No. 646,787. Patented Apr. 3, 1900.

H. E. AYKROYD.

MERCERIZING APPARATUS.

(Application filed Oct. 18, 1899.)

(No Model.) 2 Sheets—Sheet 1

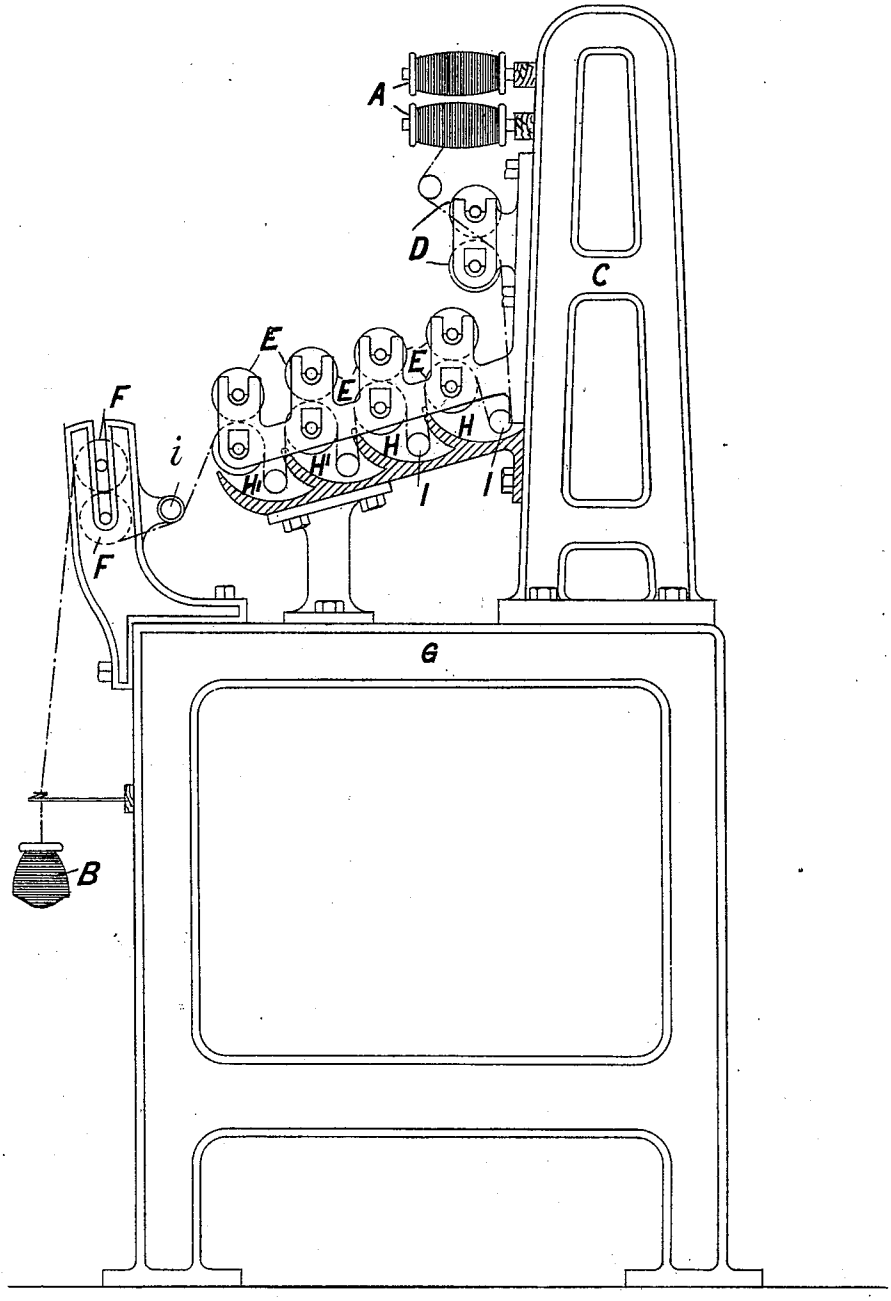


FIG. 1.

