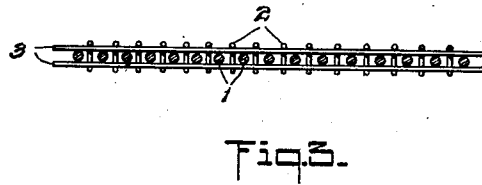
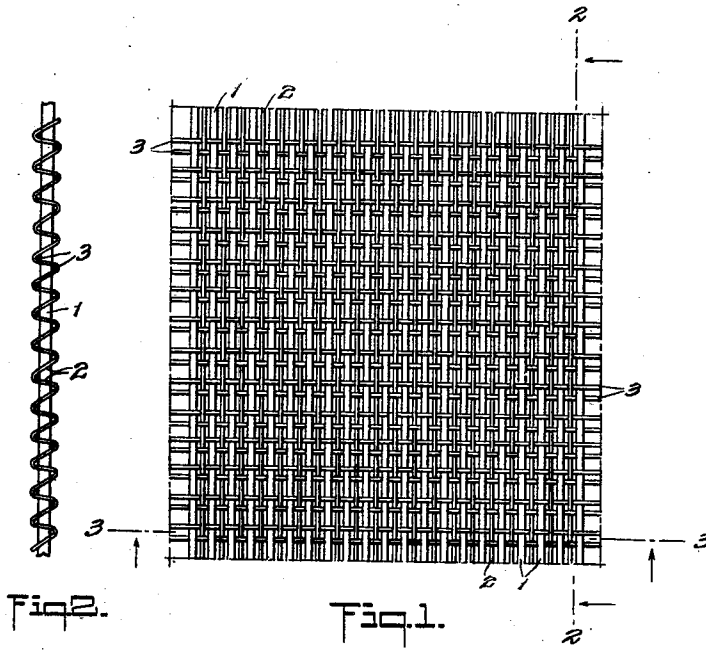


1,433,467.

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INVENTOR
Fred B. Manley
BY
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UNITED STATES PATENT OFFICE.

FRED B. MANLEY, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO TEXTILES DEVELOPMENT CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

FABRIC.

Application filed March 3, 1921. Serial No. 449,454.

To all whom it may concern:

Be it known that I, FRED B. MANLEY, a citizen of the United States, and a resident of the city of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Fabrics, of which the following is a specification.

The object of the present invention is the construction of a fabric especially adapted for the introduction of rubber composition for tires, belts or the like in which the face and back of the fabric are comparatively flat or level so that when the rubber composition is pressed therein it will be of even thickness all over the fabric. A series of small threads forming a binder warp introduced between the cords causes the cords to be held in more evenly spaced position than in the fabrics now on the market, and the rubber composition can therefore be pressed more evenly between the cords. In the product now on the market an undulation or waviness is found on the face and back of the fabric producing an uneven thickness of rubber composition thereon with a resultant varying bond between the layers of the fabric. The fabric is also advantageously manufactured for use in cloth which is not intended for belting or rubberizing. For instance, a cloth can be produced therefrom which is more easily bent parallel with the warp than crosswise thereof and is therefore adapted for a variety of purposes.

Figure 1 is a plan view of the fabric and Figure 2 is a cross-section on line 2—2 of Figure 1.

Figure 3 is a cross section on line 3—3 of Fig. 1.

Such fabrics are composed of cord strands 1 which form the warp of the fabric. Preferably the weft strands or filler threads 3 lie transversely on top and bottom of the cords in such fashion that they rest smoothly and evenly on the top and bottom of the cords. In order to secure this result it is preferable that the yarn threads forming the binder warp 2 between the cord strands should pass over and under the weft strands rather loosely. I have found that the best results are obtained by allowing the weft strands on top to be almost opposite the weft strands on bottom. In my construction when looking on one face of the cloth the weft strands on the opposite face are almost concealed.

Such fabrics are usually 48 to 60 inches in width and woven off a loom in any desired length. After weaving, the fabric is frictioned or coated with rubber and then taken to a cutting machine and cut to an angle of about 45° in strips of widths necessary to build the tire, after which the usual method of building cord tires is pursued.

