

Oct. 11, 1938.

G. SLAYTER

2,133,237

TEXTILE MATERIAL

Original Filed Feb. 7, 1936

FIG-1-

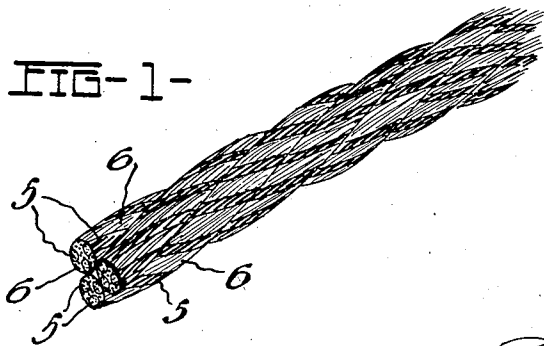


FIG-2-

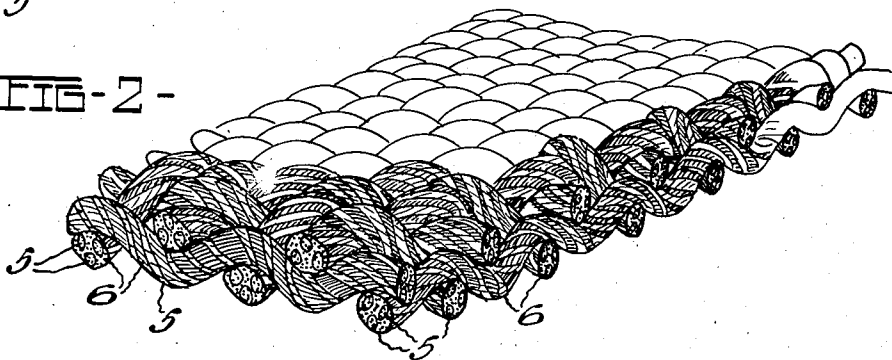
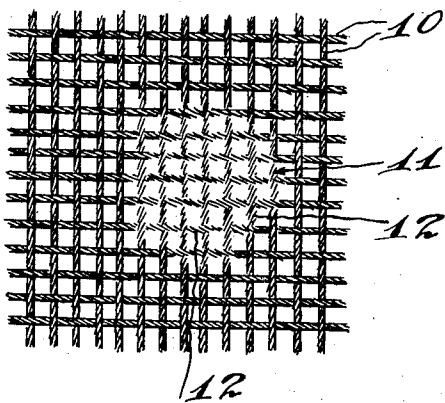


FIG-3-



James Slayter
INVENTOR.

BY *Rule & Hoge*
ATTORNEYS.

UNITED STATES PATENT OFFICE

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TEXTILE MATERIAL

Games Slayter, Newark, Ohio, assignor to Owens-Illinois Glass Company, a corporation of Ohio

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6 Claims. (Cl. 139-420)

The present invention relates to a textile material and more particularly to glass fibers fabricated with other textile fibers.

It is an object of the present invention to provide a textile material which has high heat and fire resisting properties and which has certain components incorporated in the textile material which tend to carry away and disperse momentary applications of high temperature heat to prevent scorching and burns.

It is another object of the present invention to provide a textile fabric comprising fibers of different materials combined in such a manner that it has strength for handling, fabricating, etc. and a high resistance to acids and the like so that its life may be greatly increased despite subjection to heat or acid conditions.

Another object is to provide a textile material composed of conventional organic fibers mixed with and held together by inorganic, heat and acid resisting fibers which will remain unharmed and serve to retain the material intact and unimpaired despite weakening or destruction of the organic fibers.

It is a further object of the present invention to provide a fabric of combined fibers having unusual and novel color effects.

Other objects and advantages of the present invention will become apparent from the following description taken in conjunction with the drawing, in which:

Fig. 1 is a perspective view, partly in section, of a yarn made in accordance with the present invention;

Fig. 2 is a similar view showing a fabric also made in accordance with the present invention; and

Fig. 3 is a diagrammatic plan view of an embodiment of the present invention showing a fabric after having a portion of component fibers removed or destroyed by subjection to heat, acid or the like.

By the use of glass fibers in conjunction with other textile fibers, such as cotton, wool, flax, silk or the like, certain effects can be obtained in the resulting material which are not obtainable otherwise. Where the fabrics or textiles comprising an intertwining or intermixture of glass and organic fibers are used for making gloves, aprons or other articles which are used in handling acids destructive to the organic fibers, or for making fabrics where high temperatures may weaken or destroy the organic fibers, the glass fibers will remain unharmed and serve to retain the materials intact and unimpaired.

