July 9, 1968 KARL-PETER LOPATA 3,391,552

DRUM FOR WINDING GOODS INTO A SKEIN ESPECIALLY FOR TREATING TEXTILES

Filed Nov. 3, 1966

Fig.1

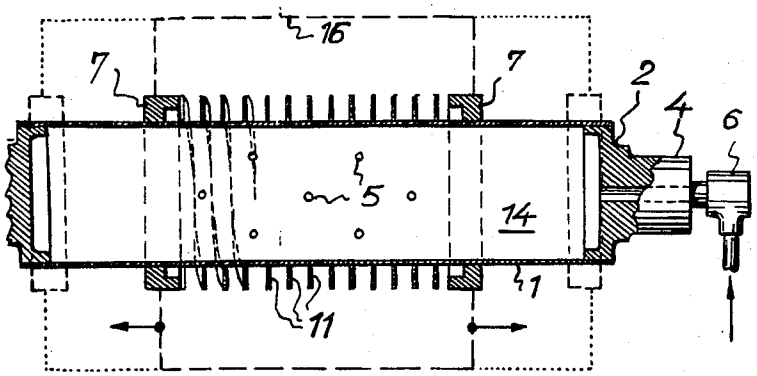


Fig.2

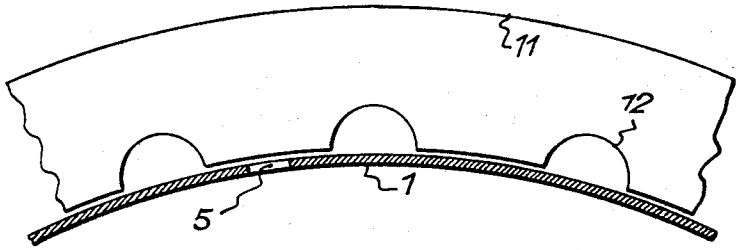
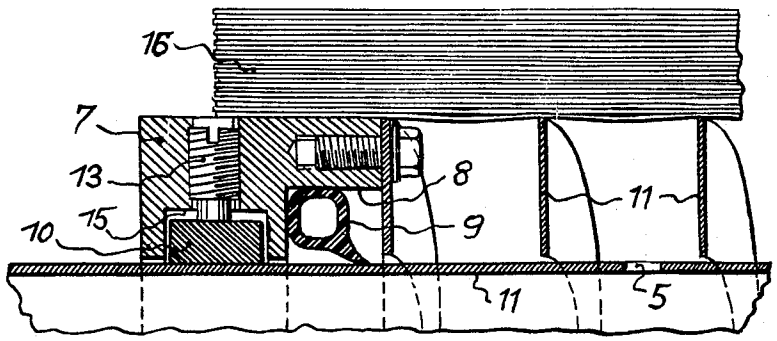


Fig.3



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United States Patent Office 3,391,552 Patented July 9, 1968

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DRUM FOR WINDING GOODS INTO A SKEIN ESPECIALLY FOR TREATING TEXTILES

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Filed Nov. 3, 1966, Ser. No. 591,832
Claims priority, application Germany, Nov. 19, 1965, K 57,696
4 Claims. (Cl. 68—150)

The present invention relates to a drum for winding thereon widths of textiles into a skein, especially for use in connection with machines for bleaching, bucking, steaming, washing and the like of textiles. The textiles are wound onto the drum in the form of wide webs, whereupon treating liquor or steam or a gas is introduced into the drum and pressed through all of the layers of the skein, while said drum may be rotated at different speeds for aiding the pressure exerted upon the treating liquor or fluid and for purposes of obtaining greater uniformity.

With heretofore known drums of the type involved, the length of which is selected for the greatest width of the textiles to be treated, the surface of the drum is perforated over the entire length thereof. This fact results in the drawback that when treating narrow webs of goods, the perforations at both ends of the drum have to be covered up. The simplest way to do this was by covering the two drum ends with sheet metal or foils and bandaging the same.

Another way of preventing the escape of treating liquor or fluid through the end portions of the drum when treating narrow widths of textiles, was to divide the drum by inner partitions into individual chambers and closing off those chambers which were not covered by the goods.

According to still another heretofore known design, cover means were arranged on the inside of the fluid receiving chamber for covering up those perforations which were not covered by goods to be treated.

All of the above mentioned arrangements have the drawback that they are relatively expensive to produce and that above all the adustment or preparation of the drum for the different widths of textiles is relatively awkward and time-consuming.

It is, therefore, an obect of the present invention to provide a drum of the above mentioned general character which will overcome the drawbacks referred to above.

It is another obect of this invention to provide a drum as set forth in the preceding paragraph which will make the passage of the treating medium through the skein more uniform.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing, in which:

FIG. 1 diagrammatically illustrates a longitudinal section through a drum according to the present invention.

FIG. 2 represents on a larger scale than FIG. 1 a side view of a portion of a spiral band used in connection with the drum of FIG. 1.

FIG. 3 is a section through the left-hand upper portion within the dot-dash line circle shown therein.

