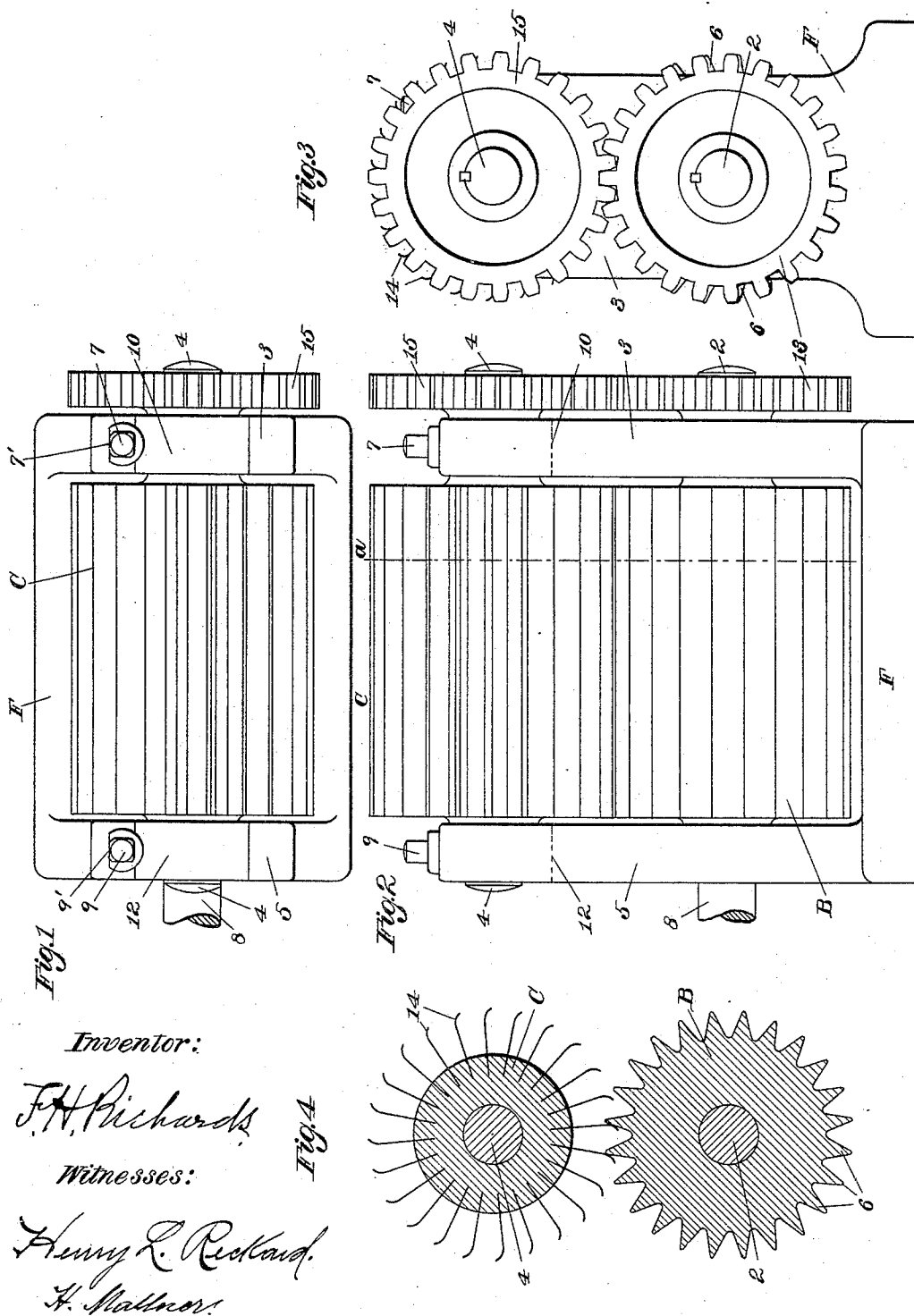


(No Model.)

F. H. RICHARDS.
DRAWING ROLLS FOR SPINNING MACHINES.

No. 474,030.

Patented May 3, 1892.



UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

DRAWING-ROLLS FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 474,080, dated May 3, 1892.

Application filed July 8, 1891. Serial No. 398,761. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Drawing-Rolls for Spinning-Machines, of which the following is a specification.

This invention relates to rolls used in drawing-heads for reducing slivers of fiber preparatory to the twisting and spinning of the same, the object being to provide improved drawing-rolls which shall be more positive and reliable in their operation than the rolls ordinarily used for this purpose.

In the drawings forming a part of this specification, Figure 1 is a plan view of a pair of drawing-rolls embodying my present improvements. Fig. 2 is a side elevation of the same drawn in projection with Fig. 2. Fig. 4 is a sectional end elevation of the rolls, the view being taken on line *a a*, Fig. 2, and showing the construction of the rolls more in detail.

Similar characters designate like parts in all the figures.

