UNITED STATES PATENT OFFICE.

THOS. G. BOONE, OF BROOKLYN, NEW YORK, ASSIGNOR TO WILLIAM C. NOYES, OF SAME PLACE.

IMPROVEMENT IN THE MANUFACTURE OF TWINE.

Specification forming part of Letters Patent No. **6,295**, dated April 10, 1849.

To all whom it may concern:

Be it known that I, THOMAS G. BOONE, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and Improved Method of Making Cotton Twine or Cord; and I do hereby declare that the following is a full, clear, and exact description of the same.

The nature of my invention consists in applying liquid glue or starch or any convenient combination or composition of these or other analogous substances to cotton threads or yarns separately, in combination with twisting said threads or yarns collectively into twine or small cords while the threads or yarns are wet with said substances, thereby rendering the twine or cord more compact and strong than by any known process.

To enable others skilled in the art to make and use my invention or improvement, I will proceed to describe its operation.

Operation: As the yarns for making the twine pass through the feeding-rollers of the common twisting-frame I apply the liquid substance which I use to the yarns by the lower feeding-roller revolving in a trough containing the said liquid, which in this manner and by these contrivances carries it up from the trough described and applies it to the yarns as they pass between the feeding-rollers. I cover the upper feeding-rollers with cloth for the purpose of saturating the yarns thoroughly by pressing the liquid into them while they are passing between the said rollers. While the yarns are wet I twist them in that state by twisting them as they are passing from the feeding-rollers toward the bobbins, said bobbins having a drag or draft sufficient to take out the stretch in the twine. In other words, the twine is extended, such drag or draft making the twine compact and firm.

Twine is made by twisting a number of strands of twisted fibers of the cotton-wool compactly together, the fibers of which contribute a part of their strength to support such compactness, and any degree of twist beyond that required to prevent such fibers or parts from slipping asunder before breaking is a tax on such fibers or parts and diminishes the strength of the twine or cord.

My invention or improvement in making cotton twine or cord consists in uniting and cementing more firmly together these yarns into twine by the use of the adhesive liquid in the manner hereinbefore described, so that an important part of the strain of the fiber usually required and exerted in twist to keep the fibers from slipping is by reason of such internal saturation dispensed with, in consequence of which the fibers and yarns are made to adhere to the utmost of their power and so firmly with less twist that the twine will break off short before its parts will slip asunder, and the fiber-strain saved in this way by making a less degree of twist necessary is added to the strength of the twine in this way manufactured. Thus the whole strength of the fibers in the twine is obtained, (which whole strength cannot be obtained in any other way,) and thereby I make a stronger article in being enabled to dispense with a part of the twist that would otherwise be necessary in order to prevent the fibers and yarns from slipping, thereby saving a part of the weakening effects of such twisting as would be necessary to the making of twine without applying to it such internal saturation, as such unsaturated twine would require more twist to secure its parts from slipping than by my process.

By twisting the yarns into twine while wet with such liquid, and the twine being dried afterward, the fibers of such twine are more intimately blended and fastened than by applying the liquid to the twine after it is made or by applying it to the parts before being twisted without twisting them while wet. Therefore my process or invention or improvement makes a more strong, smooth, and compact twine or cord than is done or made by any other known process.

Having described the nature of my invention or improvement and the manner in which it is applied, I do not claim the saturating of yarns or strands of cord or twine with tar and twisting said yarns or strands while so saturated into cord or twine, as the nature of such tar would be weakening and soiling and not adapted to the end and objects designed to be attained by this invention; nor do I claim generally the application of gelatine, gluten,

starch, or glue to twine or cord for the purpose of sizing. I disclaim the substance used as sizing separately, and I also disclaim the manner in which it is applied separately; but I claim the two processes combined—that is to say, I claim—

The saturating of the cotton yarns or strands separately with gelatine, gluten, starch, or any convenient combination or composition of these or any other viscous or analogous substance while in a liquid state preparatory to and for the purpose of being twisted, and in combination with the twisting the said cotton yarns or strands while so wet and saturated at one operation into twine or cord, thereby producing the results hereinbefore set forth, and therefore by so twisting it in combination with the saturating of the yarns at one operation I both save time and expense in the process of manufacture, and at the same time produce a better article for the purpose of untarred wrapping-twine than is produced by any other known process, thereby giving the article an internal saturation with these tenacious and preservative substances, which impart strength, as aforesaid, superior to a tar saturation without the weakening and soiling properties of tar.

Dated at Brooklyn this 18th day of January, A. D. 1849.

THOMAS G. BOONE.

In presence of—
H. W. SCHIEFFELM,
B. SCHIEFFELM.