

# UNITED STATES PATENT OFFICE

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## METHOD OF COATING GLASS THREAD

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1 Claim. (Cl. 117—65)

This invention relates to a novel and improved method of forming a thread of glass fibers or filaments. As known in the art, usually glass thread is formed of twisted filaments, each filament being extruded in a continuous length. These filaments, however, can be made into short lengths, similar to cotton fibers, and spun into yarns, in a similar manner to that employed in the spinning of rayon staple fiber.

When glass filaments are formed into thread, the result is a product which has certain advantages but which has certain other very definite disadvantages. Among the disadvantages is that the thread is quite brittle, which renders it unsuitable for sewing purposes, particularly in sewing machines where the thread is subjected to sharp sudden flexing, especially where the machine is operated at high speed. This is the principal disadvantage which is overcome by the present invention.

For the sake of illustration, I may describe my invention as being practiced with a thread made of a large number of ends, for example fifteen ends, each of which in turn is formed of many fine filaments of glass fiber, these being twisted together to form a thread. As an example, glass yarn supplied by the manufacturer, known as 900/2, is plied fifteen times to make a sewing thread.

The thread thus formed is then run through a bath of rubber latex or some equivalent compound of rubber or other adhesive. For the sake of convenience, however, the material in the bath will be referred to as latex. The apparatus for running the thread through the bath may be any of the usual pieces of apparatus used for such purposes and needs no description.

After leaving the bath, the thread is then heated and compressed, preferably by being passed through a round hole in a heated die, the diameter of the hole being such that the wet thread in passing through it is compressed. By that arrangement, the latex is forced into the interior of the thread, between the fibers or filaments of which the thread is composed, and thus the thread is thoroughly impregnated with latex and a thin film of latex is formed over the outside surfaces thus protecting the fibers against abrasion. Preferably, the temperature of the die is kept at an ordinary flatiron tem-

perature, say, about 350°. By proceeding in this manner, the latex coating is smoothed and burnished or "ironed."

After the glass yarn has been impregnated with latex and run through the dies, the material may then be placed in an oven and vulcanized in the normal manner. In that case, a suitable vulcanizing agent may be incorporated into the latex prior to impregnation.

I have found that by the method which I have described above, I am able to produce thread which is no longer brittle, but which may be used as a sewing thread. At the same time the coating of latex which is provided on the thread is one which prevents glass filaments or fibers from cutting or wearing each other while it is being sewed into the cloth.

One of the other advantages of my method is that it makes it possible to make thread of any desired color. Ordinarily, glass thread has to be colored by coloring the glass from which it is formed, but this method limits the number of colors that can be obtained. However, with my method it is possible to incorporate in the latex any desired dyestuff which will give to the finished thread the desired color. There is practically no limit to the number of colors which may thus be given to the finished product.

Since the invention has been found to be particularly useful with sewing thread, I have for convenience used the word "thread" in referring to the product, but by that term I do not intend to limit myself to any particular size of thread, because the invention may be practiced equally well with materials which are usually referred to as yarn or cord. The word "thread" therefore is used to cover any of such equivalent products.

I claim:

The method of treating glass fiber thread which comprises impregnating said thread with latex and then passing the impregnated thread through the orifice of a heated die, said orifice having a circular cross section less than the cross section of the thread and of such dimensions that the thread is compressed during passage through said orifice, and heating the impregnated thread while it is subjected to said pressure.

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