No. 696,416. Patented Apr. 1, 1902.

W. P. DENÈGRE.

SQUEEZE ROLL.

(Application filed June 13, 1901.)

(No Model.)

Fig. 1.

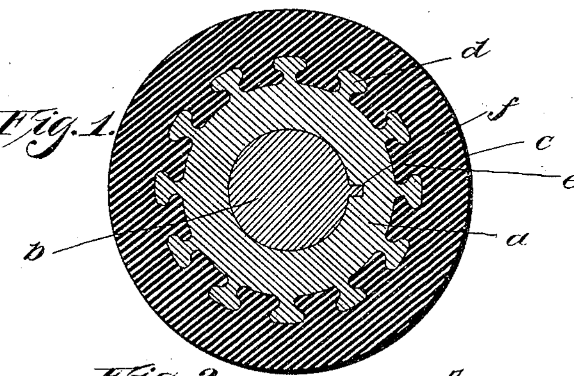


Fig. 2.

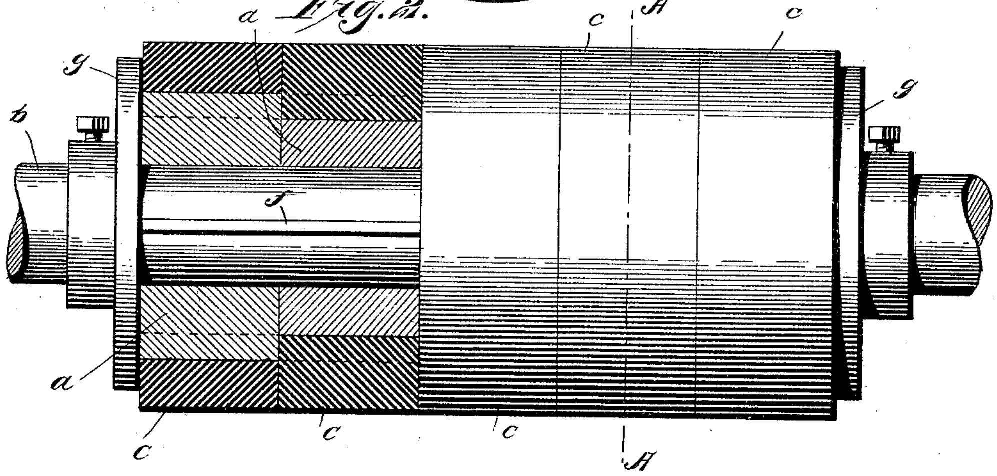


Fig. 3.

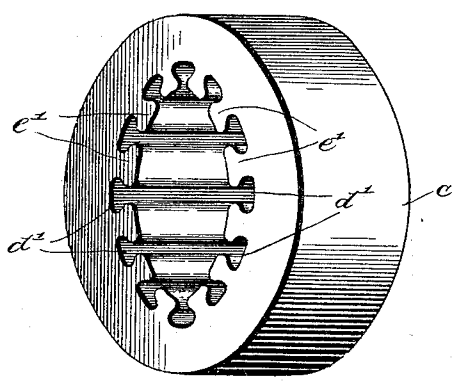
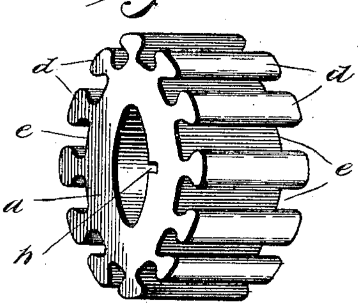


Fig. 4.



Witnesses
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WILLIAM P. DENÈGRE, OF PHILADELPHIA, PENNSYLVANIA.

SQUEEZE-ROLL.

SPECIFICATION forming part of Letters Patent No. 696,416, dated April 1, 1902.

Application filed June 13, 1901. Serial No. 64,376. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. DENÈGRE, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Squeeze-Rolls, of which the following is a specification.

My invention relates to squeeze-rolls; and it consists of the improvements which are fully set forth in the following specification and are shown in the accompanying drawings.

Squeeze-rolls such as are used in wool-scouring, yarn-dyeing machines, and the like are commonly provided with a more or less flexible or elastic squeeze-surface, which is usually formed by winding upon a cylinder a lapping or covering of yarn. This roller-lapping is more or less expensive and because of the great pressure and strain to which it is subjected becomes worn and the roll must be frequently rewrapped at considerable expense and loss of time. Rubber-faced rolls have been used, but much difficulty has been experienced in securing the rubber facing to the metallic hub or cylinder so as to be equally strong throughout and not to become loosened by the great strains to which it is subjected.

It is the primary object of my invention to provide a squeeze-roll having a metallic hub and a flexible or elastic periphery, preferably rubber, in which the hub and elastic peripheral covering are secured together in such manner as to possess uniform strength throughout and to be able to resist any strains to which the squeeze-surface may be subjected in use without liability of becoming loosened. It is also an object of my invention to accomplish this secure connection of the hub and elastic periphery without the necessity of using cements.

It is also an object of my invention to provide a squeeze-roll made in short sections which may be easily assembled or separated, so that in case of injury to a part of the roll it will not be necessary to remove the entire roll, but the injured section alone may be replaced.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a transverse vertical sectional view of a roll embodying my invention, taken on the line A A of Fig. 2. Fig. 2 is a front elevation of the same with part in longitudinal section; and Figs. 3 and 4 are perspective views, respectively, of the outer covering and inner portions of one of the roll-sections.

