No. 615,045. Patented Nov. 29, 1898.

E. PREVOST.

PROCESS OF MERCERIZING.

(Application filed May 6, 1897.)

(No Model.)

FIG. 2.

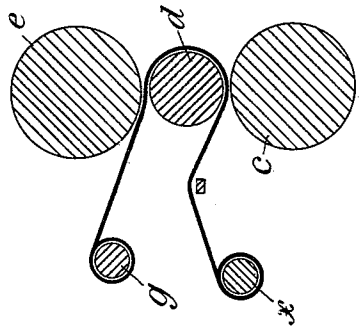


FIG. 3.

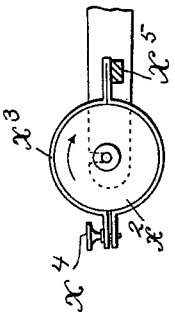
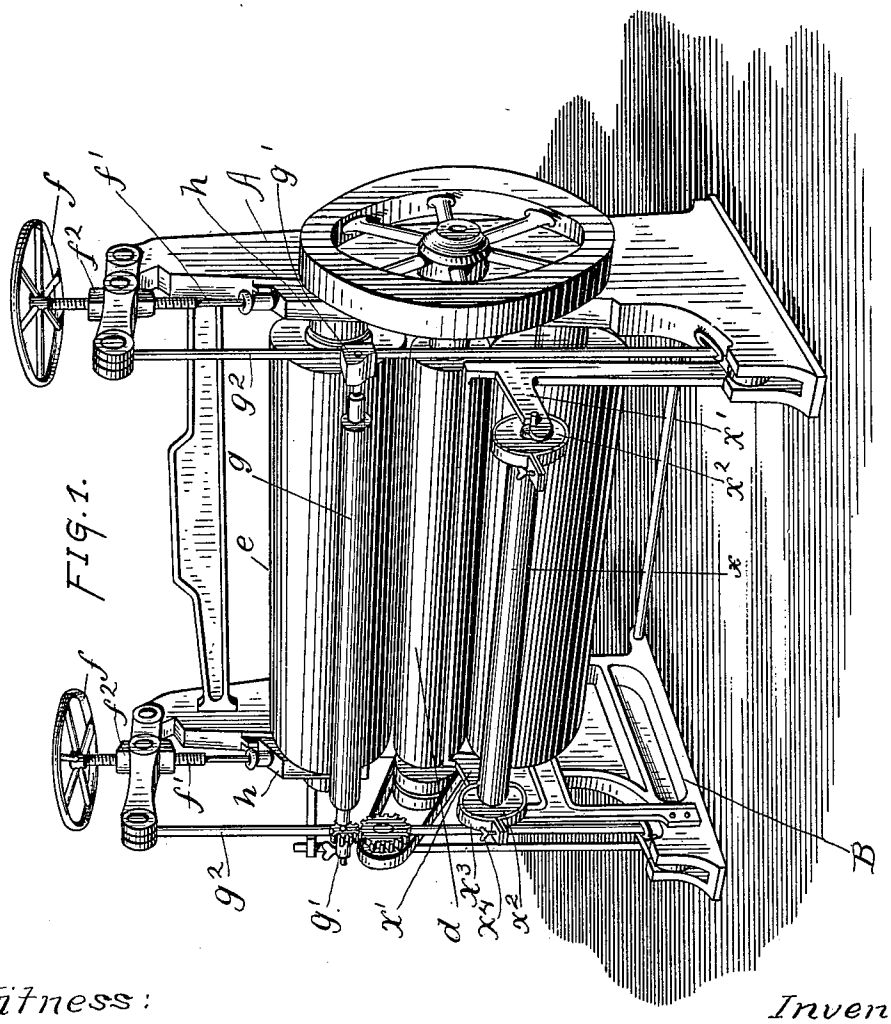


FIG. 1.



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UNITED STATES PATENT OFFICE.

EMMANUEL PREVOST, OF CREFELD, GERMANY.

PROCESS OF MERCERIZING.

SPECIFICATION forming part of Letters Patent No. 615,045, dated November 29, 1898.

Application filed May 6, 1897. Serial No. 635,394. (No specimens.)

To all whom it may concern:

Be it known that I, EMMANUEL PREVOST, a subject of the Emperor of Germany, residing at Crefeld, in the Empire of Germany, have invented certain new and useful Improvements in Mercer's System of Treating Fibers or Fabrics, of which the following is a specification.

It is the object of this invention to impart a permanent gloss or silky finish to vegetable fibers or textile fabrics throughout the whole or less extent or area thereof.

