O. A. BENOIT.

STRETCH ROLL.

APPLICATION FILED JAN. 14, 1918.

1,275,368. Patented Aug. 13, 1918.

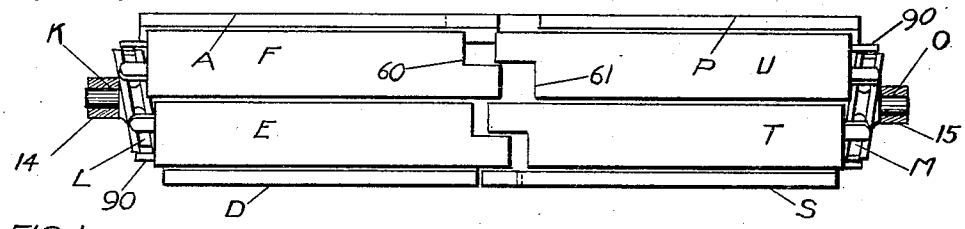


FIG 1

FIG. 2

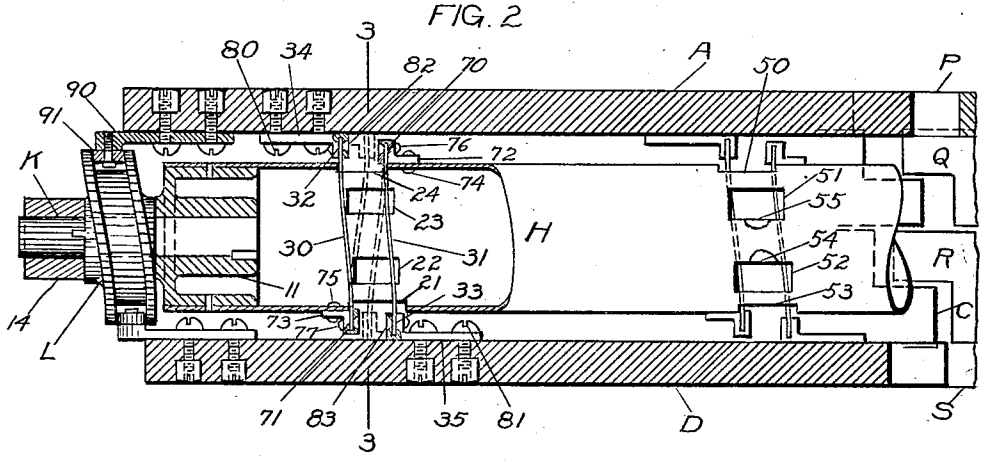
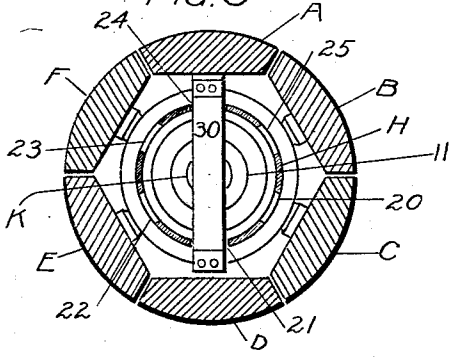


FIG. 3



A FIG. 4

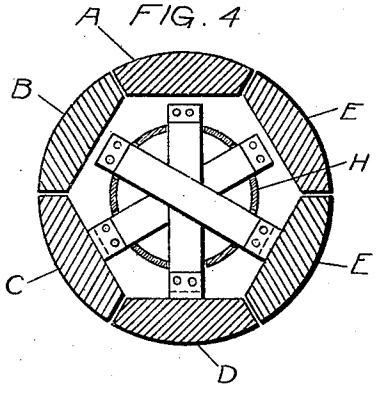


FIG. 5

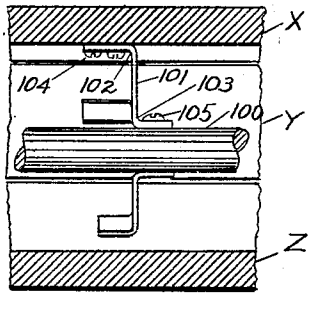
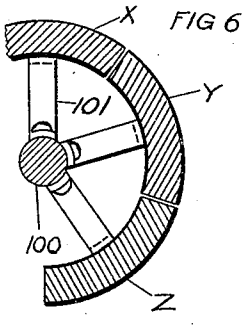


FIG 6



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STRETCH-ROLL.