Witnesses
Allan N. Fuss.
Reed Cliff

Inventor
Henry E. Aykroyd
by Dick & Aykroyd
Their Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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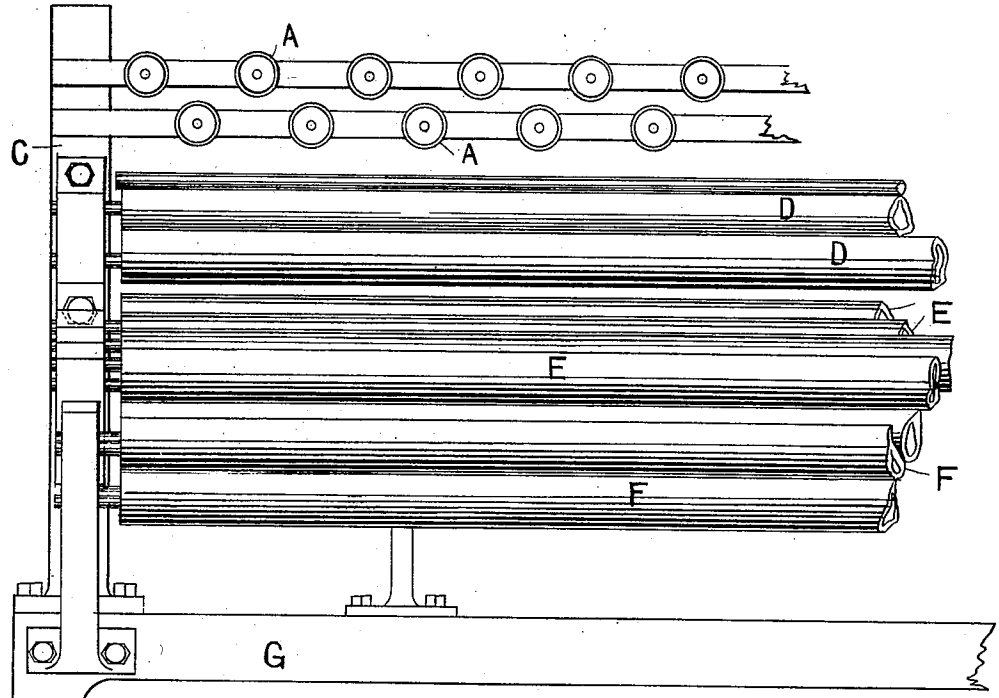


FIG. 2.

Witnesses
Allan N. Fuss.
Reed Cliff.

Inventor
Henry E. Aykroyd
by his Attys
Mason Fenwick & Lawrence

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY EDWARD AYKROYD, OF ILKLEY, ENGLAND.

MERCERIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 646,787, dated April 3, 1900.

Application filed October 18, 1899. Serial No. 733,992. (No model.)

To all whom it may concern:

Be it known that I, HENRY EDWARD AYKROYD, a subject of the Queen of Great Britain, residing at Ilkley, in the county of York, England, (whose post-office address is Glen Rosa, Ilkley,) have invented certain new and useful Improvements in Apparatus for Mercerizing, of which the following is a specification.

This invention has for its object the treatment of threads or other fibrous materials while they are on the doubling-machine in order that, whereas formerly two processes were carried out consecutively, now the mechanical operation, such as doubling, and the chemical operation of treating with the desired mercerizing liquors may be performed together upon the one machine. To this end I place in any convenient position upon the doubling-machine two or three or more (as may be necessary) troughs which run throughout the length of the machine, into which troughs is run the mercerizing liquor by any convenient means. Thus in one trough may be placed the mercerizing liquor and in the others water for rinsing the material under treatment.