In the drawings I have shown my invention embodied in a squeeze-roll such as is used in wool-scouring or yarn-dyeing machines and the like in which because of the substantial diameter and length of the roll it is made up of a series of relatively short sections; but I do not mean to limit my invention to such construction, as it also embraces the single piece or section. The sections are composed of a heavy inner hub portion or cylinder *a*, carried by the shaft *b*, and an outer flexible covering or elastic peripheral portion *c* of substantial thickness, forming the pressure or squeezing surface, carried by the inner portion *a* and engaging therewith through complementary dovetailed ribs and recesses. In the construction shown the inner portion *a*, which is preferably formed of metal, is bored internally to fit the shaft and is provided on the periphery with a multiplicity of uniformly-distributed dovetailed ribs *d*, extending longitudinally with intermediate longitudinal dovetailed recesses *e*, and the outer portion *c*, which is preferably formed of rubber, is of annular shape and is provided internally with longitudinal dovetailed recesses and ribs *d' e'*, complementary to those of the part *a*. The parts *a* and *c* are made separately and pushed together longitudinally, with the ribs *d* engaging the recesses *d'* and with the ribs *e'* engaging the recesses *e*, and the roller or section thus formed is secured to the shaft *b* in any suitable manner, as by a key *f*. The longitudinal ribs and recesses engaging with one another hold the covering *c* firmly and positively upon the inner portion *a* and equally throughout its extent, so that it cannot become loosened and turn or slip upon the inner portion under the great pressure and strain to which it is subjected. The longitudinal dovetailed ribs are of substantial height and are materially wider at the top or upper portion than at the neck, so as to interlock firmly between the complementary ribs of the other part.

I prefer to make the dovetailed ribs and the recesses substantially of T-rail shape in cross-

section and more or less rounded, as shown, to avoid sharp edges, which would be liable to cut the rubber and loosen the outer covering. The elastic or rubber portion *c* is of substantial thickness, which will depend upon the diameter of the roll and the amount of elasticity or flexibility required.

In making up a large roll a series of sections may be placed side by side upon the shaft *b* and keyed thereon and clamped tightly together in any convenient manner. In Fig. 2 of the drawings I have shown the sections secured in placed by end clamping-disks *g g*, secured to the shaft by set-screws; but this has been shown merely for purposes of illustration, as the particular means of securing the sections in place upon the roll is not a part of my invention and any convenient means may be employed for that purpose.

In a long roll, and particularly in one employing a very elastic covering, it may be desirable to arrange the sections with their longitudinal ribs and recesses out of longitudinal alinement, as the location of the ribs and recesses in line might have a tendency, because of the great pressure to which it is subjected, to create longitudinal corrugations in the surface of the roll. This arrangement may be conveniently effected by locating the keyway *h* in successive sections at a sufficiently different radial angle with respect to the location of ribs and recesses to bring the ribs *d* in the hub portion of one section in line with the recesses *e* in the hub portion *a* of the adjacent section or sections. I have shown such arrangement in Fig. 2. If any portion of the roll is injured, the section in which the injury occurs may be removed and replaced by a new section.

While my squeeze-roll is especially adapted for use in wool-scouring and yarn-dyeing machines and the like, it may be put to a great variety of uses where strong squeeze-rolls are required.

I do not mean to limit myself to the details of construction shown, as they may be varied without departing from my invention.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. A section for a squeeze-roll of the character described consisting of a heavy hub portion having its periphery formed of a multiplicity of longitudinal dovetailed ribs and recesses, and of an outer peripheral portion consisting of a thick ring of flexible or elastic material having its interior formed of a multiplicity of longitudinal ribs and recesses complementary to those of the hub portion, said parts being pushed into longitudinal engagement one with the other with the dovetailed ribs of each portion engaging the dovetailed recesses of the other portion.

2. A section for a squeeze-roll of the character described consisting of a heavy hub portion having its periphery formed of a multiplicity of longitudinal dovetailed ribs and recesses formed with curved or rounded edges, and of an outer peripheral portion consisting of a thick ring of flexible or elastic material having its interior formed of a multiplicity of longitudinal ribs and recesses complementary to those of the hub portion, said parts being pushed into longitudinal engagement one with the other with the dovetailed ribs of each portion engaging the dovetailed recesses of the other portion.

3. A squeeze-roll of the character described composed of a series of sections arranged side by side and each consisting of a heavy hub portion having its periphery formed of a multiplicity of longitudinal dovetailed ribs and recesses, and of an outer peripheral portion consisting of a thick ring of flexible or elastic material having its interior formed of a multiplicity of longitudinal ribs and recesses complementary to those of the hub portion, said parts being pushed into longitudinal engagement one with the other with the dovetailed ribs of each portion engaging the dovetailed recesses of the other portion.

4. A squeeze-roll composed of a series of sections arranged side by side and each consisting of an inner portion having its periphery provided with longitudinal ribs and recesses and of an outer peripheral portion having a flexible or elastic surface provided internally with complementary ribs and recesses engaging the ribs and recesses of the inner portion, the ribs of adjacent sections being arranged out of longitudinal alinement.

5. A section for a squeeze-roll of the character described, consisting of a heavy hub portion having its periphery formed of a multiplicity of longitudinal dovetailed ribs and recesses of substantially T-rail shape in cross-section, and of an outer peripheral portion consisting of a thick ring of flexible or elastic material having its interior formed of a multiplicity of longitudinal ribs and recesses complementary to those of the hub portion, said parts being pushed into longitudinal engagement one with the other, with the dovetailed ribs of each portion engaging the dovetailed recesses of the other portion.

In testimony of which invention I have hereunto set my hand.

WM. P. DENÈGRE.

Witnesses:
ERNEST HOWARD HUNTER,
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