On March 15, 1898, patents numbered 600,826 and 600,827 were granted to Richard Thomas and myself for improved processes of mercerizing vegetable fibers and fibrous fabrics under tension to give said fibers or fabrics a silky luster and feel. The process covered by the first of these patents consists in first subjecting the material to stretching, then mercerizing it, maintaining the tension during the operation of mercerizing, and, finally, when such operation is completed relaxing the tension. The process covered by the second of the above patents differs from the process of the first patent mainly in that the material is first subjected to the mercerizing action without tension and then, after the material is wetted by the mercerizing fluid, subjected to a stretching action sufficient to produce a silky luster and feel. These patented processes produce remarkable results; but I have discovered that a more permanent and greater gloss or silky finish can be imparted to such fibers or fabrics by subjecting them to pressure during the time between the dipping of them into the mercerizing liquid and the washing or removal of the mercerizing fluid and drying, and by my present process the gloss or silky finish may be produced throughout the whole area of the material or on portions only of the fibers or fabric, so that a design or figure may be produced.

In carrying out my invention the fiber or fabric is stretched during the mercerizing process either by subjecting it to tension, so as to stretch it after it has been shrunken by the action of the mercerizing liquids, or by maintaining it under tension, so as to wholly or partially resist the tendency to shrink during the mercerizing process, and while the fiber or fabric is being treated by the mercerizing process under tension I subject it to heavy pressure, which will compress the whole or parts of the material and impart a permanent silky gloss to such portions of the fiber or fabric which have thus been treated. If the pressure is exerted throughout the entire length of the fiber or the entire surface of the fabric, the fine silky gloss will be imported throughout; but by applying the pressure at portions only of the extent or surface I may produce patterns or designs composed of glossy portions distributed over the relatively dull surface of the material.

The pressure may be applied in any suitable manner and by any suitable means, and the particular period of time during the mercerizing process that it is applied is not material to my invention. The pressure may be applied after the removal of the lye used in the mercerizing process and even after the removal of the acid from the fiber or fabric, which is then very soft and in an excellent condition to receive and permanently retain the effects of the compression; but to obtain the desired effect it must be applied before drying, for while it is true that pressure applied after drying will produce some effect upon the surface such finish is not "fast" or permanent and will disappear when the fiber or fabric is wet. The gloss or silky effect produced according to my invention is fast and permanent and will not be destroyed by subsequent wetting or washing of the fibers or fabrics.

In the accompanying drawings I have shown one form of mechanism which may be employed for carrying my invention into effect.

In said drawings, Figure 1 is a front perspective view of a machine for stretching and compressing material during the mercerizing process. Fig. 2 is a detail transverse sectional view of the stretching and compressing rolls. Fig. 3 is a detail view of a brake applied to one of the rolls.

Journaled in suitable braced side frames A B are three rolls *c*, *d*, and *e*, arranged as shown. The roll *e* is journaled in blocks *h*, slidingly mounted on the side frames, which blocks *h* are engaged by screws f', passing through nuts f^2 and provided with operating hand-wheels *f*.

g indicates a winding-roll journaled in bearings g', attached to vertical rods g^2.

x indicates the cloth-supporting roll journaled in bracket-arms x'. At each end of roll x is a brake wheel or disk x^2, surrounded by a band-brake x^3, having an adjusting-screw x^4 and supported by a lug x^5 on arm x'.

The material undergoing the mercerizing operation is unwound from roller x and passed above roller c, under roller e, and around roller d to the winding-roll g. The several rolls may be operated in any suitable manner, such as by the gearing shown. The brakes upon roller x retard the unwinding of the goods under the pull of roll g, causing the stretching of the goods. The necessary pressure is obtained between rolls d and e, the pressure being regulated by screw f'.

Any suitable means may be employed for subjecting the fiber or fabric to the stretching action and the compressive action without departing from the present invention, which relates solely to the art or process of producing a gloss or silky finish upon vegetable fibers or fabrics, consisting in simultaneously subjecting them to tension and heavy pressure during the mercerizing action without regard to the particular mechanism by which such results are produced. The best results can be produced by employing long-fibered tightly spun and twisted fibers or material woven from such long fibers, as set forth in the above-named patents.

Although I have shown and described pressure-rollers between which the material undergoing the mercerizing operation is passed, I would have it understood that I make no claim to the feature of imparting a rolling pressure or compression to the material held under tension during the mercerizing operation. This feature is covered in an application filed September 1, 1897, Serial No. 650,315, in the names of Richard Thomas and Emmanuel Prevost for "Process of mercerizing vegetable fibers," the process consisting in mercerizing vegetable fibers or fibrous materials and at the same time subjecting them to tension and the rolling pressure or compression of rollers between which the material is passed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The herein-described process of producing a gloss and silky finish upon vegetable fibers or fibrous materials, which consists in mercerizing said fibers or fabrics and, during the mercerizing action, simultaneously subjecting them to tension and compression over the whole or a part of their extent or area of surface, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

EMMANUEL PREVOST.

Witnesses:
KARL HARTMANN,
W. HAUPT.