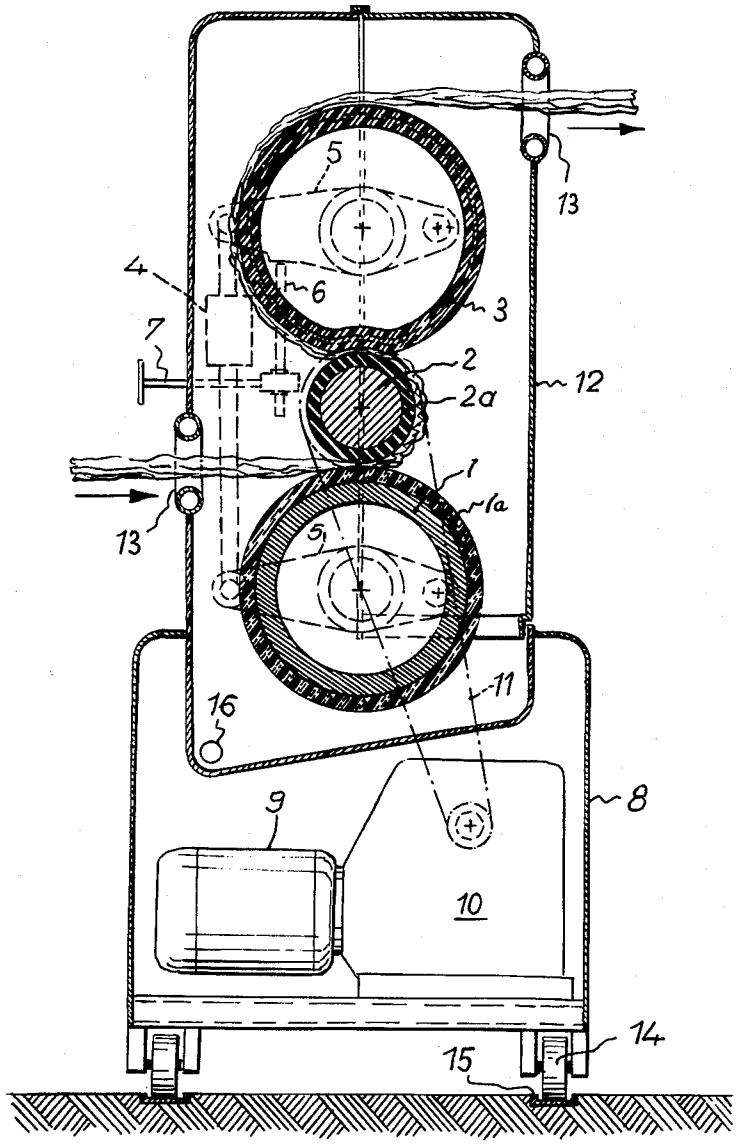
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THREE-ROLL WET SQUEEZERS

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THREE-ROLL WET SQUEEZERS

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The present invention relates to a wet squeezer and, more particularly, to a three-roller wet squeezer.

Wet sequeezers as heretofore known comprising an elastic and a rigid roller for squeezing out the moisture of textiles have the drawback that the steel rollers when getting in contact with liquid containing sodium chloride are attacked by the latter. Efforts to coat the rigid rollers with a chemically resistant layer, as for instance synthetic materials such as Teflon or the like have failed inasmuch as the respective coat will, due to the pressures occurring during extrusion pressing operations, be squeezed off the rollers in a relatively short time.

According to other heretofore known attempts to overcome the above mentioned drawbacks, steel rollers have been covered by a thin tube of stainless steel or by a layer of ebonite.

However, the last mentioned attempts likewise have been unsuccessful inasmuch as the covering tube becomes loose in a very short time in view of the rolling operation.

The problem of creating chemically resistant rigid rollers could be solved by making the entire roller as a solid roller or as a thick-walled tubular roller of the above mentioned stainless steel. Such a solution, however, is economically not feasible since the said material is far too expensive.

It is, therefore, an object of the present invention to provide a wet squeeze for textiles and the like which will overcome the above mentioned drawbacks.

It is another object of this invention to provide a squeezing apparatus which will have a highly satisfactory squeezing effect over the entire width of the material to be squeezed.

