

996,970.

I. F. BURNHAM.
RUBBER COVERED ROLL.
APPLICATION FILED JUNE 3, 1909.

Patented July 4, 1911.

2 SHEETS—SHEET 1.

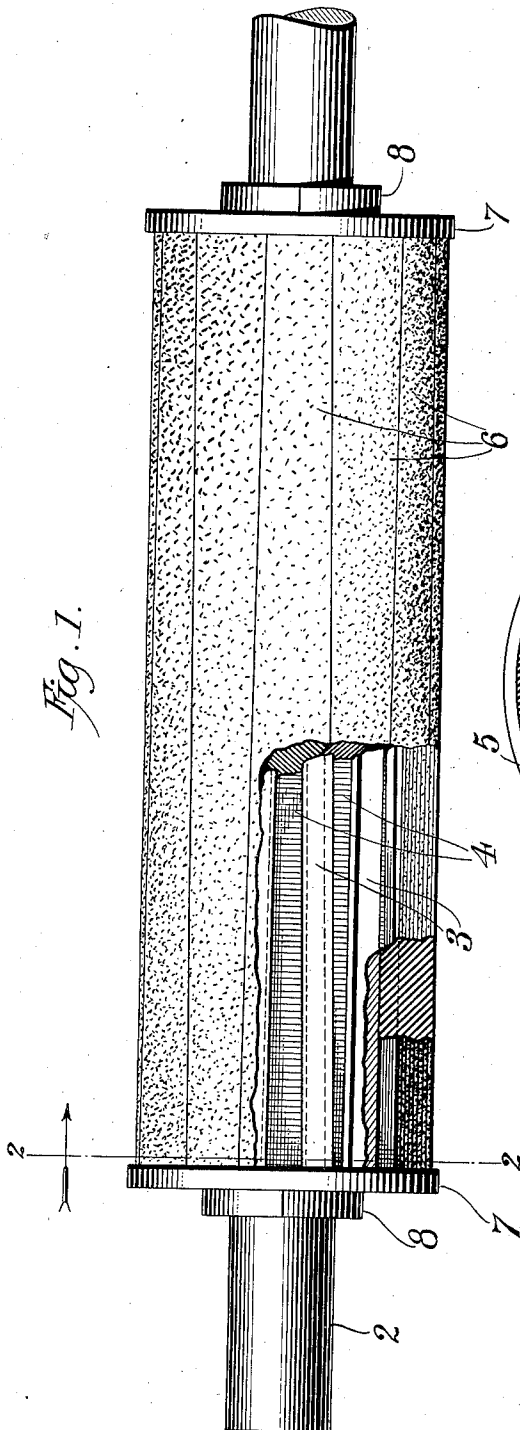


Fig. 1.

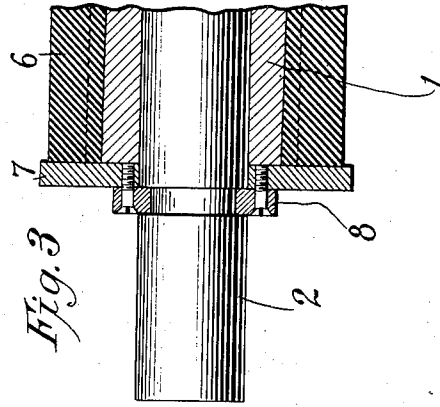


Fig. 3.

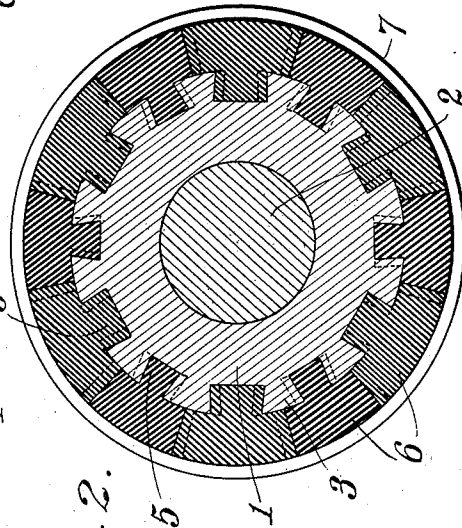


Fig. 2.