The drum according to the present invention is characterized primarily in that its outer peripheral wall surface is surrounded by a spiral-shaped flat band means arranged on edge, while the ends of said spiral band means are connected to ring members of substantially equal diameter which ring members are spaced from each other in axial direction of the drum and are displaceable on said drum selectively toward and away from each other. Said ring members have sealing means associated therewith for sealingly engaging the peripheral outer surface of the drum. The drum is hollow and confines chamber means for receiving the textile treating liquor or fluid which may be a gas. One of the characteristic features of the drum consists in that only the central portion of the outer drum wall is provided with relatively few bores. By displacing the said ring members, the drum can be quickly adusted for the required width of the goods to be treated. By resting the first layer of the goods on the edges of the edgewise arranged spiral bands, a very wide free cross section will be available for the passage of the treating liquor in contrast to the heretofore customary perforated drums with only a free passage area of approximately 50%. The liquor passing from the chamber means inside the drum according to the present invention through the relatively few holes in the central portion of the drum is distributed uniformly over the entire length of the drum also in axial direction, in view of the fact that the inner periphery of the spiral bands is provided with cutouts preferably at uniform spacing.

Referring now to the drawing in detail, the drum according to the present invention as illustrated in the drawing comprises a cylindrical smooth pipe **1** having flanges **2** with studs or axle journals respectively welded to the ends of pipe **1**. Within the central area of the drum which corresponds to the narrowest width of goods to be treated on said drum, there are provided a plurality of bores or holes **5** for the passage of the treating liquor or fluid. At one end of the drum there is provided a fitting **6** in which the journals **4** may rotate for feeding the treating liquid or gas under pressure into the interior **14** of the drum which forms the treating fluid receiving chamber means.

As will furthermore be seen from FIG. 1, one end ring member **7** each is mounted on the end portion of drum **1**. These end ring members **7** are axially displaceable on said drum so as to be able to be moved toward and away from each other. Each of the end ring members has that side thereof which faces toward the other end ring member provided with a recess **8** in which is mounted an elastic radial seal **9** for substantially fluid-tight engagement with the outer peripheral surface of drum **1**. Each end ring member is furthermore provided with a clamping device comprising inner clamping means **10** and outer clamping means in form of screws **15** adapted to clamp against the inner clamping means **10**. Means **10** and members **7** may likewise consist of rust resistant steel.

Between the two end ring members **7** there are arranged one or more spiral bands **11** which are mounted on edge and the ends of which are connected to the two end ring members **7** in such a way that they can form one or multiple thread spirals. Such spiral bands may consist, e.g., of rust resistant steel.

FIG. 2 illustrates in approximately natural size a portion of a spiral band **11** which shows that in substantially uniform spacing, the inner periphery of the spiral band is provided with cutouts **12** through which the liquor or fluid passed from the chamber means **14** through bores **5** to the outside of drum **1** can pass along the outer periphery of drum **1** in axial direction thereof.

The two end ring members **7** the cross section of which is shown in approximately natural size in FIG. 3 have approximately the same diameter as the spiral bands **11**. These end ring members **7** are spaced from each other substantially in conformity with the width of the goods to be treated on the drum and after corresponding adjustment are clamped fast onto the drum by tightening the screws **15**. Since when moving the end ring members **7** toward each other, the diameter of the spiral bands will somewhat increase, whereas the diameter of the spiral band means will decrease when the ring members **7** are

moved away from each other, it is necessary by a corresponding rotation of one of the two end ring members relative to the other to adapt the diameter of the spiral bands to the drum diameter. By adjusting the two end ring members 7, it will be made possible that in each position the spiral bands always have the same distance from the circumference of the outer drum wall. The number of the spiral bands or the threads thereof per unit is so selected that also at the least possible distance of the two end ring members 7 from each other there will remain a distance of approximately two centimeters. This distance is still sufficient to assure that the goods wound over the spiral bands and the end ring members will lie even while a hanging through of the goods will also be avoided by the fact that the treating liquor heats the goods under pressure. The dash lines in FIG. 1 show a skein formed by the narrowest goods to be treated on the drum, whereas the dotted line shows a skein of goods having the maximum width to be treated on the drum. When forming a skein on the goods, there will thus always remain an annular space between the goods and the drum, and this annular space is laterally sealed by the radial seals 9 in the recesses 8 of the end member 7. These seals 9 will form a sufficiently tight seal even against high pressures, as for instance pressures of from 1 to 5 atmospheres.

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

What I claim is:

1. For use in connection with machines for treating widths of textiles wound into a skein, a drum having chamber means therein for receiving fluid for treating textiles, said drum having an outer wall with the central portion thereof only provided with passage means therethrough for establishing communication between said chamber means and the outer peripheral surface of said drum, said passage means being distributed only over such a maximum axial length of said drum as corresponds approximately to the narrowest width of the textiles to be treated on said drum, spiral-shaped resilient flat band means arranged on edge around said drum, connecting means selectively axially displaceable on said drum and detachably connecting the ends of said band means to axially spaced portions of said drum, and sealing means respectively associated with said ends of said band means and engaging the outer peripheral surface of said drum in a substantially fluid-tight way.

2. A drum according to claim 1, in which said connecting means include two ring members of substantially equal outer diameter which are spaced from each other in the axial direction of said drum and are detachably connected thereto, each of said ring members having that end face thereof which faces the respective adjacent end of said band means connected thereto, each of said ring members also having recess means housing one of said sealing means.

3. A drum according to claim 1, in which the inner peripheral portion of said band means is provided with cutout passage means for permitting the passage therethrough of treating fluid conveyed from said chamber means to the outer periphery of said drum.

4. A drum according to claim 2, in which said ring members include inner clamping means surrounding and engaging said drum and also include outer clamping means adjustable from the outside of said ring members and operable to exert pressure on said inner clamping means.

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