Patented May 11, 1948

2,441,209

UNITED STATES PATENT OFFICE

2,441,209

TREATMENT OF SYNTHETIC PLASTIC FIBERS

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No Drawing. Application December 7, 1945, Serial No. 633,551

2 Claims. (Cl. 106—232)

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This invention relates to the treatment of certain synthetic plastic fibers and is concerned primarily with the treating of such fibers in an undrawn condition for the purpose of maintaining in the fibers the ability to draw.

At the present time there is known and available to the public certain synthetic plastic fibers which when spun, twisted, braided, or woven into a strand or rope have the ability to draw or elongate and while so elongating absorb an appreciable amount of kinetic energy. Undrawn nylon is typical of such synthetic plastic fibers and among others might be noted "polyethylene," "vinyon" and "vinylite." In view of this now recognized property of such synthetic plastic fibers it has been proposed to take advantage of these properties in mechanical apparatus particularly where shock absorbing action should not be attended with any rebound or recoil.

Under ideal conditions the strand or rope which is made from the undrawn synthetic plastic fibers will probably draw and afford the desired results without any particular treatment of the fibers. This drawing action requires that the molecules of the fibers be in a plastic or unoriented condition and if sufficient moisture content is present this molecular condition obtains. However, should the fibers dry out as under conditions of high temperature or by being left exposed to the weather for long periods the fibers will not draw as intended.

Accordingly, this invention has in view as its foremost objective the provision of a compound for treating synthetic plastic fibers of the type above noted so as to maintain them in a condition in which they may be drawn to absorb kinetic energy. In carrying out this idea in a practical embodiment the invention proposes to impregnate the strand or rope into which the fibers are fashioned by a compound which preserves the plastic molecular arrangement.

A further object of the invention is the provision, in the treatment of synthetic plastic fibers, of a compound of the character above noted which comprises shellac, glycerin and pitch. These materials may be present in proportions extending over a wide range but the three together make up the complete compound.

Various other more detailed objects and advantages of the invention such as arise in connection with carrying out the above noted ideas in a practical embodiment will in part become apparent and in part be hereinafter stated as a description of the invention proceeds.

The invention, therefore, comprises a compound for treating undrawn synthetic plastic fibers to preserve the ability of the fibers to draw and while drawing to absorb energy and which consists essentially of a compound comprising shellac, glycerin and pitch.

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For a full and more complete understanding of the invention reference may be had to the following description in which detailed steps, materials, proportions, and conditions are given purely by way of illustrating a preferred embodiment of the invention.

It may first be assumed that the undrawn synthetic plastic fibers, whatever they may be, are spun, twisted, braided, or woven into the finished article such as a strand or rope. Undrawn nylon is a fairly good example of such undrawn fibers. However, it is to be noted that "polyethylene," "vinyon" and "vinylite" also have the molecular arrangement prior to drawing which permits them to be drawn and elongated so as to absorb kinetic energy. It is to the end of preserving this ability of the strand or rope made from the fibers to draw and elongate under various and perhaps adverse conditions that the present invention is aimed.

In order to prepare the impregnating compound shellac is taken as the main ingredient. While the proportion of shellac may vary the optimum may be taken as 80% by weight. By shellac is meant the ordinary commercial product in which the shellac is dissolved in either methyl or denatured ethyl alcohol.

In addition to the shellac the final compound comprises glycerin in the portion of about 10% by weight and a pitch solution in the proportion of about 10% by weight. As an example of the pitch solution a hundred grams of the solution would be made up of thirty-three grams of pitch and sixty-seven grams of methanol. Obviously, other pitch solutions might afford equally satisfactory results.

The shellac, glycerin and pitch solution in the proportions specified above are dumped into an open-topped vat and thoroughly mixed together by agitation. This may be accomplished by using a paddle.

The strand of synthetic plastic fibers which is to be treated is now completely immersed in the compound and the immersion is maintained for a period sufficient to insure a complete penetration of the fibers by the compound. It has been found that 24 hours is the period which will prove ample for all ordinary cases. Under some conditions it might be desirable to extend this period. The important factor being to insure complete

impregnation of the synthetic plastic fibers by the compound.

When undrawn synthetic plastic fibers of the character above noted are impregnated by a conditioning compound in accordance with the above noted steps and materials they will absorb and retain about 20% by weight of the compound. This percentage will, of course, vary with different synthetic plastic fibers, changes in the impregnating compound, and variations in other conditions.

While preferred specific embodiments of the invention are hereinbefore set forth, it is to be clearly understood that the invention is not to be limited to the exact steps and ingredients described because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

What is claimed is:

1. In the treatment of undrawn synthetic plastic fibers, a conditioning compound comprising shellac in the proportion of about 80% by weight, glycerin in a proportion of 10% by weight, and a pitch solution in the proportion of 10% by weight in which the pitch solution is made up of about 33% pitch and 67% methanol.

2. In the treatment of undrawn synthetic plastic fibers, a conditioning compound comprising shellac in the proportion of about 80% by weight, glycerin in the proportion of 10% by weight, and a pitch solution in the proportion of 10% by weight in which the pitch solution is made up of about 33% pitch and 67% alcoholic solvent.

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REFERENCES CITED

The following references are of record in the file of this patent:

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