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FABRICS

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FIG. 1

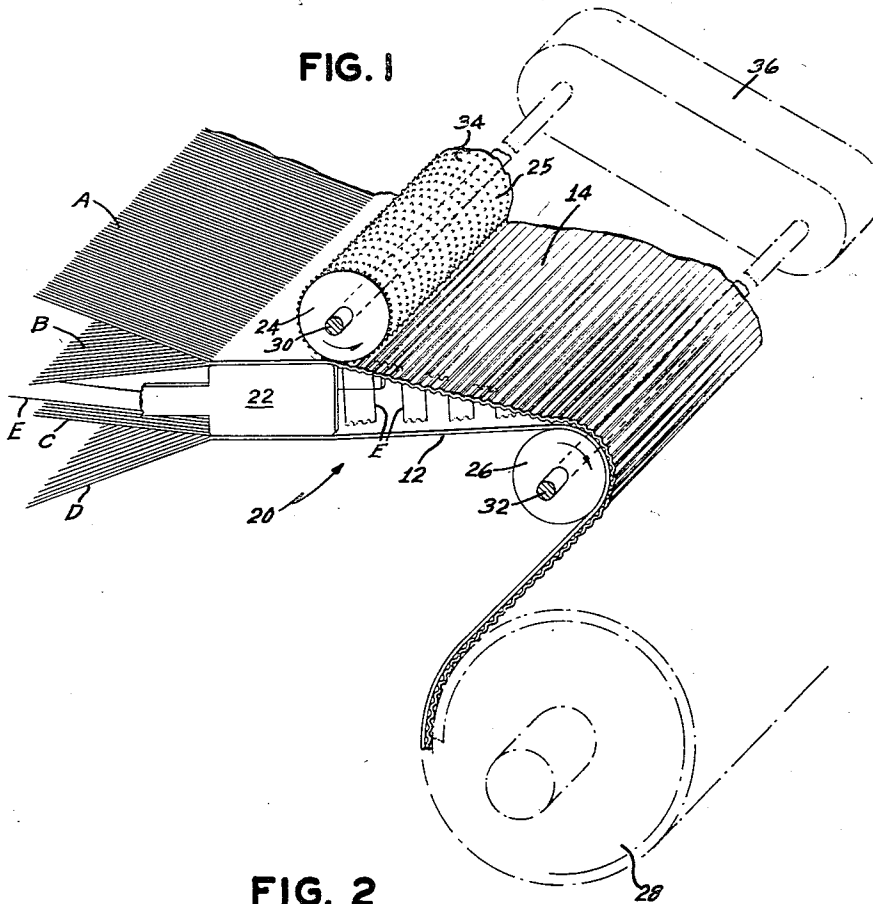
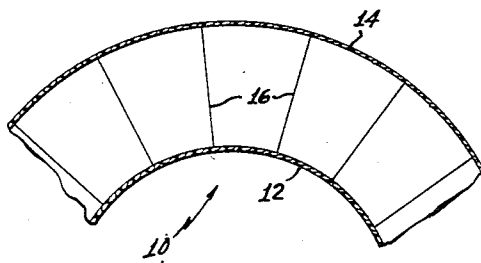


FIG. 2



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Original application June 19, 1953, Serial No. 362,755, now Patent No. 2,732,865, dated January 31, 1956. Divided and this application May 27, 1955, Serial No. 513,323

2 Claims. (Cl. 139—410)

This invention relates generally to improvements in fabrics and method of, and apparatus for, making the same and, more particularly, to improvements in arcuate inflatable mattress fabrics and method of, and apparatus for, making the same.

It is the primary aim and object of the present invention to provide mattress fabric formed of a pair of fabrics having an intermediate thread extending therebetween and connected thereto in which said fabric is adapted to assume an arcuate shape of a desired curvature.

It is another object of the present invention to provide arcuate mattress fabric of the aforementioned character in which the arcuate shape is of a curvature that is readily and accurately controllable.

It is a further object of the present invention to provide an improved method of making the fabric material of the aforementioned character, said method readily lending itself to efficient and low cost mass production.

It is yet another object of the present invention to provide improved apparatus for making the fabric material of the aforementioned character, said apparatus being simple in design and construction, and economical to manufacture.

The above and other objects, features and advantages of the present invention will be more fully understood from the following description considered in connection with the accompanying illustrative drawings.

In the drawing which illustrates the best mode now contemplated by me for carrying out my invention:

Fig. 1 is a fragmentary perspective view of loom apparatus formed according to the present invention; and

Fig. 2 is a fragmentary schematic view of the arcuate inflatable mattress fabric formed on the apparatus shown in Fig. 1.

Referring to the drawing, and more particularly to Fig. 2 thereof, there is shown a segment of mattress fabric 10 which comprises a pair of fabrics 12 and 14 which are interconnected by the intermediate thread 16, said pair of fabrics being disposed in confronting disposition and laterally spaced apart. It will be understood that the intermediate thread 16 is secured to the fabrics 12 and 14 in a manner to be described in detail hereinafter and said intermediate thread is transversely disposed between said pair of fabrics. It will be noted that the fabric 14 is elongated relative to the fabrics 12, said arrangement providing a fabric material 10 which is adapted to assume an arcuate shape of a desired curvature. The method of, and apparatus for forming the mattress fabric 10 will now be described in detail with reference to Fig. 1.