Still another object of this invention consists in the provision of a wet squeezer which will separately squeeze the central portion and the marginal portion respectively of the goods to be squeezed.

These and othed objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing diagrammatically illustrating a vertical section through a three-roller wet squeezer according to the present invention.

The wet squeezer according to the present invention in which between two rollers of larger diameter there is arranged a roller of smaller diameter, is characterized primarily in that one of the larger diameter rollers is designed as a pneumatic roller and the other larger diameter roller is covered by a rubber layer of approximately from 50 to 80 Shore hardness, whereas the smaller diameter or intermediate roller is covered with a hard rubber layer of approximately 100 Shore hardness, all of said rollers being arranged relative to each other in such a way as to permit passing the material to be squeezed first between one larger diameter roller and the smaller diameter roller and subsequently between said last mentioned roller and the other larger diameter roller.

When the strand goods are passed over the rollers and therebetween in the just outlined manner, a particularly good effect is exerted upon the strand goods. This effect is due to the fact that the goods, when passing through the bite between the first larger diameter or outer roller and the intermediate or smaller diameter roller, are squeezed primarily over the central portion thereof, whereas the squeezing of the marginal portion is effected between the intermediate roller and the other outer or pneumatic larger diameter roller.

Referring now to the drawing in detail, the arrangement shown therein comprises three rollers superimposed upon each other in vertical direction so that their axes are horizontal. However, it is to be understood that if required, the said three rollers may have their axes arranged along a vertical plane.

With reference to the drawing, the lowermost roller **1** represents a rubber roller having a rubber coat **1***a* vulcanized onto drum or roller **1**. The hardness of the rubber coat **1***a* may vary from 50 to 80 Shores in conformity with the respective requirements. Superimposed upon the lower roller is an intermediate roller **2** which has a considerably smaller diameter and is provided with a hard rubber coat **2***a* having a hardness of approximately 100 Shores.

Superimposed upon the intermediate roller **2** is a pneumatic roller **3**. Pneumatic roller **3** likewise has a considerably larger diameter than intermediate roller **2** and in the particular showing of the drawing has an outer diameter substantially corresponding to that of the lower roller.

Rollers **1** and **3** are for instance through the intervention of lever means **5** pressed against each other by a hydraulic cylinder piston system **4** common thereto. The intermediate roller **2** is journalled in stationary bearings (not shown).

The arrangement illustrated in the drawing furthermore comprises an abutment **6** which is adjustable by a manually operable wheel **7** in such a way that the pressure at which the pneumatic roller **3** may be pressed against the intermediate roller **2** can be adjusted or varied within fine limits.

The squeezer is driven through the intermediate roller **2** through the intervention of a chain or V-belt drive **11** by a drive motor **9** and a transmission **10**, said drive motor being mounted on a base **8**.

A particular advantage of the arrangement according to the present invention consists in that in view of the separate squeezing of the central portion of the strand or textile goods and of the marginal areas of said strand or textile goods, the total squeezing pressure may be lower, and that in view of the fact that the smaller intermediate roller is supported and guided on both sides, a specific higher surface pressure is obtained, while nevertheless a working loose of the rubber covers will be prevented.

According to a further feature of the invention, the squeezer rollers are surrounded by a protective spray water housing **12** with passages **13** for permitting the passage of the strands or textile material to be squeezed. In this way, the squeezed-out liquid will be collected and

may be withdrawn from the housing through an opening or discharge **16**.

The mounting of the squeezer rollers on a base **8** and the encasing thereof in a housing **12** results in the creation of a unit which makes it possible to make the arrangement according to the present invention movable or portable. Accordingly, base **8** may be provided with rollers or casters **14** so that the arrangement may be moved wherever required. If desired, the flooring over which the unit is to be moved may be provided with U-shaped grooves **15** which will impart greater stability to the unit at its place of employment.

It is, of course, to be understood that the present invention is, by no means, limited to the particular arrangement shown in the drawing but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. In a device for squeezing liquids from textile materials and the like; a first smaller roller, second and third larger rollers parallel to said first roller and forming bites with said first roller in respective regions spaced circumferentially of said first roller for squeezing liquids from material passed between the respective rollers, said first roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 100, said second roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 50 to 80, said third roller being highly resilient, drive means for driving at least one of said rollers to pass material therebetween, and pressure applying means operatively connected to at least one of said rollers to press the rollers together to squeeze liquid from the material.

