

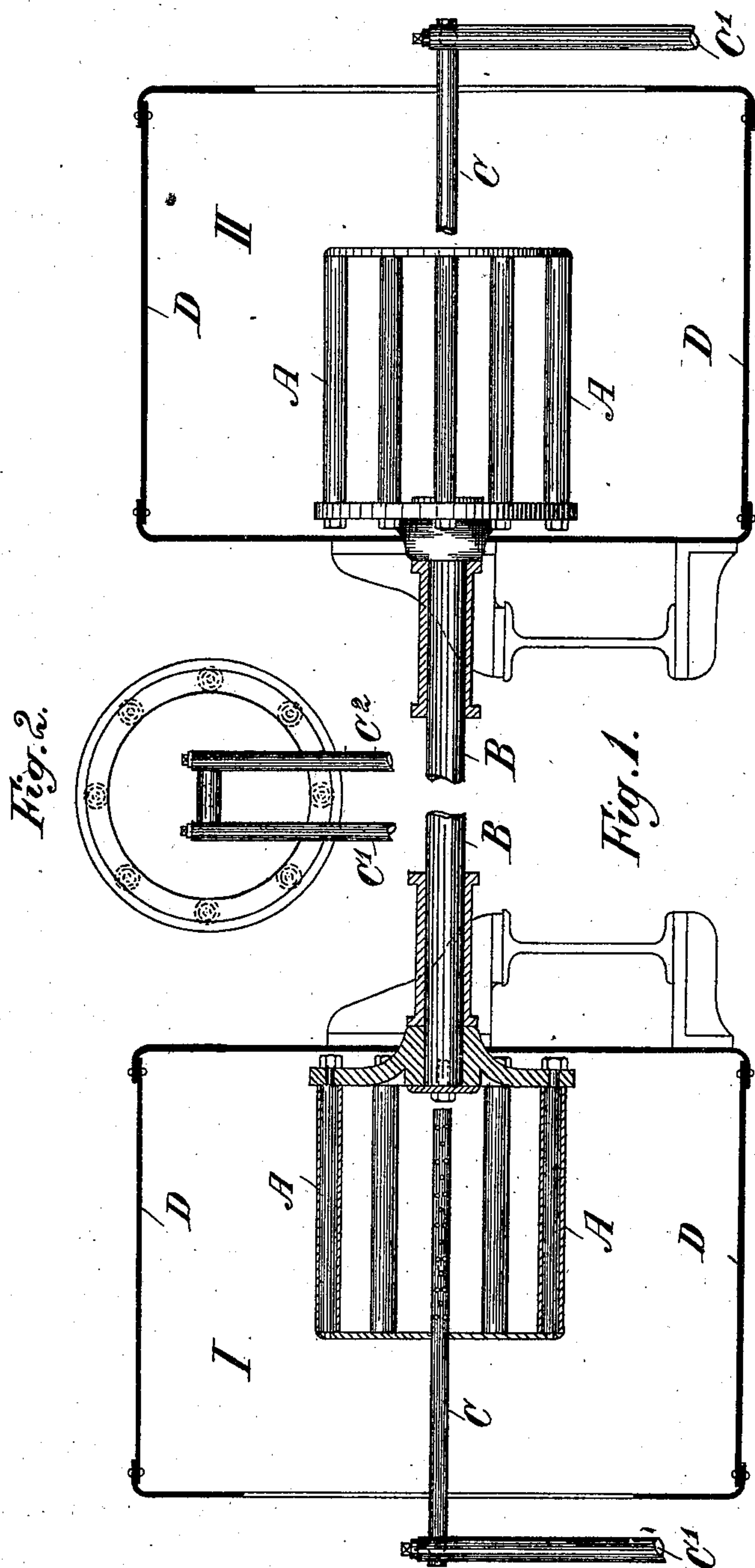
No. 698,026.

Patented Apr. 22, 1902.

W. KLEINWEFERS.
PROCESS OF MERCERIZING.

(Application filed Apr. 3, 1897.)

(No Model.)



Witnesses
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T. ...

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UNITED STATES PATENT OFFICE.

WILHELM KLEINWEFERS, OF CREFELD, GERMANY, ASSIGNOR TO THE FIRM
OF JOH KLEINWEFERS SÖHNE, OF CREFELD, PRUSSIA, GERMANY.

PROCESS OF MERCERIZING.

SPECIFICATION forming part of Letters Patent No. 698,026, dated April 22, 1902.

