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TENNIS BALL COVER CLOTH

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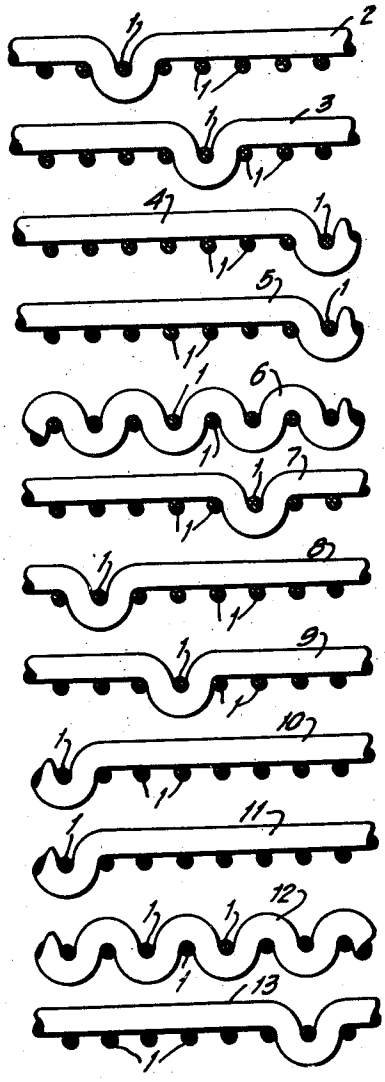


FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

FIG. 7

FIG. 8

FIG. 9

FIG. 10

FIG. 11

FIG. 12

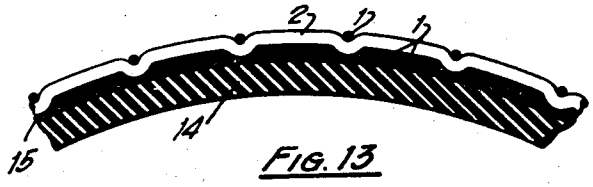


FIG. 13

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TENNIS BALL COVER CLOTH

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12 Claims. (Cl. 139—426)

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My invention relates to fabrics and particularly to tennis ball covering cloths and to tennis balls covered therewith.

Tennis ball covering cloth as manufactured at the present time consists of a woven and felted fabric having a "cover" or matted surface formed from part of the fibers from which the cloth is made. The function of this matted surface is to permit better control of the ball in play. When this surface becomes so worn that the weave of the fabric is plainly visible what is termed as "floating" occurs and, in matches between experts the ball is usually discarded. In ordinary competition a ball so worn may be continued in use although its playing qualities gradually deteriorate.

I have discovered that by incorporating fibers or filaments of a synthetic resin, such as "nylon," in the fabric, the wearing qualities of the ball are very substantially enhanced.

At the present time tennis balls are covered with a fabric having a preponderance of the filling or crosswise yarns on the outside surface of the ball. Such a cloth is illustrated in the accompanying drawing which, in Figs. 1 to 12 inclusive, shows the transverse cross sections of the cloth between adjacent filling yarns; and, in Fig. 13, shows a fragmentary enlarged section of a tennis ball. Figs. 1 to 12 inclusive are of course to a distorted and enlarged scale.

In the drawing, 1 indicates the warp yarns, and 2 to 13 inclusive the filler yarns. 14 is the rubber casing of the ball, and 15 is the cement which secures the covering fabric formed from the yarns 1 and 2, as shown in Fig. 13, to the casing. The filler yarns, or at least the yarns on the wearing surface, are preferably somewhat heavier than the warp yarns.

By reversing the cloth so that a preponderance of the warp yarns are on the playing or wearing surface the same general result could be achieved. It is to be understood however that the drawings are merely illustrative of one type of weave which has proven satisfactory and that my invention is not limited to the use of a fabric having the weave shown.

By incorporating in the cover cloth fibers or filaments of a synthetic, linear polymer, such as "nylon" and having strength and wearing qualities comparable thereto, the life of the ball is greatly increased without impairing its playing qualities. For example, a fabric containing 25% by weight of "nylon" in the filling yarns, which constitutes only about 17%, by weight, of the entire fabric, shows about the same amount of

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wear after being in the wearing machine for eighteen minutes, as a regular, all wool cloth shows after being in the machine for only twelve minutes. In other words, the addition of this quantity of "nylon" increases the life of the fabric by about 50%. Tests on tennis balls covered with my fabric indicate that improved wearing qualities begin to be noticeable as the quantity of "nylon" in the filling yarns is increased from about 10%, by weight, of the fabric. When 28% by weight of "nylon" is used the wearing qualities are very substantially increased, and with 42% of "nylon" the wearing qualities are 100% better than those of balls with all wool covers.