The invention will be understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 shows an end elevation, partly in section, of a doubling-frame with my invention applied thereto; Fig. 2, a front view.

Referring to the figures, A are the pairs of bobbins of single yarn; B, one of the bobbins of double yarn; C, bobbin's creel; D, drag-rollers; E, squeezing-rollers; F, hollow drag-rollers, to be heated either by steam or hot washing-off water, and G the frame of the machine. In a convenient position I place the troughs H, which run throughout the length of the machine, into which is run the mercerizing liquor by any convenient means. Thus in the troughs H is placed the mercerizing liquor and in the troughs H′ the water for rinsing the material under treatment. The troughs H and H′ are preferably arranged in pairs, one being slightly above the other, and, as shown in Fig. 1 of the drawings, may be made of a single piece of material supported in an inclined manner upon the frame G and creel C. Each one of the troughs, therefore, is a little lower than the one next to it, and the squeeze-rollers E are correspondingly arranged, as seen in said Fig. 1. In the troughs H, I mount the glass guide-rods I, under which the yarn is passed, and above these I mount squeezing-rollers E, between which the yarn or other material is passed on its way from one trough to another in order to give a certain amount of squeeze to the material, as well as to throw back into the trough any superfluous liquor which would otherwise be carried away and wasted. By this means a saving in liquor is effected. The rollers E may be adjustably mounted in suitable bearings, so that any required amount of nip or pressure may be applied. Either the troughs or rollers, or both, may be made all in one length throughout the machine or be divided up for convenience into several sections.

The machine is by preference single-sided, so as to have an easy access to broken ends and facilitate the manipulation of the machine generally.

The mode of action is as follows: The yarn being withdrawn from the bobbins A by the drag-rollers D is conducted under the glass guide-rollers I in the first mercerizing-trough H. It is then conducted through the first pair of squeezing-rollers E, the same process being continued in the next trough H, and so on through the rinsing-troughs H′, being finally carried around the glass guide-rod *i* and through the hollow drag-rollers F and conducted in the doubled and mercerized state onto the bobbins B. The top drag-rollers D and the drying-rollers F may be fluted, if necessary.

A system of circulating the water and the mercerizing liquor may be effected by having a circulating-pump (rotary or otherwise) fixed at a convenient point and large enough to meet the requirements of one machine or many, as the case may be, with pipes connected to one end of trough for inflow and the other end for outflow, the whole to be connected with a storage or receiving cistern from and to which all liquor, caustic or otherwise, will be circulated from and to their various troughs.

The drag-rollers F are preferably slightly larger in diameter than the drag-rollers D,

so as to insure that there is no shrinkage in length.

I declare that what I claim is—

The herein-described apparatus for simultaneously doubling, mercerizing and washing vegetable fibers in a single machine, comprising a suitable frame, a creel mounted at one side and bearings mounted at the other side of said frame, a series of parallel troughs secured to the said creel and extending over and supported above the frame, each succeeding trough being lower than its predecessor, the higher troughs being adapted to contain mercerizing liquid and the lower ones, washing liquid, a glass guide-rod in each trough, a pair of squeeze-rolls mounted partly in and partly above each trough, bobbins mounted on the creel, drag-rollers mounted on the creel to receive the fibers from the bobbins, a glass rod and a pair of drag-rollers mounted in the bearings at the opposite side of the frame to keep the fibers stretched during the entire operation, and a bobbin mounted on the frame, whereby yarn may be passed from the first-named bobbins, through the drag-rolls under the glass rods, through the mercerizing liquid, the squeeze-rolls, and the washing liquid, under the last-named glass rod, through the last-named drag-rolls and upon the last-named bobbin and thoroughly mercerized and washed, substantially as described.

In witness whereof I have hereunto signed my name, this 5th day of October, 1899, in the presence of two subscribing witnesses.

HENRY EDWARD AYKROYD.

Witnesses:

CHARLES JOHN VINT,

HENRY KILLICK.