June 2, 1942. E. H. HANSEN 2,285,375

RIBBED ROLL FOR SLASHING MACHINES AND OTHER TEXTILE MACHINES

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Fig. 1.

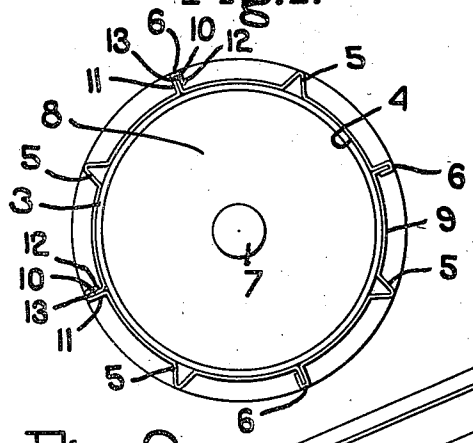


Fig. 2.

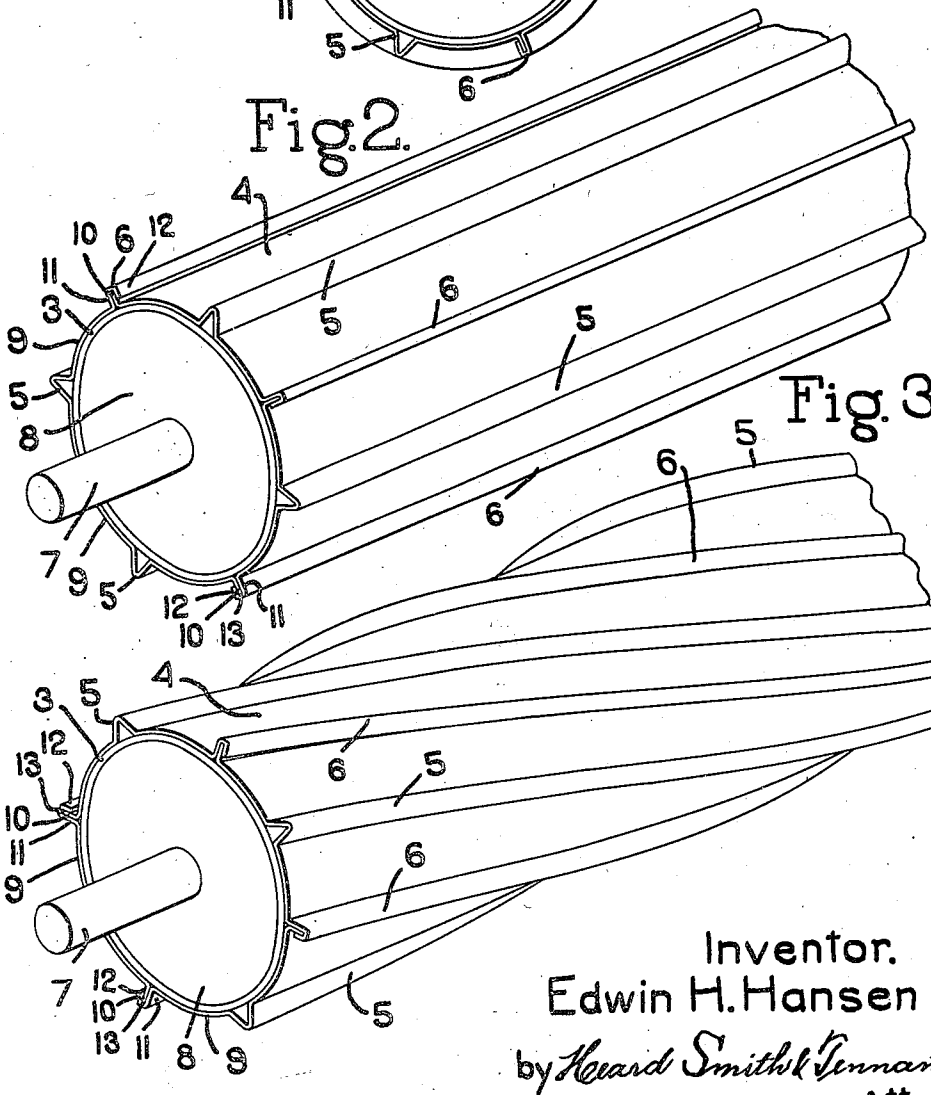


Fig. 3.