While as much as 60%, by weight, of "nylon" may be employed it is impossible definitely to state the maximum percentage which can be employed in every case because the fabric must be fulled, and "nylon" and other synthetic resinous yarns, per se, cannot be fulled. Furthermore, the fulling characteristics of any fabric are affected by many factors such as the type of weave, the percentage of wool therein, the character of the wool as measured by its fineness, length and felting ability, and the character of the fabric itself as measured by the fineness or size of the yarns therein and the number of threads per inch. Hence, the maximum quantity of resinous yarns which can be employed is limited to that which does not prevent the proper fulling of the fabric, and the resinous material must not be so disposed or used in such quantity or such form as to prevent proper fulling.

The synthetic resin is most effective when it is largely disposed in the playing or wearing surface of the cover. For this reason I prefer a one sided cover cloth. That is, a cloth having such a weave that a preponderance of yarns running in one direction therein is on that side of the cloth which is adapted to form the outside or wearing surface of the cover. The resinous substance is, of course, preferably largely disposed in the wearing surface of the cover.

In the preferred form of the cloth, the "nylon" or other resinous filaments or fibers are incorporated along with wool fibers in the form of a composite yarn although plied yarns or even separate yarns made entirely of a synthetic resin may be employed along with yarns made entirely of wool.

What I claim is:

1. A tennis ball covering cloth comprising a woven and fulled fabric having warp and filler

yarns, and formed partially of wool fibers and partially of "nylon" fibers; the fibers exposed on that surface of said fabric adapted to form the outer or wearing side of said ball covering being matted together and including an appreciable quantity of "nylon" fibers.

2. A tennis ball covering cloth comprising a woven and fulled fabric having warp and filler yarns, and formed partially of wool fibers and partially of "nylon" fibers; said fabric having a preponderance of those yarns which run in one direction exposed on that surface of said fabric adapted to form the outer or wearing surface of said ball covering; and the fibers exposed on said surface being matted together and including an appreciable quantity of "nylon" fibers.

3. The structure set forth in claim 2 in which the preponderance of yarns exposed on the surface of said fabric adapted to form the outer or wearing surface of said ball covering are filler yarns.

4. A tennis ball covering cloth comprising a woven and fulled fabric having warp yarns formed substantially of wool fibers and filler yarns formed in appreciable part of "nylon" fibers; the preponderance of said filler yarns being exposed on that surface of said fabric adapted to form the outer or wearing surface of said ball covering; and the fibers exposed on said surface being matted together and including an appreciable quantity of "nylon" fibers.

5. A tennis ball covering cloth comprising a woven and fulled fabric having a warp and filler; the warp being formed substantially of wool, and the filler being formed at least in part of composite yarns comprising fibers of wool and fibers of "nylon"; the preponderance of said composite yarns being exposed on that surface of said fabric adapted to form the outer or wearing surface of said ball covering; and the fibers exposed on said surface being matted together and including an appreciable quantity of "nylon" fibers.

6. A tennis ball having a cover thereon of the fabric set forth in claim 1.

7. A tennis ball having a cover thereon of the fabric set forth in claim 2.

8. A tennis ball having a cover thereon of the fabric set forth in claim 3.

9. A tennis ball having a cover thereon of the fabric set forth in claim 4.

10. A tennis ball having a cover thereon of the fabric set forth in claim 5.

11. A tennis ball covering cloth comprising a woven and fulled fabric having warp and filler yarns; the warp being formed substantially of wool, and the filler being formed at least in part of composite yarns comprising fibers of wool and fibers of "nylon" and having the preponderance thereof exposed on that surface of said fabric adapted to form the outer or wearing surface of said ball covering; the "nylon" constituting from 10% by weight of the fabric up to less than that percentatge which will materially interfere with the fulling of said fabric; and the fibers exposed on said surface being matted together and including an appreciable quantity of "nylon" fibers.

12. A tennis ball having a cover thereon of the fabric set forth in claim 11.

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