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## 2,989,992 WOVEN FABRICS

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This invention relates to woven fabrics and in particular to a woven fabric in the form of a tube or sleeve having what can be termed a terry side and a plain side.

In recent years it has been proposed to depart substantially for the conventional mode of lubricating the journal of a railroad car. Thus, the conventional mode of 15 lubricating the journal of a railroad car, as well as the bearing for the journal, has been by way of oil-soaked waste packing comprising loose threads of waste material stuffed into the journal box between the journal and the bottom wall of the journal box. Investigations have 20 shown, however, that this rather crude form of lubrication contributes to the so-called hot box hazard, and research efforts are now being directed toward eliminating waste packing as the accepted or standard form of lubricating railroad car journals. One such type of im- 25 proved lubricator is that disclosed in application Serial No. 777,485, filed December 1, 1958, wherein an openended fabric sleeve is in effect to be draped over resilient arms that are so mounted within the journal box of a railroad car as to effectively press portions of the sleeve 30 against the car journal. Other portions of the sleeve are arranged to dip into a supply of oil in the bottom of the journal box, and the fabric sleeve is to be of such nature as to rapidly wick oil to the journal thereby furnishing lubricant to the journal and its associated bear- 35 ing.

The present invention pertains to a woven sleeve or so-called tube of wicking material that can be used in such a lubricator or one akin thereto, and one of the objects of the present invention is to have this sleeve so 40woven as to present a heavy pile warp thread arrange-ment on one side of the tube while such pile surface is absent on the opposite side. This is accomplished under the present invention by affording loose or untensioned 45 terry warp threads that are arranged to project from both the inner and outer faces at what can be designated the terry fabric or pile side of the tube, in contrast to the opposite side of the tube which is tightly woven to have two plys, and such constitutes a specific object of the 50 present invention. As a result of this particular construction, the terry loop threads are found to greatly enhance the wicking characteristics of the sleeve thereby assuring that copious quantities of lubricant will be relayed to the car journal, and at the same time, the tightly woven plain side of the tube interjects a degree of strength and stability and assures easy conformability of the wick tube to the shape of the particular lubricator base with which it is to be associated, as will be particularly evident from the construction of the lubricator base disclosed in the above-identified co-pending application.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment of the present invention and the principles thereof and what we now consider to be the best mode in which we have contemplated applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims. 2

In the drawings:

FIG. 1 is a sectional view on an enlarged scale taken substantially on the line 1-1 of FIG. 2;

FIG. 2 is a perspective view illustrating the general nature of the woven fabric of the present invention;

FIG. 3 is an expanded plan view taken substantially on the line 3-3 of FIG. 1; and

FIG. 4 is a schematic view illustrating a mode of use of the present invention.

The present invention is illustrated in FIG. 2 of the drawings as embodied in a woven tube or sleeve WT of wicking material which is adapted to be associated with a lubricator of the kind disclosed in the above-identified application. Thus, the woven article WT is of 360° sleeve-like form and has open ends, and as a result of this the open ends of the sleeve or tube WT can be draped over two arms of a lubricator L, FIG. 4, extended part way into the open ends with the medial part of the sleeve WT disposed below the tops of the lubricator arms to dip into a quantity of oil. It will be appreciated that the tube WT will be of such diameter and of such length as required by the particular construction of the lubricator with which it is to be associated. Thus, for example, the sleeve WT may have a length of a foot or so and may be as much as six inches or more in diameter.

The sleeve WT has a non-terry or plain side or half PS and a terry or pile side or half CS, FIG. 2. Thus, while the sleeve WT as illustrated in FIG. 2 is more or less of elliptical shape, it will be appreciated that this is merely for illustrative purposes and that the sleeve can be flattened to bring the two sides or halves PS and CS into engagement as will be evident in FIG. 4, or the sleeve WT can in effect be expanded to present a truly cylindrical shape. In any event, the sleeve WT is to have one side for the full length woven with terry pile loops L1 that are on the outer face of the tube and like loops L2 that are on the inner face of the tube. The other half of the tube or sleeve WT for the full length thereof is devoid of such loops, and hence can be considered the plain side PS.