2. A device according to claim **1**, in which said third roller is hollow and rubber-like.

3. In a device for squeezing liquids from textile materials and the like; a first smaller roller, second and third larger rollers parallel to said first roller and forming bites with said first roller in respective regions spaced circumferentially of said first roller for squeezing liquids from material passing between the respective rollers, said first roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 100, said second roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 50 to 80, said third roller being highly resilient, drive means driving said rollers in a direction to cause material to be passed first between said first and second rollers and then between said first and third rollers, and means for pressing said second and third rollers against said first roller to squeeze liquid from said material.

4. In a device for squeezing liquids from textile materials and the like; a first smaller roller, second and third larger rollers parallel to said first roller and forming bites with said first roller in respective regions spaced circumferentially of said first roller for squeezing liquids from material passed between the respective rollers, said first roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 100, said second roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 50 to 80, said third roller being highly resilient, first support means supporting said first roller for rotation on a fixed axis, second and third support means respectively supporting said second and third rollers for rotation on axes movable toward and away from the axis of said first roller, and fluid operable means acting on said first and second support means for pressing said second and third rollers against said first roller.

5. A device according to claim **4**, in which adjustable abutment means are provided for said third support means to limit the movement of said third roller toward said first roller.

6. In a device for squeezing liquids from textile materials and the like; a first smaller roller, second and third larger rollers parallel to said first roller and forming bites with said first roller in respective regions spaced circumferentially of said first roller for squeezing liquids from material passed between the respective rollers, said first roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 100, said second roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 50 to 80, said third roller being highly resilient, drive means for driving at least one of said rollers to pass material therebetween, pressure applying means operatively connected to at least one of said rollers to press the rollers together to squeeze liquid from the material, a housing enclosing said rollers, and entrance and exit means formed in said housing for material passing between said rollers.

7. In a device for squeezing liquids from textile materials and the like, a first smaller roller, second and third larger rollers parallel to said first roller and forming bites with said first roller in respective regions spaced circumferentially of said first roller for squeezing liquids from material passed between the respective rollers, said first roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 100, said second roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 50 to 80, said third roller being highly resilient, drive means for driving at least one of said rollers to pass material therebetween, pressure applying means operatively connected to at least one of said rollers to press the rollers together to squeeze liquids from the material, a frame supporting said rollers and said drive means and said pressure applying means, and means supporting the frame for ready portability thereof.

8. In a device for squeezing liquids from textile materials and the like; a first smaller roller, second and third larger rollers parallel to said first roller and forming bites with said first roller in respective regions spaced circumferentially of said first roller for squeezing liquids from material passed between the respective rollers, said first roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 100, said second roller having a substantially rigid core and a rubber-like layer having a hardness on the Shore scale of about 50 to 80, said third roller being highly resilient, drive means for driving at least one of said rollers to pass material therebetween, pressure applying means operatively connected to at least one of said rollers to press the rollers together to squeeze liquids from the material, a frame supporting said rollers and said drive means and said pressure applying means, and means supporting the frame for ready portability thereof, said frame including a housing enclosing said rollers and having material entrance and exit means, said means supporting said frame including roller means.

9. In a device for squeezing liquids from textile materials and the like; a first smaller roller, second and third larger rollers parallel to said first roller and forming bites with said first roller in respective regions spaced circumferentially of said first roller for squeezing liquids from material passed between the respective rollers, said first roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 100, said second roller having a substantially rigid core and a rubber-like surface layer having a hardness on the Shore scale of about 50 to 80, said third roller being highly resilient, first support means supporting said first roller for rotation on a fixed axis, second and third support means respectively supporting said second and third rollers for rotation on axes movable toward and

away from the axis of said first roller, fluid operable means acting on said first and second support means for pressing said second and third rollers against said first roller, the axes of said rollers being substantially coplanar, a frame in which said rollers are mounted, said first support means being fixed in said frame, said second and third support means comprising levers pivoted at one end in said frame and connected between their ends to said second and third rollers, and said fluid operable means being connected between said levers at the the other ends thereof.

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