G. D. BURTON.

METHOD OF TREATING YARN AND THE LIKE.

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Fig. 1.

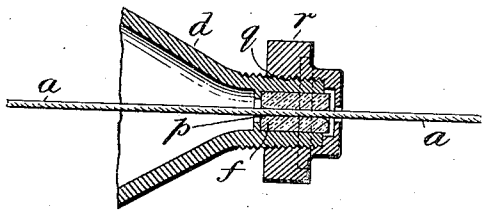
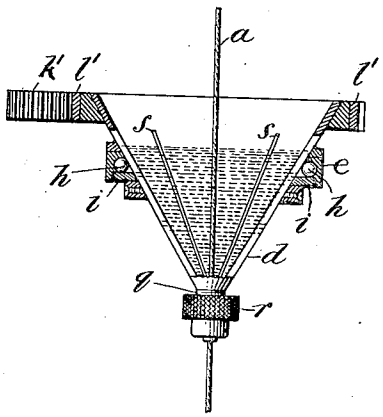


Fig. 2.



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UNITED STATES PATENT OFFICE.

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METHOD OF TREATING YARN AND THE LIKE.

1,131,623. Specification of Letters Patent. Patented Mar. 9, 1915.

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To all whom it may concern:

Be it known that I, GEORGE DEXTER BURTON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Methods of Treating Yarn and the like, of which the following is a specification.

The object of the present invention is to provide a method of treating yarn or analogous materials, such as thread, twine, rope and the like, in fact any material in the nature of yarn or thread composed of fibers joined together by overlapping at their ends and held by friction, whether such fibers are vegetable, animal or mineral substances, for the purpose of giving such yarn a smooth, even surface and a glossy finish and also increasing the strength and elasticity thereof.

Fibers of animal or mineral origin contain an oily or greasy substance or substances, and vegetable fibers contain a gummy substance or substances, and sometimes such vegetable fibers are treated with oily or greasy substances after liberation and before spinning.

I have found that if a suitable degree of heat be created frictionally, or otherwise, in the yarn, the oily, greasy or gummy substance contained therein is softened and brought to the surface, and that when the yarn is subjected to a rubbing action, simultaneously with such creation of heat therein, or immediately thereafter, a smooth, even and glossy finish is imparted to the yarn. The strength and elasticity of yarn treated in this manner are increased because the oily, greasy and gummy substance so brought to the surface by the creation of heat therein is spread over the surface fibers by the rubbing action and serves as a binder to increase the adhesion between the fibers, as well as a filler for the yarn.

In practising my method I prefer to create heat in the yarn frictionally by rubbing the same over a hard polished surface, as for example, by passing the yarn through an apertured member rotating in the direction of the twist of the yarn, thereby creating heat in the yarn and subjecting it to the rubbing action simultaneously. The resulting heat frictionally created serves to soften the gummy, oily or greasy substance or substances contained in the yarn and to bring the same to the surface thereof, so that it may be used to finish, gloss and size the yarn under the influence of the rubbing action, thereby giving the yarn a natural gloss and finish.

In the drawings which accompany and form a part of this specification, I have shown two forms of apparatus whereby my invention may conveniently be realized in practice; but it will be understood that my invention is broader than mere apparatus and that it may be practised by a variety of mechanisms without departing from the principle of my invention.

In the drawings, Figure 1 is a longitudinal section showing an apertured finishing member through which the yarn may be passed for the purpose of creating frictional heat, and Fig. 2 is a vertical section of a modification.

In the particular drawings which I have selected for the purpose of more fully disclosing my improved method, *d* represents a hollow cone which by any suitable mechanism may be readily rotated about its longitudinal axis and which carries the apertured member *f* at its apex. The member *f* is shown in the present instance as a tube of ivory or other substance sufficiently hard to take a high polish. The yarn *a* is shown passing through the aperture *p* of the member *f* which is secured to the apex or neck *q* of the cone by a clamp-nut *r*. The neck and body of the cone may be provided with slits *s*, which form yielding jaws adapted to spread sufficiently to permit the insertion and removal of the member *f* and to be clamped against the latter by the nut *r*. While the yarn is being drawn through the apertured finishing member, the latter is rotated rapidly with the cone *d* and rubs the yarn and develops heat in the latter by its friction upon the same. The heat so developed softens the natural gummy, oily or greasy substance of the yarn and draws it to the surface over which it is spread by the finishing member.

In case there is not a sufficient quantity of natural finishing substance in the material to be treated, I may apply a substitute sizing or finishing substance to the yarn prior to its treatment by the rubbing device. In such case the cone *d* may be made to serve as a container for the sizing substance, being then supported so that its axis is upright

and its apex or neck points downwardly as shown in Fig. 2, in which I have also indicated the gear *k' l'* whereby the cone is rotated, as well as the bearing *e*, preferably a ball bearing comprising a runway having a series of balls *h* secured by a retainer *i*. The yarn to be treated first passes through the size and becomes coated or saturated therewith and then passes through the finishing device *f*. The method is particularly useful in finishing and glossing flax and ramie yarns and the like, and careful tests have shown that the treatment increases the strength and elasticity of the yarn, besides imparting a glossy finish thereto.

I claim:

1. The method of treating yarn and the like which consists in creating heat in the yarn, thereby causing the natural gummy, oily or greasy substance contained therein to come to the surface thereof, and subjecting the yarn to a rotary rubbing action in the direction of the twist of the yarn, thereby imparting to the yarn a natural glossy finish and increased strength and elasticity.

2. The method of treating yarn and the like which consists in passing the yarn through a finishing substance or sizing material, creating heat in the yarn, thereby causing the natural gummy, oily or greasy substance contained therein to come to the surface, and subjecting the yarn to a rotary rubbing action in the direction of the twist of the yarn, thereby imparting to the yarn a glossy finish and increased strength and elasticity.

3. The method of treating yarn and the like which consists in frictionally creating heat in the yarn, thereby causing the natural gummy, oily or greasy substance contained therein to come to the surface, and simultaneously subjecting the yarn to a rotary rubbing action in the direction of the twist of the yarn, thereby imparting to the yarn a natural glossy finish and increased strength and elasticity.

4. The method of treating yarn and the like which consists in passing the yarn through a finishing substance or sizing material, frictionally creating heat in the yarn, thereby causing the natural gummy, oily or greasy substance contained therein to come to the surface thereof, and simultaneously subjecting the yarn to a rotary rubbing action in the direction of the twist of the yarn, thereby imparting to the yarn a glossy finish and increased strength and elasticity.

5. The method of treating yarn and the like which consists in softening the natural gummy, oily or greasy substance contained therein and bringing the same to the surface thereof by creating heat in the yarn, and imparting to the yarn a natural glossy finish and increased strength and elasticity by subjecting the yarn to a rotary rubbing action in the direction of the twist of the yarn.

6. The method of treating yarn and the like which consists in softening the natural gummy, oily or greasy substance contained therein and bringing the same to the surface by frictionally creating heat in the yarn and simultaneously imparting to the yarn a glossy finish and increased strength and elasticity by subjecting the yarn to a rotary rubbing action.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEO. D. BURTON.

Witnesses:
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ANNIE L. REYNOLDS.