

# UNITED STATES PATENT OFFICE.

FRANKLIN TAYLOR, OF WILMINGTON, DELAWARE.

METHOD OF TREATING VULCANIZED FIBER AND LIKE MATERIAL.

SPECIFICATION forming part of Letters Patent No. 302,795, dated July 29, 1884.

Application filed June 26, 1884. (No specimens.)

*To all whom it may concern:*

Be it known that I, FRANKLIN TAYLOR, of Wilmington, in the county of New Castle and State of Delaware, have invented a new and Improved Method of Treating Vulcanized Fiber and like Material, of which the following is a specification.

In many of the uses to which vulcanized fiber, gelatinized fiber, leatheroid, vegetable fiber which has been treated by the well-known sulphuric acid process, and such like material are applied, it is desirable that the material should possess more or less softness or flexibility, and that this quality should be lasting. For instance, when the material is used for many kinds of packings, washers, &c., more or less flexibility is required, and of course it is important that the material should not become dry and hard with age, but should retain its flexibility as long as possible. I impart this permanent flexibility and softness to the fiber by subjecting it to a bath of deliquescent salt subsequent to the organic change produced in the vegetable fiber during its manufacture.

When vulcanized fiber is manufactured according to the well-known Schmidt method set forth in Patent No. 113,454, the vegetable fiber or cellulose is treated either with mother-water resulting from the manufacture of chloride of zinc or other chlorides, or with a solution of chloride of zinc or other chloride. In either case, however, this active agent for producing the organic change in the cellulose to convert it into vulcanized fiber is thoroughly washed out of the fiber, and then the fiber is treated with a bath of water and glycerine or sugar-water to render it flexible.

The patent of Daniel Hanna (No. 120,380) relates to the treatment of vegetable fiber by chloride of zinc, or mother-water of chloride of zinc, and suggests that when a hard paper is required nearly, if not all, of the solution is washed out from the paper; but when a soft paper is to be produced comparatively little of the solution is washed out. This manner of producing flexible fiber is objectionable for various reasons, and principally because of the great difficulty and practical impossibility

of producing uniform results, as it is impossible to always wash the fiber to the same degree to produce equality of flexibility in the same batch of material.

In my improved method the vegetable fiber or cellulose is first treated with the active agent, whatever it may be, to produce the required organic change, is preferably then thoroughly washed, and then subjected to a bath of a solution of deliquescent salt of a definite and known strength. The deliquescent salt may be used either alone, or a bath composed of a solution of deliquescent salt and glycerine or sugar-water may be used. While both baths give most excellent results in practice I prefer the last named.

The method of treating vegetable fiber for the manufacture of vulcanized fiber and such like material is so well known and fully set forth in the patents referred to, as well as others, that any description here is unnecessary.

In carrying out my invention I preferably take the fiber as it comes from the cleansing-bath while yet soft and saturated with moisture, and treat it with a bath of a solution of chloride of zinc or other deliquescent salt, which bath may be of a strength of from 15° to 30° Baumé, more or less, according to the degree of flexibility it is desired to impart. When the deliquescent salt is used in combination with a glycerine or sugar-water solution, I preferably take a solution of either of the latter of from 20° to 30° Baumé, and add to it from thirty to sixty per cent. in bulk of the solution of deliquescent salt at a strength of about 30° Baumé, more or less. As before remarked, these proportions may be changed according to the amount of softness and flexibility desired.

While I prefer to take the material as it comes from the cleansing-bath and subject it to the softening-baths described, I may treat the dried fiber in the same way. Of course, however, in that case the fiber would have to be immersed in the solution for a much greater length of time. The wet fiber as it comes from the bath may be immersed in the softening-solution for from six to forty-eight hours, the



length of time depending upon the thickness or size of the mass immersed and the amount of softness to be imparted to it.

When working according to my improved method, as the strength of the bath is always definite and ascertained, fiber of uniform flexibility may readily be manufactured, and the material produced retains its softness for a long period of time. As above stated, I prefer to use the deliquescent salt in connection with sugar or glycerine, as I believe better and more permanent results are obtained thereby. I have used chloride of zinc as the deliquescent salt employed, though various other deliquescent chlorides may be used—as, for instance, the chlorides of tin, calcium, and other chlorides used in the manufacture of vulcanized fiber.

I am aware that in the patent of Van Bibber (No. 113,224) chloride of calcium mixed with a composition for printers' inking-rollers has been suggested as a means of rendering the rollers soft and flexible.

Approximately equal and good results—at least results much better than those heretofore attained—may be had in some cases by omitting the cleansing-bath, and taking the material directly from the bath of the active agent and immersing it in a bath of a definite strength of solution of deliquescent salt, or of deliquescent salt and glycerine or sugar-water. With a compound solution of glycerine or sugar and deliquescent salt good results may be obtained in this way.

I claim as my invention—

1. The method of treating vegetable fiber after it has undergone organic change and cleansing in the process of manufacturing vulcanized fiber and such like material, which consists in immersing it in a bath of a solution of deliquescent salt, as described.

2. The method of treating vulcanized fiber and such like material to impart softness and flexibility thereto, which consists in taking

the fiber after the organic change therein has been produced in the process of manufacture and subjecting said fiber to a bath of a solution of deliquescent salt, as described.

3. The method of treating vulcanized fiber and such like material, which consists in taking the vulcanized fiber after the organic change therein has been produced in the process of manufacture and subjecting it to a bath of a solution of deliquescent salt combined with glycerine or sugar-water, as described.

4. The herein-described bath for softening vulcanized fiber and such like material, which consists in the combination of a solution of a deliquescent salt and glycerine or sugar, as set forth.

5. The method of treating vulcanized fiber and such like material to impart softness and flexibility thereto, which consists in taking the fiber after the organic change therein has been produced in the process of manufacture and subjecting it to a softening-bath of a solution of chloride of zinc, or of a solution of chloride of zinc combined with glycerine or sugar-water.

6. The method of treating vulcanized fiber and such like material after it has undergone the organic change and subsequent cleansing in the process of manufacture, which consists in subjecting the material to the action of a bath of a solution of chloride of zinc, or of chloride of zinc combined with glycerine or sugar-water.

7. The herein-described bath for softening vulcanized fiber and such like material, which consists in the combination of a solution of chloride of zinc and glycerine or sugar-water.

In testimony whereof I have hereunto subscribed my name.

FRANKLIN TAYLOR.

Witnesses:

EDW. M. TAYLOR,  
W. P. WEBB.