The loom 20, a fragmentary portion of which is shown in Fig. 1, is conventional except in the respects to be specifically noted hereinafter, and comprises a series of gages 22 which are disposed warp-wise of the apparatus. The series of threads A and B are adapted to form the upper fabric 14 and the series of threads C and D are adapted to form the lower fabric 12, the intermediate

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thread E being adapted to form the intermediate thread 16 shown in Fig. 2. As is conventional in weaving on loom apparatus of this character, warp and weft threads will be interwoven to simultaneously form the pair of fabrics 12 and 14 which are laterally spaced in confronting disposition with the spacing corresponding to the width of the series of gages 22. The intermediate thread E will be woven with the warp and weft threads of the pair of fabrics 12 and 14, respectively, in succession during the weaving of said pair of fabrics with the thread E extending transversely between said pair of fabrics. Thus the weaving operation, as aforescribed relative to the loom apparatus 20, is conventional in all respects whereby it will be apparent that the fabrics 12 and 14 will be spaced apart a distance corresponding to the width of the series of gages 22. If desired said fabrics 12 and 14 may be spaced apart a distance substantially greater than the width of the series of gages 22, this arrangement being fully shown, described and claimed in my copending application Serial No. 360,435, filed June 9, 1953, for Fabrics and Method of Making the Same. Thus the fabrics 12 and 14 may be spaced apart corresponding to the width of the gages 22 or said fabrics may be spaced apart in the manner shown in my copending application aforesaid. The loom 20 will be provided with two warp beams, one beam for fabric 12 and one beam for fabric 14.

Pursuant to the present invention, there is provided a pair of take-down rolls 24 and 26 which are vertically and laterally spaced from each other, it being noted that said take-down rolls are positioned forwardly of the series of gages 22. Associated with the forwardly positioned take-down roll 26 and disposed therebelow is a wind-up roll 28 which is adapted to receive and wind-up the fabric 10 from the take-down roll 26. The take-down roll 24 is adapted to rotate at a greater peripheral speed than the take-down roll 26 whereby the upper fabric 14, which is adapted for association with the take-down roll 24, will be of greater length relative to the fabric 12 which is adapted for association with the take-down roll 26 on being drawn from the series of gages 22. It will also be apparent that the warp beam for the fabric 14 will permit the latter to be drawn off at a faster rate relative to the fabric 12 by roll 24. Since the shuttles travel across the fabric 12 and 14 the same number of times per unit of time, fabric 14 will have a lesser number of weft threads per unit of length than the fabric 12. However, the difference in the number of weft threads in fabrics 12 and 14 will be relatively small for practically all curvatures desired of fabric material 10. The take-down rolls 24 and 26 are mounted for rotation on the shafts 30 and 32, respectively, in the direction of the arrows as shown. Disposed on the peripherally extending surface 25 of the roll 24 is a series of projecting elements 34 which are adapted to cooperate with adjacent face portions of the fabric 14 for drawing the latter. The elements 34 may be of any desired construction and arrangement whereby to provide for the engagement thereof with the fabric 14 without damaging the latter. Any suitable means (not shown) may be provided for rotating the shafts 30 and 32 so as to provide for the aforementioned different peripheral speeds of the take-down rolls 24 and 26. The upper take-down roll 24 is adapted to rotate at a greater peripheral speed than the take-down roll 26 and, if desired, the shafts 30 and 32 may be interconnected by any suitable mechanism indicated generally at 36 for providing a fixed relative speed between said shafts so as to provide for a fixed relative peripheral speed between the take-down rolls 24 and 26. Thus the fabric 14 on being drawn from the gages 22 is adapted to cooperate with the take-down roll 24 so as to provide for the

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greater length of said fabric relative to the fabric 12. Similarly the fabric 12 on being drawn from the series of gages 22 is adapted to cooperate with the lower take-down roll 26, the latter being driven at a slower peripheral speed than the take-down roll 24. Thus the differential peripheral speed of the take-down rolls 24 and 26 will be effective to provide for the differential length between the companion pair of fabrics 12 and 14. It is to be noted that the pair of fabrics 12 and 14 will converge towards the take-down roll 26 and will be guided therearound onto the wind-up roll 28.

The fabrics 12 and 14 may be thereafter suitably coated or impregnated with a fluid impervious material so that articles fabricated therefrom will be correspondingly fluid impervious. Thus by way of example it is to be noted that the mattress fabric 10 may be fabricated into arcuate air-inflatable mattresses or fluid containers. Accordingly the aforescribed mattress fabric 10 may be used to form fluid containers or inflatable mattresses of a desired curvature that is readily and accurately controllable. The instant mattress fabric 10 readily lends itself to the formation of fluid containers having an arcuate shape of a desired curvature whereby such containers may be readily associated with complementary structure of a corresponding shape. It is to be noted that, if desired, the shafts 30 and 32 of the take-down rolls 24 and 26, respectively, may be independently driven so as to provide for the aforescribed differential peripheral speed or, if desired, said shafts may be operatively linked by suitable means 36 so as to provide for a fixed relative differential speed.

This application is a divisional application of my application Serial No. 362,755, filed June 19, 1953 for Fabrics and Method of and Apparatus for Making the Same, now Patent No. 2,732,865.

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While I have shown and described the preferred embodiment of my invention, it will be understood that various changes may be made in the present invention without departing from the underlying idea or principles of the invention within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. An arcuate fabric material, comprising a pair of laterally spaced woven fabric layers interconnected by a series of transversely extending threads having portions thereof woven to said layers, respectively, said layers comprising interwoven warp and weft threads with one of said pair of layers being of greater length than the other of said pair of layers, said one layer having in unstressed state a lesser number of weft threads per unit of length than said other layer, and said layers being coated to render the fabric material fluid impervious.

2. An arcuate fabric material, comprising a pair of laterally spaced woven fabric layers interconnected by a series of transversely extending threads having portions thereof woven to said layers, respectively, said layers comprising interwoven warp and weft threads and being of different lengths and having in unstressed state a different number of weft threads per unit of length.

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