May 2, 1939. T. MILNES 2,157,082

FELT

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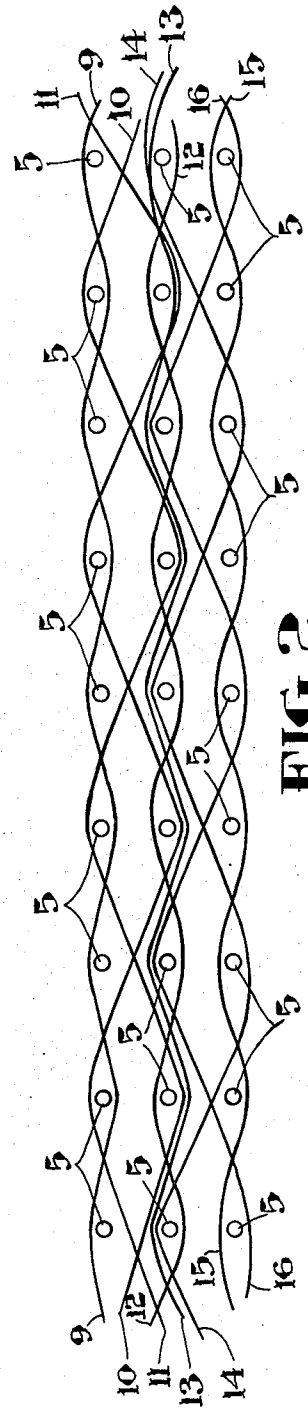


FIG. 2

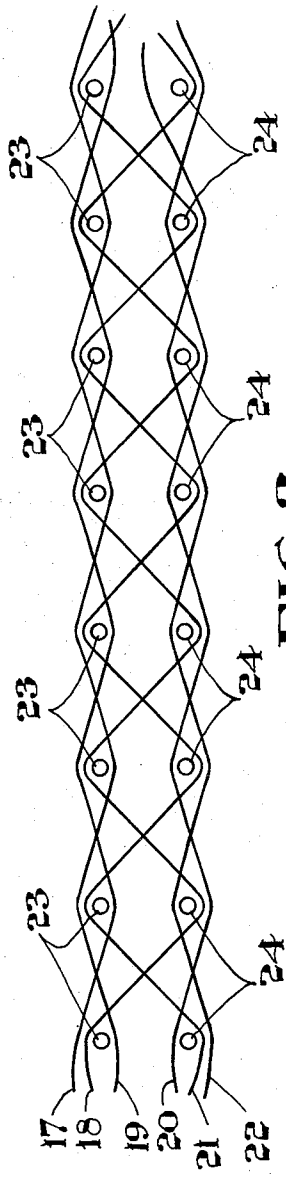


FIG. 3



FIG. 1

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# UNITED STATES PATENT OFFICE

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## FELT

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Application April 16, 1937, Serial No. 137,309

1 Claim. (Cl. 139—408)

This invention relates to felts used in the manufacture of pulp and paper and has particular reference to dryer felts employed for supporting and pressing a wet sheet of pulp or paper against the steam heated dryer cylinders of a pulp or paper making machine.

The object of the present invention is to provide an improved felt of the class commonly known as asbestos or asbestos-content felts. Various methods of making such felts have been proposed from time to time. In some instances the asbestos yarns used in the felt are made entirely of asbestos fibres and have little tensile strength. In other instances the so-called asbestos yarns are made of asbestos and textile fibres twisted together to provide a yarn having greater tensile strength than yarns made entirely of asbestos fibres. In still other instances the so-called asbestos yarns are made of asbestos fibre spun around a strengthening core consisting of wire or textile threads such as cotton. These are known as core yarns.

The present invention provides an improved felt in which core yarns, consisting of asbestos fibres spun around a strengthening core of cotton or other suitable textile fibres, are each twisted together with one or more threads made of cotton or other suitable textile fibres so that the completed core yarn comprises (*a*) a central core of cotton or other textile fibres; (*b*) an envelope of asbestos fibres completely enclosing the textile core; and (*c*) an outer binding consisting of cotton or other textile threads spiralled around the asbestos envelope.

One advantage of the improved core yarns provided in accordance with this invention is that the outer binding of cotton or other textile threads considerably increases the tensile strength of the yarn as compared with ordinary core yarns consisting simply of a core of textile fibres and an outer envelope of asbestos fibres. When yarns made in accordance with the present invention are subjected to stretching tension the strain is taken mainly by the inner core and the outer binding of textile fibres so that rupture of the asbestos envelope due to excessive tension is prevented under all ordinary working conditions.

Another characteristic of core yarns made in accordance with the present invention is that the outer binding of textile threads assists in holding the asbestos fibres in place around the textile core in addition to causing the asbestos fibres to lie in a more or less parallel direction so that the fuzziness of the asbestos surface is reduced as compared with ordinary core yarns.

Proceeding now to a more detailed description reference will be had to the accompanying drawing, in which—

Fig. 1 is a view of my improved core yarn showing the manner of applying the outer binding of textile fibres.

Fig. 2 is a view showing the weave of a three ply felt in which the weft or filling consists of yarns of the type shown in Fig. 1.

Fig. 3 is a view, similar to Fig. 2, of a two ply felt including filling or weft yarns made in accordance with this invention.

The weft yarns of the three ply felt appearing in Fig. 2 are indicated at 5. These are made as shown in Fig. 1, that is to say, they consist of a textile core 6, an asbestos-fibre envelope 7 completely enclosing said core, and an outer binding of cotton or other textile threads 8 spiralled around the asbestos envelope. In making this yarn, the asbestos fibres are spun around the core 6 to form the envelope 7 according to any of the usual methods followed in the manufacture of ordinary core-yarns of the asbestos-surface type. This core yarn is then twisted with the cotton binding threads 8 to produce the finished yarn shown in Fig. 1.

The weft threads in the upper layer of the three ply felt form, with the warps 9, 10 and 11, the paper carrying surface of the felt. The warps 9 to 11 inclusive, are preferably made of ordinary core-yarn comprising a core of cotton or other textile fibres around which is spun a heat resisting envelope of asbestos fibres. In some instances it may be feasible to make the warps 9 to 11 inclusive of the improved type of core yarn illustrated in Fig. 1. The remaining warps, 12 to 16 inclusive, used in the central and bottom layers of the felt are preferably made of cotton or other suitable textile fibres.

In Fig. 3 I have shown a two-ply felt in which the wefts, indicated at 17 to 22 inclusive, consists of core-yarns made as illustrated in Fig. 1. The warps 23 in the upper layer of this felt are preferably made of ordinary core-yarns consisting of a textile core enclosed in a heat resisting envelope of asbestos fibres while the warps 24 in the lower layer are preferably made entirely of cotton or other suitable textile fibres. If desired the warp threads 23, appearing in Fig. 3, may also be made of the same type of yarn as that employed in the weft or filling.

While I have indicated several ways in which my improved yarn may be incorporated in the fabric of a dryer felt it will be understood that the invention is not restricted to these specific


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examples since various modifications in respect to employment of these yarns in the manufacture of different weaves of felts will readily suggest themselves to persons skilled in the art.

I claim:

A three-ply asbestos dryer felt in which the weft of each ply is composed of yarns comprising a textile core, an asbestos-fibre envelope completely enclosing said core and an outer binding of textile threads spiralled around the asbestos envelope, said felt being further characterized in that the warp of the upper ply is composed entirely of core-yarns comprising a core of textile fibres enclosed in an asbestos-fibre envelope while the warps of the central and bottom plies consist solely of textile fibres such as cotton.

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