Application filed April 3, 1897. Serial No. 630,637. (No specimens.)

To all whom it may concern:

Be it known that I, WILHELM KLEINWEFERS, a subject of the King of Prussia, Emperor of Germany, residing at Crefeld, in the Kingdom of Prussia, Germany, have invented new and useful Improvements in Processes for Mercerizing Cotton in the Form of Hanks, of which the following is a specification.

This invention has reference to a process by means of which it is possible to avoid the shrinkage of the fibers during the mercerization process of cotton and other vegetable fibers, and it is intended to obviate the difficulties of the processes heretofore in use where the fiber is either mercerized under tension or is subsequently stretched by mechanical means in order to restore the fiber to its original length. Such treatment always weakens the fiber and often ruptures it. All these difficulties are avoided in my invention by loosely supporting the fibers in a distended condition and subjecting them to the action of centrifugal force during the various stages of the process, which action by well-known natural principles tends to lengthen the fiber, and thereby balances the effects of mercerization, tending to produce a tension in a direction opposite to that of the centrifugal force. Thus, properly speaking, in my invention the fiber is not subjected to any stretching or strain whatsoever in consequence of the balancing effect of these two forces upon the body of the fiber, which prevents any essential contraction of the same.

For carrying my invention into effect I have found it preferable to use the device represented in the accompanying drawings.

Figure 1 is part elevation, part section, of the device in a preferred form of construction, Fig. 2 illustrating the admission of liquid.

The apparatus, the reel A of which of any optional width, carries a large number of cotton hanks arranged one beside the other, so that the threads form a loose-tight covering, may be rotated by the shaft B, suitably journaled in the stationary casing D. This casing is so constructed as to prevent the accumulation of any considerable quantities of liquid, which may be continuously drained off during the process by any suitable means—a stop-cock or overflow, for instance. (Not shown in the drawings.) For introducing the

liquid into the interior of the reel A, I may either use special admission-pipes C C' or I may admit the liquid through a suitable bore in the shaft B. In Fig. 2 of the drawings I have shown separate pipes C' and C² for the introduction of the alkaline liquor and of the washing liquid, either of which by means of a suitable stop-cock may be connected to the admission-pipe C.

It is a very essential feature of my invention that the fibers, preferably in the form of tops or slivers in a loose and distended condition, are kept loosely supported upon the reel, while the liquid is forced through them in but one direction from the interior to the outside of the fibers, so as to eliminate any causes which could effect their free extension and the action of centrifugal force. The tops or slivers of cotton, any number of which may be loosely arranged side by side upon the reel, are kept in rotation at a rather considerable speed during the whole duration of the process and the subsequent washing and drying of the fibers.

The rate of rotation may be so regulated that no appreciable shrinkage can take place, the fibers remaining loosely supported on the reel when after the finishing of the process the rotation of the device is discontinued.

In place of a reel I may of course use any other appliance which will allow the liquid to be forced in one direction through the loosely-supported fibers from the inside thereof.

It is obvious that instead of using but one reel or similar means for the treatment I may connect several of them in series, as shown in the drawings, where such reels A A are driven from the shaft B.

While avoiding the shrinkage of fibers during mercerization, my process presents the further advantage that the handling of the fiber subjected to the treatment is greatly facilitated, the workmen not coming in contact with the strong lye, inasmuch as when the process is finished and the rotation discontinued, the excess of alkaline liquor has been removed from the fibers, and the same are still in a loose and distended condition so that they may be easily removed from the reel.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The method herein described of mercer-

izing cotton fiber which consists in loosely supporting the fibers and imparting such a swift rotary movement thereto during the process of mercerization and washing as will
5 prevent the longitudinal shrinkage of the material while causing the mercerizing liquid to pass through the fiber from the interior thereof in one direction, and subsequently washing the fiber during rotation.
10 2. The method herein described of mercerizing cotton fiber, which consists in loosely supporting the fibers to be treated, imparting a swift rotary movement to the fibers that will overcome the tendency to shrink while
15 forcing the mercerizing liquor in one direction through the supported fibers during such

rotary movement, and subsequently forcing the washing liquid through the fibers in the same direction during such rotary movement.

3. The within-described improvement in 20 mercerizing cotton which consists in subjecting the material to the action of centrifugal power of such degree that it will overcome the contractile energy of the liquids employed, substantially as set forth. 25

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILH. KLEINWEFERS.

Witnesses:

JOS. PANNES,
HERM. HALL.