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Fig. 4

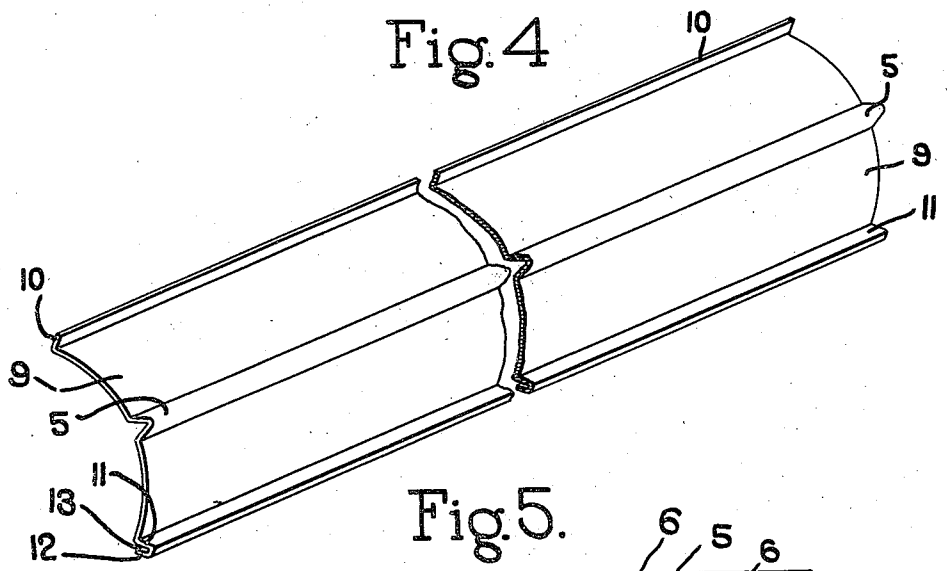


Fig. 5.



Fig. 6.

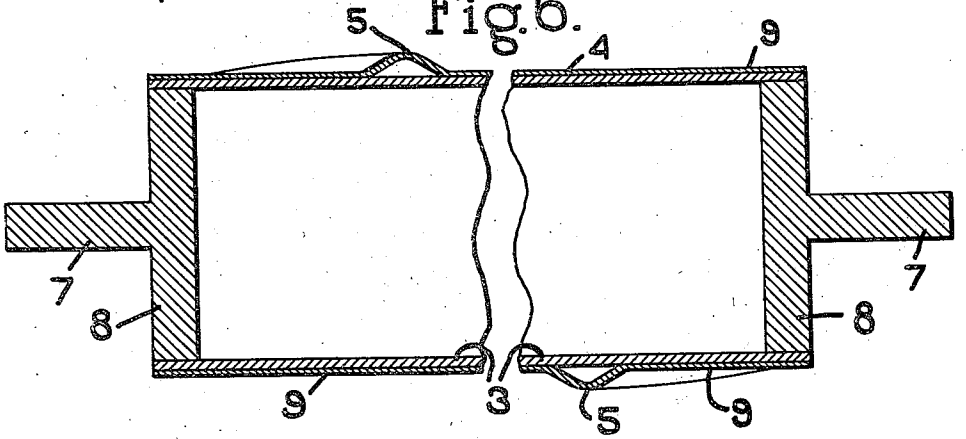


Fig. 7.

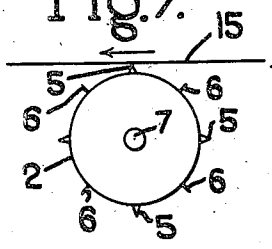
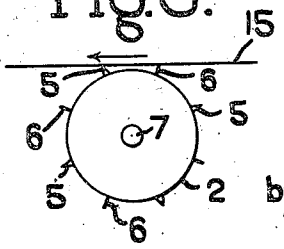


Fig. 8.



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UNITED STATES PATENT OFFICE

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RIBBED ROLL FOR SLASHING MACHINES AND OTHER TEXTILE MACHINES

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Application June 13, 1941, Serial No. 397,882

3 Claims. (Cl. 28—28)

This invention relates to ribbed rolls such as are used in slashing machines and other textile machines for supporting wet warp yarn as it is withdrawn from the sizing bath. Ribbed rolls are commonly used for this purpose because the wet sized warp threads are apt to stick to a roll having a plain surface, thus causing complications in the slashing operation. In the case of ribbed rolls, however, the wet warp yarns are supported on the edges of the ribs and thus are held out of contact with the surface of the cylinder.