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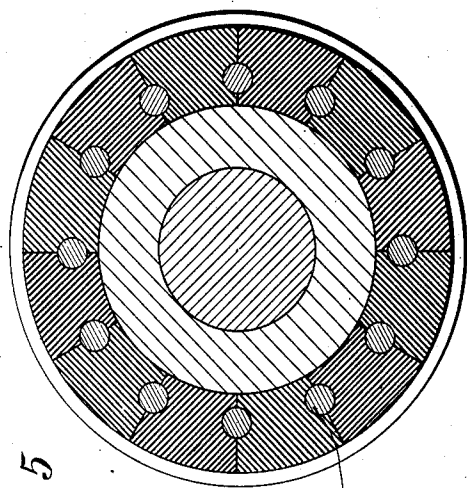


Fig. 5

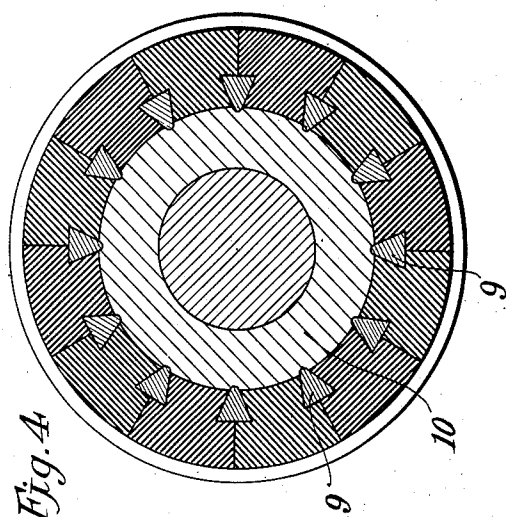


Fig. 4

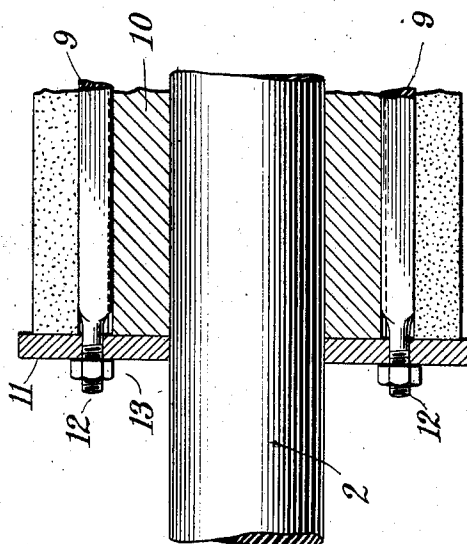


Fig. 6

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UNITED STATES PATENT OFFICE.

IRA F. BURNHAM, OF STOUGHTON, MASSACHUSETTS, ASSIGNOR TO STOUGHTON RUBBER COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

RUBBER-COVERED ROLL.

996,970.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed June 3, 1909. Serial No. 499,984.

To all whom it may concern:

Be it known that I, IRA F. BURNHAM, a citizen of the United States, and a resident of Stoughton, county of Norfolk, State of Massachusetts, have invented certain new and useful Improvements in Rubber-Covered Rolls, of which the following is a full, clear, and exact disclosure.

My invention relates particularly to rubber covered rolls used in wool washing machines where they are subjected to heavy pressures and strains.

I do not wish to be understood as being limited to rolls that are used for this particular purpose, for my improved roll may be utilized wherever rubber covered rolls are used in the various arts.

The object of my invention is to produce a roll which has a practically continuous homogeneous surface, which is less likely to become worn and which may be easily repaired or renewed, should it become damaged.

For a detail description of several forms of my invention which I at present deem preferable, reference may be had to the following specification and to the accompanying drawings, forming a part thereof, in which—

Figure 1 is a view in elevation showing parts of the rubber portion of the roll cut away in order to disclose the fastening means; Fig. 2 is a transverse sectional view of the roll, taken on the line 2—2 Fig. 1; Fig. 3 is a longitudinal sectional view of one end of the roll of Figs. 1 and 2; Figs. 4 and 5 are transverse sectional views of modified forms of the roll; and Fig. 6 is a longitudinal sectional view of the end of the roll of Fig. 4.