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To all whom it may concern:

Be it known that I, OLIVER A. BENOIT, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Stretch-Rolls, of which the following is a specification.

This invention relates to what are known as stretch rolls or spreader rolls. In textile mills, just before cloth is wound into a roll, where it should be smooth and without creases, it is drawn over such a stretch roll which stretches and smooths it laterally so that it will wind up smoothly without creasing.

Such rolls are loosely mounted so that as the cloth passes over them, they will be revolved by the frictional action thereof. The periphery of each roll is formed of longitudinal sections in the form of slats which extend from each end to about the middle of the roll thus forming the periphery thereof.

Such slats or peripheral sections are supported in such a manner that they can move longitudinally toward and from each other in a well known manner. Such movement is produced by the action of end cams, curved tracks or grooves whereby at the line where the cloth first touches the roll, the slat sections which are end to end, will be near each other but, as the roll revolves, will be caused to move away until they reach the greatest distance where the cloth is about to leave the roll. From such point, they are caused to come together in order to repeat the operation.

My invention has to do especially with the method of supporting the slats. In the dyeing and finishing processes much of the cloth which passes over a stretch roll is wet. Whether the cloth is wet or dry, it is very sensitive to stains and I have found that if the slats are supported in such a manner as to slide in grooves or to pivot on rocker arms where there is any rubbing or wearing of metal parts between the outside ends of the slats, the metal is worn off in small quantities but continually and, getting into the cloth, causes stains even in dry cloth. It seems necessary that the inside ends of the slats at the middle of the roll should be supported in some way, as it does not seem possible to arrange the slat-supporting means entirely outside the edges of the cloth.

Wherever such rolls are used, any method of support which requires metal to rub against metal inside the roll is highly objectionable, for such parts are hard to reach for oiling and if oiled, the oil gets into the cloth while if not oiled, the metal wears more rapidly.

It is often necessary that such rolls should revolve rapidly, and, with dry bearings or grooves, the parts wear out very quickly, and must soon be replaced.

In the drawings, Figure 1 is a front elevation of my preferred form of roll removed from the machine. Fig. 2 is a longitudinal sectional elevation of my preferred form of roll, the cylinder being shown partly in section and only one parallel pair of a series of slat supports being shown as in place. Fig. 3 is an enlarged sectional view from the right of line 3—3 of Fig. 2. Fig. 4 is an enlarged sectional view as from the left of line 3—3 of Fig. 2, showing a single complete set of supports. Fig. 5 is a sectional elevation similar to Fig. 2 of a modified form of spring support, and Fig. 6 is a cross section thereof.

My preferred form of roll shown in Figs. 1, 2, 3, 4, is axially supported between shafts K and O which are revoluble in suitable bearings, such as shown at 14 and 15.

At adjacent inside ends, each shaft carries a head such as 11 each of which enters an end of a cylinder H. Cylinder H is fixed to the heads and is thus revoluble with shafts K and O.

I prefer to provide one or more series of oppositely disposed slots, such as 24—21, 22—25, 20—23—near one end of the cylinder H, other series of such slots, not shown, near the other end, another series as 50—53, 51—55, 54—52—to the middle left of the cylinder, and another series, not shown, near the middle right of the cylinder.

For sections forming the periphery of the roll, I use slats A, B, C, D, E, F, and P, Q, R, S, T, U, each of which is about half the length of the roll and each of which is placed so that it will not touch the cylinder H and preferably so that there will be a slight lateral distance between it and the adjoining slat. Preferably they are arranged in pairs diametrically of the roll as A opposite to D, P opposite to S, etc.

Their adjoining ends, such as 60 and 61,

may be recessed or rabbeted in a well known manner, as shown, so that their inner ends will overlap.

The principal feature of my invention is the flexible slat supports such as shown at 30 and 31.

Each support is made of flexible material such as wood or preferably sheet metal, and its outer end fits closely into a slot such as 32 or 33 in a bracket 34 or 35 which is fixed to the inside of a slat such as A or D by means of bolts 80 or 81. The outer end of each support is fixed in place in its slot by means such as rivets 82 or 83.