It will be appreciated that the sleeve WT is woven from cotton or like threads on a single loom having an upper shed and a lower shed as is well known in the art insofar as weaving tubes is concerned. Thus, the warps that are used to develop the terry side CS are in the upper shed of the loom, FIG. 1, and the warps that are used to develop the plain side PS are in the lower shed of the loom, FIG. 1, and the filler or weft threads are alternately extended from the upper shed to the lower shed. In order that the generation of the filler thread passes can be fully appreciated, the filler threads are identified in FIGS. 1 and 3 as successive numbers in the proper group order. Thus, there are four upper shed picks, namely, 1, 3, 5 and 7 to be considered as a one-ply group in developing the terry pile side of the tube, whereas the four lower shed picks 2, 4, 6 and 8 are arranged to develop two plies for the plain side of the tube. It will be appreciated that the ßĤ filler thread is first extended transversely in the upper shed to develop No. 1 pick, and then is turned down and across in the opposite direction to develop No. 2 pick in the lower shed, then up and across for No. 3 pick in the upper shed, down and across for No. 4 pick in 65 the lower shed and so on.

The repeated picks 2 and 6 at the inner ply of the plain side PS are associated with a pair of warp threads C and G which alternately pass over and under the picks 2 and 6 in a common weave with respect thereto. In like manner, warp threads F and K are associated in a common weave with the outer ply having the picks 4 and 8. The four warps C, G, F, and K on the plain side are all pulled taut during the course of weaving, and the two plies are connected together by a binder warp H which passes over the top of pick No. 2, under pick No. 8, over pick No. 2 and so on.

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It will be recognized that the picks at the terry side 5 of the tube are arranged in a repeated series of four picks 1-3-5-7, 1-3-5-7, and so on. A pair of taut warp threads B and E pass respectively over and under pick No. 3 which is the second pick in the aboveidentified 1-3-5-7 series. Warp B then passes under 10 the three picks 5, 7, and 1 considered as a group, and the warp E passes over this same group of three picks, whereafter warp E passes over this pick. These warps are drawn tight during the course of weaving. 15

The warps A and D, FIG. 1, are untensioned warps which develop the terry pile loops L1 and L2 mentioned above and identified in FIG. 1. Terry warp A passes under picks 1 and 3, over the top of picks 5 and 7, under picks 1 and 3 and so on. In like fashion, terry warp 20 D passes over picks 1 and 3 as a group, then under picks 5 and 7 as a group, over picks 1 and 3 and so on.

It will be appreciated that the foregoing is repeated across the width of the loom as will be evident in FIG. 3, and while there are to be terry pile loops L1 on the 25 outer face and terry pile loops L2 on the inner face of the tube on the terry cloth side thereof, these loose terry warps can be varied in number across the width of the loom as desired. Advantageously, however, there are as many terry warp threads on the terry cloth side of 30 the woven tube as there are tight or tensioned warp threads B and E on the terry fabric or pile side.

It will be seen from the foregoing that under the present invention we afford a woven tube of wicking material, advantageously utilizing conventional cotton threads, 35 wherein the woven wicking sleeve has a two-ply plain side as PS and a heavily piled loop or terry cloth side CS having loops at both the inner and outer face of the resultant wicking sleeve. Such loops will account for a greatly enlarged absorbing and wicking capacity insofar as absorption of oil is concerned, whereby copious

quantities of oil can be relayed by capillarity to a rotating part to be lubricated.

Hence, while we have illustrated and described a preferred embodiment of our invention, it is to be understood that this is capable of variation and modification, and we therefore do not wish to be limited to the precise details set forth, but desire to avail ourselves of such changes and alterations as fall within the purview of the following claims.

We claim:

1. A woven wick tube wherein opposed halves of the tube are of dissimilar weave, one half of the tube having longitudinally extending warp threads and transverse filler threads interwoven therewith; and the other half of the tube comprising transverse filler threads and longitudinal plain warp threads interwoven taut therewith, said other half of the tube also comprising longitudinal terry warp threads that have their loops extending from both faces of said other half of the sube, and the warp and filler thread at said one half of the tube being woven in two plies joined together by binder warp threads.

2. A woven wick tube according to claim 1 wherein the filler threads at said other half of the tube are arranged in a repeated series of four picks and wherein adjacent taut warp threads associated therewith respectively pass over and under the second pick and then respectively pass under and over the next three successive picks as a group, and wherein adjacent terry warps respectively first pass under and over two successive picks in said group to have loose or untaut loops and then respectively pass over and under the adjacent two picks of the series and are pulled taut with respect thereto.

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