These ribbed rolls are usually in the nature of idler rolls and are rotated by the engagement of the moving warp threads therewith. Such ribbed rolls are also sometimes used for supporting a travelling web of cloth as the latter is being subjected to some treatment.

Heretofore, such ribbed rolls have been made with the ribs extending longitudinally thereof and parallel to the axis of the roll. If such a roll is being used in a slashing machine, for instance, and the machine is stopped with the ribbed roll in such an angular position that the warp threads are engaging two adjacent ribs, then when the machine is started up again, the warp threads are apt to slide over the two ribs without starting the roll in rotation, thus making it necessary for the operator to manually start the roll in rotation in order that it may perform its function properly.

One way in which these ribbed rolls have heretofore been made is to take a steel tubing having a length corresponding to that of the roll and having a proper diametrical dimension, and then to cover said tubing with a sheet metal envelope which has been deformed to present ribs extending from one end to the other thereof. This method of making a ribbed roll has been used especially in the case of a roll that is to be provided with an exterior surface of non-corrosive material, such, for instance, as stainless steel, brass, etc.

Sometimes this sheet metal envelope is made in sections, each section extending the length of the roll and each being deformed to present one or more ribs extending longitudinally thereof. Such sections are placed about the steel tubing, and the meeting edges thereof are secured together, thereby making a unitary ribbed envelope for the tubing, which envelope is welded or otherwise permanently secured to the tubing at its ends.

It has also been proposed to make a ribbed roll by assembling in the form of a cylinder a plurality of sheet metal strips or sections which extend from one end to the other of the cylinder, and uniting the adjacent strips along their meeting edges, each strip being formed with a longitudinal rib and the united strips being interiorly supported in some suitable way as by means of disks.

In both of these types of ribbed rolls the exterior surface of the roll is formed by connected sheet metal strips which extend from one end to the other of the roll, each strip having an outwardly extending rib.

The object of the present invention is to provide a novel ribbed roll, such as above described, in which the ribs are given a spiral shape. This is done by assembling the ribbed sheet metal sections in the form of a cylinder in the usual way and with the ribs extending longitudinally and parallel to the axis of the cylinder, and then turning one end of this envelope or cylinder structure angularly relative to the other end thereof, thereby to give the individual sections and the ribs formed thereon a spiral shape. After the ribs have thus been given their spiral shape then the sheet metal envelope is anchored permanently to its interior support so as to preserve the spiral shape of the ribs.

In the drawings I have illustrated my invention as applied to the type of ribbed roll in which the sheet metal ribbed envelope is mounted on and thus supported interiorly by a steel tubing, but I desire to state that the invention is not limited to a ribbed roll having this particular interior support for the sheet metal covering.

Fig. 1 is an end view of a roll embodying my invention;

Fig. 2 is a fragmentary perspective view showing the ribbed envelope after it has first been applied to the steel tubing;

Fig. 3 is a similar view showing the envelope after it has been twisted on the steel tubing to give the ribs their spiral shape;

Fig. 4 is a fragmentary perspective view of one of the sections of the envelope;

Fig. 5 is a view showing the manner in which the ribs are given their spiral shape;

Fig. 6 is a longitudinal sectional view through a roll embodying my invention;

Figs. 7 and 8 are diagrammatic views to illustrate the advantage gained by using a roll embodying my invention.

The exterior surface of the roll herein shown is in the form of a sheet metal envelope **4** provided with ribs **5** and **6**. This sheet metal envelope is carried by an interior support which is

shown in the drawings as in the form of a tubular body member 3 which has a length equal to that of the roll to be made and which has at each end a head 8 provided with a trunnion 7, said trunnions providing means by which the roll is rotatively supported.

The ribbed envelope 4 is herein shown as made up of a plurality of sheet metal sections 9, each of which extends the length of the roll, and each of which is deformed to present one or more longitudinal ribs 5.