The great objection to the fabrics now in use is that they are woven in such fashion that the warp of cord strands is interwoven with a light strand of filling so that at intersecting points the warp is alternately higher and lower. When such fabrics are employed the raised cords form a waved surface and when the various layers are brought into contact they friction unevenly. Under my plan at no time does the cord strand lie out of a flat plane or go over or under a single strand of filling or a single strand of the warp. To accomplish this it is preferable for the weft strands to rest smoothly and evenly on the surface of the cord strands without friction or strain.

I have sought and constructed a fabric in which the cord strands 1 lie flat and even that is without undulations and the interlocking strands 2 and 3 form a comparatively lighter interlocking filling which holds the cord strands flat and in place. In this way when the rubber is applied there will be a regular and even amount of rubber over and between every cord, thereby evening the strength of the bond between each layer of fabric when fashioned into a tire.

The absence of undulation in this fabric permits a more even distribution of rubber over tires manufactured therefrom and in the case of belting it reduces the stretch so that it is almost one-half of what occurs in ordinary belt duck. It will be understood that the size of strands shown in the drawings are merely illustrative and that they may be widely varied, so long as the binder strands are of relatively small size and serve merely to hold the cord strands and the weft strands in position.

In the claims, the expression "cord strands" has been used, but since this is a term having particular reference to tire fabric construction, the term "yarn" has been alternately added thereto for the purpose of identifying the fabric in general without reference to tire fabrics.

It will also be understood that while I

have shown the cord strands as larger in diameter than the weft or the binder strands, this is not essential. Preferably, however, the strands which I have described as the cord strands are comparatively inextensible.

I claim:

1. A fabric adapted to receive rubber composition, comprising a warp of straight parallel cord or yarn strands spaced apart and lying in a single plane without undulations, a filler of weft strands resting loosely on opposite sides of the warp, and binder strands of relatively small size interlocking the filler strands and serving merely to maintain the cord warp and the weft strands in position, the spaces between the cord warp strands being sufficient in width to permit each of said strands to be surrounded by a coating of the composition.

2. A fabric adapted to receive rubber composition, comprising a warp of straight parallel cord or yarn strands spaced apart and lying in a single plane without undulations, a filler of weft strands resting without undulations on opposite sides of the warp, and binder strands of relatively small size interlocking the filler strands and serving merely to maintain the cord warp and the weft strands in position, the spaces between the cord warp strands being sufficient in width to permit each of said strands to be surrounded by a coating of the composition.

3. A fabric adapted to receive rubber composition, comprising a warp of straight parallel cord or yarn strands spaced apart and lying in a single plane without undulations, a filler of weft strands resting loosely on opposite sides of the warp with each weft strand positioned opposite the space between a pair of weft strands on the opposite side of the warp and nearer one than the other of said pair of strands, and binder strands of relatively small size interlocking the filler strands and serving merely to maintain the cord warp and the weft strands in position, the spaces between the cord warp strands being sufficient in width to permit each of said strands to be surrounded by a coating of the composition.

4. A fabric adapted to receive rubber composition, comprising a warp of straight parallel cord or yarn strands spaced apart and lying in a single plane without undulations, a filler of weft strands resting without undulations on opposite sides of the warp with each weft strand positioned opposite the space between a pair of weft strands on the opposite side of the warp and nearer one than the other of said pair of strands, and binder strands of relatively small size interlocking the filler strands and serving merely to maintain the cord warp and the weft strands in position, the spaces between the cord warp strands being sufficient in width to permit each of said strands to be surrounded by a coating of composition.

5. A fabric adapted to receive rubber composition, comprising a warp of straight parallel cord or yarn strands spaced apart and lying in a single plane without undulations, a filler of weft strands resting loosely on opposite sides of the warp, and a single binder strand of relatively small size between each pair of cord warp strands interlocking the filler strands and serving merely to maintain the cord warp and the weft strands in position, the spaces between the cord warp strands being sufficient in width to permit each of said strands to be surrounded by a coating of the composition.

6. A fabric adapted to receive rubber composition, comprising a warp of straight parallel cord or yarn strands spaced apart and lying in a single plane without undulations, a filler of weft strands resting without undulations on opposite sides of the warp, and a single binder strand of relatively small size between each pair of cord warp strands interlocking the filler strands and serving merely to maintain the cord warp and the weft strands in position, the spaces between the cord warp strands being sufficient in width to permit each of said strands to be surrounded by a coating of the composition.

Signed at Baltimore, in the county of Baltimore, and State of Maryland, this 28 day of February, 1921.

FRED B. MANLEY.