The inner end of each support enters a slot such as 70 or 71 in a bracket 72 or 73, shown as fixed to the outside of cylinder H by rivets such as 74 or 75, and is fixed in place by rivets such as 76 or 77.

Each support, as 30 or 31, is preferably radially disposed as it passes diametrically through cylinder H and through oppositely disposed slots such as 24 and 21. As each support 30 or 31 is made of flexible material, the slats are permitted to move endwise, as shown by the dotted lines in Fig. 2, but there is no wear on the metal parts from the fact that the movement of the slats is taken up by the elasticity of the supports which bend along their length but do not move in their brackets.

To cause the longitudinal movement of the slats, I provide a groove or track L or M fixed to each shaft bearing 14 or 15 and arms such as 90 attached at the outside end of each slat. Each arm carries a roller 91 which travels in and is guided by a track L or M in such a manner as the shape of the track requires.

The rollers and tracks being outside, the slats can readily be oiled and the oil does not get into the cloth.

On a roll of the usual size, say nine inches diameter, in order to get spring supports of sufficient length, I prefer to use a cylinder with flexible supports which run through diametrically disposed slots, but in some cases, as in extra large rolls, I can use other means of fixing my supports to the slats and to the revoluble, inflexible central supporting member.

Such a construction is shown in Fig. 5 in which 100 is a revoluble, solid central shaft and X, Y, Z are slats. Each support 101 is made of flexible metal and is bent at 102 and 103, one bend being fixed to a slat by means of screws 104 and the other bend to the shaft 100 by a screw 105.

I prefer straight supports rigidly fixed in brackets as the side thrust of the slats is better taken care of and the supports bend along their entire length rather than at any one point.

With the construction shown in Fig. 5, an odd number of slats may be used, and the supports while radially disposed are not diametrically disposed.

The central revoluble member may be a single solid shaft such as 100 or the shafts K and O with heads and cylinder H. The bearings and tracks are fixed and the central revoluble member and the whole roll are free to revolve in them.

I claim:

1. In a cloth stretching roll, the combination of revoluble shafts, and a cylinder axially mounted between them having one or more series of oppositely disposed slots, with sections forming the periphery of the roll, and flexible radial supports each fixed at one end to the cylinder and extending through oppositely disposed slots and fixed at its other end to a section located diametrically opposite to the first mentioned end.

2. In a cloth stretching roll, the combination of revoluble shafts, and a cylinder axially mounted between them having one or more series of slots, with sections forming the periphery of the roll, and flexible supports each fixed at one end to the cylinder and extending through a slot and fixed at its other end to a section.

3. In a cloth stretching roll, the combination of revoluble shafts, and a cylinder axially mounted between them having one or more series of slots, with sections out of contact with the cylinder forming the periphery of the roll, and flexible supports each fixed at one end to the cylinder and extending through a slot and fixed at its other end to a section.

4. In a cloth stretching roll, the combination of revoluble shafts, and a cylinder axially mounted between them having one or more series of oppositely disposed slots, with sections forming the periphery of the roll, and flexible radial supports each fixed at one end to the cylinder and extending through oppositely disposed slots and fixed at its other end to a section, together with means outside the sections to cause them to move longitudinally back and forth as the roll revolves.

5. In a cloth stretching roll, the combination of a central revoluble member, with sections forming the periphery of the roll, and flexible supports each fixed at one end to a section and at its other end to the revoluble member.

6. In a cloth stretching roll, the combination of a central revoluble member, with sections forming the periphery of the roll each mounted upon flexible supports each of which is rigidly fixed to one end of the revoluble member, and at its other end to a section.

7. In a cloth stretching roll, the combination of revoluble shafts, and a cylinder axially mounted between them having one or more series of oppositely disposed slots,

with sections forming the periphery of the roll, inner slotted brackets each fixed to the cylinder, outer slotted brackets each fixed to a peripheral section, and flexible radial supports each fixed at one end in the slot of a cylinder bracket and at the other end in the slot of a section bracket, each support extending through oppositely disposed slots, together with means outside the sections to cause them to move longitudinally back and forth as the roll revolves.

In testimony whereof I have affixed my signature.

OLIVER A. BENOIT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."