Referring to the drawing, the numeral 1 indicates a longitudinal bushing or sleeve through which the shaft 2 passes and to which it is secured by a key or in any suitable or well known way. The sleeve 1 is provided on its cylindrical surface with a series of longitudinal ridges or flanges 3 forming ribs which taper inward toward the center, or in other words are in the shape of a dovetail. The grooves 4 formed between the ridges 3 are preferably wider at one end than at the other and are adapted to receive similarly shaped flanges or lugs 5 carried on the inner side of the rubber sections 6, which constitute the surface of the

roll. The rubber sections 6 are also tapered and are arranged alternately with their wider ends at opposite ends of the roll, as clearly shown in Fig. 1. Disks 7 are placed upon the shaft 2 for the purpose of holding the longitudinal strips 6 in position and the disks may be retained upon the shaft 2 in any suitable way, such as by split collars 8 entering grooves in the shaft and attached to the disks 7 by screws.

In Fig. 4 I have shown a form of the roll in which the retaining ribs for the rubber strips is in the form of triangular bars 9, the inner angles of which fit into corresponding grooves in the surface of the sleeve 10. The bars 9 are secured to the end disks 11 by being reduced to cylindrical form and screw threaded as at 12. The screw threaded portions pass through holes in the disks 11 which are held in position by nuts 13 and tend to compress the strips longitudinally. The rubber strips are preferably made tapering as in the form of the roll first described.

In Fig. 5 I have shown the retaining ribs in the form of cylindrical rods 14 which engage semi-cylindrical grooves in the adjacent sides of the tapering rubber strips. It is obvious that these rods may be made rectangular if preferred. It should be noted that the joints between the rubber strips are not parallel with the axis of the roll but are inclined or situated helically in relation thereto. This arrangement prevents the pressure of an opposing roll from acting upon the joint except for a small portion of its length and obviates any tendency of the strips to separate or the joints to open.

Rolls constructed as above described, not only consist of no more parts than a roll made up of a series of disks clamped together, but also last for a longer time, as there are fewer joints and corners to become worn. It will also be seen that any one of the strips may be removed and inserted by displacing one of the end disks and withdrawing said strip without disturbing the position of the others. This is not possible in a roller made up of a series of transverse disks clamped together, as all of the disks from one end, up to the disk to be replaced, must be first removed. The tapering form of the strips enables all of the pieces to be firmly wedged together, thereby placing the surface of the roll under considerable

compression, so that the joints between the strips are firmly closed. The fact that the joints between the strips extend diagonally and longitudinally of the roll, renders the joints less liable to separate, and thereby catch and retain fibers of the material being treated or other foreign matter.

Having thus described these examples of embodiments of my invention, I do not wish to be understood as being limited to the details of form and arrangement of parts herein set forth, for various changes may be made by those skilled in the art without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A roll having a continuous elastic surface under circumferential compression, said surface comprising a series of longitudinal strips of elastic, compressible material, a rigid core, and means on the core extending longitudinally of the roll and continuously from one end to the other within the elastic portion thereof for retaining said strips in position.

2. A roll having a continuous elastic surface, said surface comprising a series of laterally contacting longitudinal strips of elastic, compressible material, a rigid core, and means for compressing said strips about said core circumferentially of the roll.

3. A roll comprising a series of longitudinal tapering strips of elastic, compressible material and means carried by the body of said roll and located within the rubber portion thereof for retaining said strips in position.

4. A roll comprising a series of longitudinal tapering strips of elastic, compressible material and means located between the sides thereof for retaining the same in position.

5. A roll having a continuous elastic sur-

face under circumferential compression, comprising a series of longitudinal strips of elastic, compressible material, a rigid core and longitudinal parts extending from one end to the other of the roll and located between said strips within said surface for retaining said strips in position on said core.

6. A roll comprising a series of longitudinal strips, of elastic, compressible material the joints between said strips extending diagonally or helically in relation to the axis of said roll.

7. A roll comprising a series of longitudinal tapering strips of elastic, compressible material and retaining ribs located between said strips and extending diagonally in relation to the axis of said roll.

8. A roll comprising a series of longitudinal tapering strips, of elastic, compressible material a sleeve upon which said strips are mounted, ribs carried by said roll and adapted to retain the bottom of said strips between them.

9. A roll comprising a series of longitudinal tapering strips of elastic, compressible material having longitudinal dovetailed projections and a sleeve having longitudinal dovetailed ribs cooperating with said projections on said strips to hold the latter in position.

10. A roll comprising a series of longitudinal tapering strips of elastic, compressible material having dovetailed projections or flanges on their inner sides, a sleeve having corresponding dovetailed projections or flanges on its periphery, a shaft passing through said sleeve, and disks carried by said shaft and contacting with the ends of said strips to hold the latter in position longitudinally.

Signed this 27th day of May, 1909.

IRA F. BURNHAM.

Witnesses:

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