The lower drawing-roll B is fixed upon a driving-shaft 2, that is carried by bearings formed in the two uprights 3 and 5, respectively, of the frame F. Said lower roll is longitudinally grooved after the ordinary manner of constructing drawing-rolls to form the series of V-shaped ribs 6, which should be slightly rounded at their outer edges to prevent any cutting or unnecessary abrasion of the fiber. The lower roll, which I denominate the "V-roll," is positively rotated through its shaft 2 by the usual means—as, for instance, a wheel or gear (not shown)—fixed upon the end 8 of said shaft. The top roll C is carried by an upper shaft 4, which may be supported in the removable bearings 10 and 12, respectively, which bearings are set in suitable notches or recesses formed, substantially as shown, in the upper ends of the aforesaid uprights 3 and 5 and retained therein by the ordinary segmentally-flanged holding-screws 7 and 9, respectively. On turning the holding-screws to loosen the same and bring the flat sides 7' and 9' of the flanges thereof adjacent to the removable bearings 10 and 12

these bearings may be lifted out of their seats in a well-known manner.

The top roll, according to my improvements, is provided with a series of spring-ribs, which are inserted in slots formed in the outer surface of the roll-body C, as will be understood from Fig. 4. The outer edges of the spring-blades or ribs 14 are shown curved backwardly to form oveled faces for properly bearing against the rearward sides of the aforesaid V-ribs 6 of the lower roll. It is to be understood that the inclination of the sides of the ribs 6 relative to a radial line from said ribs to the axis of roll B may be varied for the purpose of modifying the action of the aforesaid spring-ribs against said inclined sides, or one side only of one of said ribs may in some cases be inclined, as set forth.

The upper roll and its shaft are or may be driven from the lower roll by means of a pair of spur-gears 13 and 15, fixed on said shafts 2 and 4, respectively. The position, circumferentially, of the shafts of said rolls and gears should be such as to bring the spring blades or ribs 14 into proper working position relatively to the V-ribs of the lower roll. As a means for regulating this relation of the respective ribs, I make the gears 13 and 15 to have one tooth more or less than the corresponding roll has ribs relatively to the ribs of the rolls. By means of this construction of the gears to have a variant number of teeth the relative working positions of the respective ribs may be modified by slipping one of the gears one tooth forward or back, as the case may require, thus adjusting the rolls by a fractional part of the distance between two successive ribs corresponding to the number of teeth in the gear. By this means the working distance of the spring-blades may be brought just close enough to the V-ribs to properly grasp the sliver in any particular case. The blades 14, being somewhat elastic, overcome the slight irregularity of construction unavoidable in the making of the V-rolls and also hold the sliver with a yielding pressure, so as to simultaneously grasp it against two or more of the V-ribs with substantially equal force. Said blades being elastic, as set forth, also yield at one end more than at the other whenever the mass of the sliver is thicker at one side than toward the other side

thereof, and the blade also when properly constructed should be slightly elastic longitudinally, so as to better conform itself to the cross-sectional form of the sliver, and thus increase the holding-power, while maintaining the least practicable pressure thereon.

In my improved drawing-rolls the pressure upon the sliver is self-regulating, since when the sliver increases in size it forces back the spring-blades from the corresponding faces of the V-ribs, and by thus increasing the tension of the spring increases the pressure on the sliver, thus securing the required increase of drawing-power.

In the drawings rolls B and C are shown mounted upon shafts 2 and 4, respectively, which shafts constitute journals for revolvably supporting the rolls in their bearings, and may in some cases, if so preferred, be formed integral with the rolls.

Having thus described my invention, I claim—

1. A pair of drawing-rolls for fibrous materials, consisting of one ribbed roll and a roll provided with spring-blades coacting with the ribs of the other roll, substantially as described.

2. A pair of drawing-rolls for fibrous materials, consisting of one V-ribbed roll and a roll provided with spring-blades, coacting with the ribs of the other roll and having the edges of the springs backwardly curved, substantially as described.

3. The combination, with supporting frame-work, of the ribbed roll and the spring-roll revolvably supported in the frame-work, and gears actuating one said roll from the other and set to bring the blades of the spring-roll into working relation with one side of the ribs of the opposite roll, substantially as described.

4. The combination, with supporting frame-work, of the ribbed roll and the spring-roll revolvably supported in the frame-work, and gears actuating one said roll from the other and set to bring the blades of the spring-roll into engagement with one side of the ribs of the opposite roll and having their teeth of a variant number relatively to the ribs of the rolls, whereby the coaction of the ribs and blades may be adjusted, substantially as described.

5. The combination, with the frame-work having the uprights 3 and 5, each having a journal-bearing and a seat for a removable bearing, of the removable bearings set in said uprights, the ribbed roll journaled in said journal-bearings, the spring-roll journaled in said removable bearings, means for removably fixing said removable bearings in place, and means rotating the one roll from the other, substantially as described.

FRANCIS H. RICHARDS.

Witnesses:

HENRY L. RECKARD,
H. MALLNER.