Glass fibers are excellently suited to my novel textile material or fabric for several reasons. It is possible to form fine, attenuated, glass fibers having any ordinarily desired fineness and length. For example, fibers may be made ranging from as small as .00006 inch to one or more thousandths of an inch and also have a more or less continuous length. When glass is drawn to such extreme fineness it acquires a highly advantageous flexibility and extreme strength. Glass fibers of the finer diameters may attain a tensile strength of more than 1,000,000 lbs. per square inch and acquire sufficient pliability so that they can be bent around extremely small radii of curvature without fracture.

In addition, glass fibers have the property of being resistant to heat since the material is non-inflammable and also tends to carry away and distribute momentary applications of high temperature heat. Adjacent or intertwined textiles which are scorchable or inflammable will consequently be deprived of a large portion of heat and be delayed in reaching a temperature sufficiently high to cause scorching or combustion.

It is further to be noted that glass fibers may be combined with various percentages of other textile fibers in such a manner that the other textile fibers furnish strength for handling, fabricating, etc., and the glass fibers furnish resistance to acid or heat in the resulting material. For example, if a fabric is made up as shown in Fig. 1, having interwoven yarns 5 of glass wool twisted with individual yarns 6 of an organic fiber such as cotton, wool, silk, etc., the resulting composite yarn acquires the combined properties of strength for handling, and resistance to acid or heat.

Fig. 2 shows a fabric woven with a conventional basket weave of this material. When this fabric is exposed to a concentrated application of heat or acid which is destructive to the organic fibers, the fabric will nevertheless maintain its original form and serve to retain the fabric intact and unimpaired. Fig. 3 illustrates such a condition in which the yarns 10, interwoven with a conventional basket weave, have been subjected to, say, a concentrated application of acid at the central portion 11 so that the organic fibers have been eaten out or weakened at this point. It will be noted that the fabric as a whole is intact and is held together throughout the portion 11 by the remaining acid resistant glass fibers 12.

By the use of fibrous glass in conjunction with other textile fibers, certain novelty effects can be obtained in the composite material which are not

otherwise obtainable. An example of this condition is a fabric comprising a blend of glass fibers and certain quantities of organic fibers. The fabric is dyed with a dye which colors the organic fibers but, in view of the fact that the glass fibers are generally not wetted, does not color the glass fibers. It will be noted that the organic fibers are more or less opaque and tend to absorb the light rays, whereas the glass fibers are transparent or opalescent, tending to reflect or disperse the major portion of the impinging light rays. The result of this novel color application is a new, unusual color and light effect not obtainable by the individual fibers alone.

15 In fabricating my new material it is preferable to make up yarns largely, if not wholly, of glass wool and twist these yarns with other yarns consisting mostly, if not entirely, of organic fibers. If it is desired to fabricate yarns of mixed organic and inorganic fibers directly, it is advisable to intertwine fibers of equal length. When fibers of equal length are run together and intertwined, it is easier to obtain an even, uniform stock.

25 Although the present invention has been illustrated and described in connection with specific embodiments, it is to be understood that variations and modifications may be made which are within the scope and spirit of the appended claims.

I claim:

1. In combination, fine attenuated glass fibers, and organic fibers intertwined with said glass fibers to form a textile yarn, said yarn being dyed with a dye capable of adhering to and coloring the organic fibers but being incapable of substantially coloring the glass fibers, whereby a color effect is produced.

2. As a product of manufacture, a textile material comprising non-inflammable heat-resistant glass fibers, and strong flexible organic fibers

intertwisted with said glass fibers to form a flexible, pliable yarn, the said glass fibers and said organic fibers being all of approximately the same average length.

3. As an article of manufacture, an interwoven fabric of yarns comprising non-inflammable heat-resistant glass fibers, and strong flexible organic fibers intertwined with said glass fibers, the said glass fibers adapted to retain the fabric intact and unencumbered when the said organic fibers have been weakened or destroyed.

4. As an article of manufacture, an interwoven fabric of yarns comprising noninflammable and heat resistant glass fibers having diameters less than about .0001 inch, and organic fibers intertwined with said glass fibers, said fabric being woven with yarns having glass fibers in both the warp and the weft, and said fabric being pliable and flexible in all directions and adapted to be retained intact when the said organic fibers have been weakened or destroyed.

5. A textile fabric formed of interwoven warp and weft yarns, each of said yarns being formed with a plurality of intertwined organic fibers and glass fibers, both the organic and glass fibers being present throughout the length of the yarns whereby an article made from said textile will retain its form, integrity and in a large measure its tensile strength in the event the organic fibers are destroyed by heat, chemical reaction, or otherwise.

6. In combination, fine attenuated glass fibers, and organic fibers intertwined with said glass fibers to form a textile yarn, a plurality of said yarns being interwoven to form an interwoven fabric, said fabric being dyed with a dye capable of adhering to and coloring the organic fibers but being incapable of substantially coloring the glass fibers, whereby a color effect is produced.

GAMES SLAYTER.