Each section is curved to fit the steel cylinder 3, and each has one edge thereof bent outwardly, as shown at 10, and the other edge bent outwardly, as indicated at 11, and then bent inwardly, as indicated at 12, thereby forming between the two portions 11 and 12 a pocket 13 adapted to receive the wing 10 of an adjacent section 9. The outwardly bent edge 10 is referred to as a "single edge" and the outwardly and inwardly bent portions 11 and 12 are referred to as a "double edge."

The sections 9 are assembled to form the complete envelope by inserting the wing or single edge 10 of each section into the pocket 13 of the double edge of an adjacent section, and thereby the various sections are flexibly connected together to form a complete sheet metal ribbed envelope encircling the tubular body member 3, as shown in Fig. 2, and in full lines, Fig. 5, in which the longitudinal deformations in the sections 9 form the ribs 5, and in which the ribs 6 are formed by the interlocking single and double edges of adjacent sections 9.

After the ribbed sheet metal envelope has thus been applied to the tubular member 3, then one end of the envelope is turned angularly about the tubular member 3, relative to the other end thereof, thereby twisting the envelope on the body member and giving the ribs a spiral shape, as shown in Fig. 3, and in dotted lines, Fig. 5.

The interlocking connection between the wing or single edge 10 of each section 9 and the double edge 11, 12, of an adjacent section is sufficiently loose and flexible to permit the sectional envelope to be readily twisted on the tubular member 3. When the envelope has been twisted sufficiently to give the ribs the desired spiral shape, then the ends of the envelope are permanently secured to the ends of the body member 3, thereby maintaining the envelope in its twisted or spiral shape. This can be accomplished by welding the ends of the sheet metal envelope to the ends of the body member 3, or in any other suitable way.

If desired, also, the portions 11 and 12 of each rib may be spot-welded to the wing 10 which is confined between said portions.

In Figs. 7 and 8 there is shown diagrammatically the advantage which results from the use of this invention. In said figures, 2 indicates diagrammatically a ribbed idler roll over which a sheet of warp yarns 15 is moving in the direction of the arrows. This roll 2 is shown as having ribs 5 and 6 thereon which engage the warp yarns.

Assuming that this roll, shown in Fig. 2, has straight ribs extending parallel to the roll axis and is operating in a slashing machine with the wet warp yarns 15 travelling over and resting on the roll, and that the machine was stopped with the roll 2 in the position shown in Fig. 8, in which the warp threads 15 rest on two adjacent ribs, then, when the machine is started up again, the warp threads are apt to slide across the edges of the two ribs without starting the roll 2 in rotation.

On the other hand, if the roll should stop in the position shown in Fig. 7 with the warp threads resting on the peak of a single rib, then, when the machine is started up, the drag of the warp threads on the rib will readily set the roll 2 in rotation.

With my improved roll, wherein the ribs have the spiral arrangement, there will always be a sufficient number of warp threads resting on the peak or edge of one or more ribs, as shown in Fig. 7 to start the roll in rotation when the warp threads begin to move across the roll upon starting the machine, regardless of the angular position which the roll had when the machine was stopped.

While I have herein illustrated a roll in which the sheet metal envelope 4 is mounted on and interiorly supported by a tubular member 3, yet the invention is not limited to a roll in which the fabricated envelope has a support of this particular type since my improved method can be practised in connection with a roll in which the fabricated sheet metal envelope is mounted on and supported by an interior support of some other construction than that herein illustrated.

I claim:

1. A ribbed roll for textile machines comprising a rigid body member, a sheet metal envelope enclosing the body member and formed of a plurality of sheet metal sections extending from one end to the other of the body member, the meeting edges of adjacent sections being connected together, and each having an outwardly directed rib extending from one end to the other thereof, and also spiraling partially about the body member.

2. A ribbed roll for textile machines comprising a rigid, tubular body member, a sheet metal envelope enclosing the body member and formed of a plurality of sheet metal sections extending from one end to the other of the body member, the meeting edges of adjacent sections being connected together, and each section spiraling partially about the body member and having an outwardly directed rib extending from one end to the other thereof.

3. A ribbed roll for textile machines comprising a rigid tubular body member, a sheet metal envelope enclosing the body member and formed of a plurality of sheet metal sections extending from one end to the other of the body member, the meeting edges of adjacent sections being connected together, and each section having an outwardly directed rib extending from one end to the other thereof and spiraling partially about the roll.

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