Dec. 3, 1929. T. S. McDERMOTT 1,737,607

NEEDLED FELT FABRIC

Filed Dec. 29, 1928

Fig. 1.

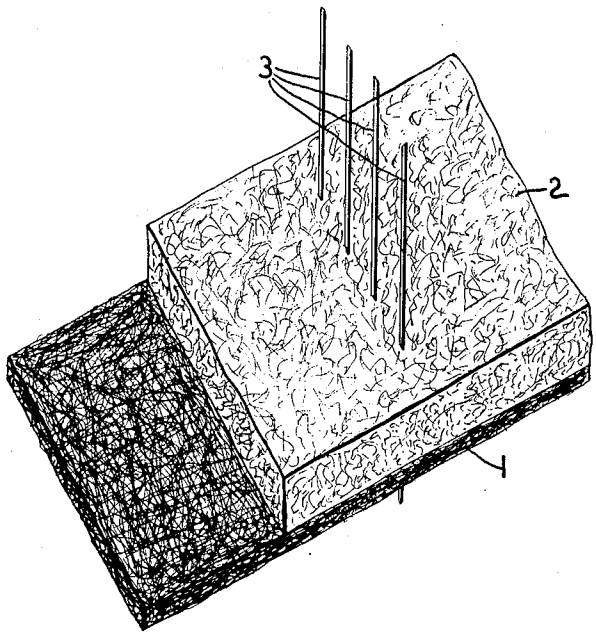
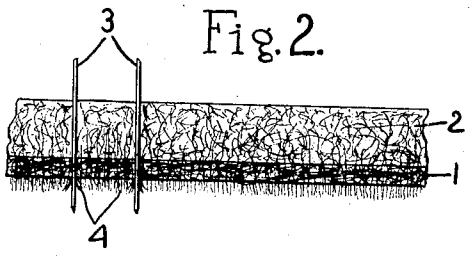


Fig. 2.



Inventor
Thomas S. Mc Dermott
by Heard Smith & Tennant.
Attys.

Patented Dec. 3, 1929 1,737,607

UNITED STATES PATENT OFFICE

THOMAS S. McDERMOTT, OF FRANKLIN, MASSACHUSETTS, ASSIGNOR TO CLARK-CUTLER-McDERMOTT COMPANY, OF FRANKLIN, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

NEEDLED FELT FABRIC

Application filed December 29, 1928. Serial No. 329,157.

This invention relates to a needled felt fabric.

One common way of making this type of fabric is to place a layer of carded fibres on a piece of woven fabric, such for instance as burlap, and then to subject the superposed layers to a needling process. This process consists in pricking through the superposed layers with needles and it results in interlacing the fibres and carrying some of them through the woven fabric or base layer and thus causing them to become interlocked with said layer.

The principal purpose of the base layer or woven fabric is to give the required strength to the final product. A layer of carded fibres which has been needled does not have any very great strength to resist tearing strain but a fabric in which the layer of carded fibres is interlocked with the woven base layer has a strength to resist any tearing or pulling strain equal to the combined strength of the woven fabric and the fibre layer.

It is one of the objects of my invention to provide an improved needled felt fabric which is as strong as the felt fabric having the burlap base layer but which can be manufactured considerably cheaper.

In my improved fabric the strength-giving layer is unspun, relatively long fibres, such as sisal fibres, cocoanut fibres, manilla fibres, etc., and in making the fabric I superpose a layer of carded fibres which are relatively short on a layer of unspun and uncarded relatively long fibres and then subject the combined layers to the usual needling process during which some of the relatively short fibres are carried into and interlocked with the unspun long fibres.

Sisal fibres are relatively long, often as long as six or eight inches, and in their unspun uncarded condition they extend in every direction and are indiscriminately matted or tangled together. The same would be true of manilla fibres or some grass fibres. A fabric made as above described has as much strength as one having a base of woven fabric but the base formed of the unspun fibres is less expensive than the woven fabric and hence the needled fabric made in accordance with my invention can be manufactured less expensively than one having a burlap base.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a view illustrating the manner in which the fabric is made;

Fig. 2 is a sectional view through the completed fabric.

In making the fabric I first provide a base layer 1 of relatively long unspun fibre, such as sisal fibre, manilla fibre, etc., and then I apply a layer 2 of relatively short fibres to the layer 1. Subsequently the two superposed layers 1 and 2 are subjected to the needling process during which both layers are penetrated repeatedly by needles 3. These needles serve to felt the layer 2 and carry some of the fibres thereof through the base layer 1 as shown at 4 in Fig. 2. By this means the two layers 1 and 2 are firmly interlocked together.

The relatively long individual fibres of the layer 1 are arranged indiscriminately and extend in every direction, each fibre being more or less interlocked with other fibres.

As a result of the needling process the layer 2 is not only united to the base layer 1 by the fibres 4 that are carried through the layer 1 but these fibres 4 also serve as an added means of tying together the fibres of the layer 1.

One advantage of my improved fabric is that its resistance against tearing strain in every direction is substantially the same. This is due to the fact that the long fibres of the base layer extend in indeterminate di-

rections. In the case of a needled fabric having a burlap base the threads composing the woven fabric extend in two directions only at right angles to each other, as is usual in woven fabrics, and hence while such a fabric has a maximum strength against pulling strain in the direction of the threads, that is, in two principal directions, it has less strength against pulling strain in a direction intermediate the two directions in which the threads of the base fabric extend.

On the other hand, my improved fabric has an equal strength against pulling strain in all directions because of the indeterminate way in which the long fibres are interlocked. Moreover, I find that a fabric made in accordance with my invention has a strength approximately as great as the maximum strength of the fabric having the base layer of burlap.

These long fibres extend in every direction and are matted together so that there is equal resistance to tearing strain in every direction.

Since less expense is involved in providing a base layer of the long unspun, uncarded fibre than is involved in providing a base layer of burlap it is possible to produce a satisfactory fabric in accordance with my invention at a reduced expense.

When the fabric is used the face thereof will be that provided by the layer 2 of shorter fibres and for a great many uses the back face of the fabric or that provided by the layer 1 of long fibres, will be concealed. When used in this way it makes little difference just what appearance the back face of the fabric presents. If the fabric is to be used under such conditions that both faces will be exposed then another layer of the shorter fibres similar to the layer 2 may be applied to the back face of the fabric by the process above described. This would provide a fabric in which both faces had the same appearance.

I claim:

1. A needled felt fabric comprising two superposed layers, one layer being composed of long unspun fibres which extend in indeterminate directions and constituting a strength giving layer and the other layer being composed of shorter fibres felted together, some of which shorter fibres pass through the layer of long fibres and thus tie the two layers together.

2. A needled felt fabric comprising two superposed layers, one layer being a strength-giving layer and being composed of long unspun fibres which extend in indeterminate directions and the other layer being a body layer and being composed of shorter carded fibres felted together, some of the shorter fibres passing into and through the layer of long fibres thereby to tie the two layers together.

3. A needled felt fabric comprising two superposed layers, one layer comprising long unspun sisal fibres which extend in indeterminate directions and are interlocked with each other, and the other layer being composed of shorter fibres felted together, some of the shorter fibres extending into and through the layer of sisal fibres and thus tying the two layers together.

In testimony whereof, I have signed my name to this specification.

THOMAS S. McDERMOTT.