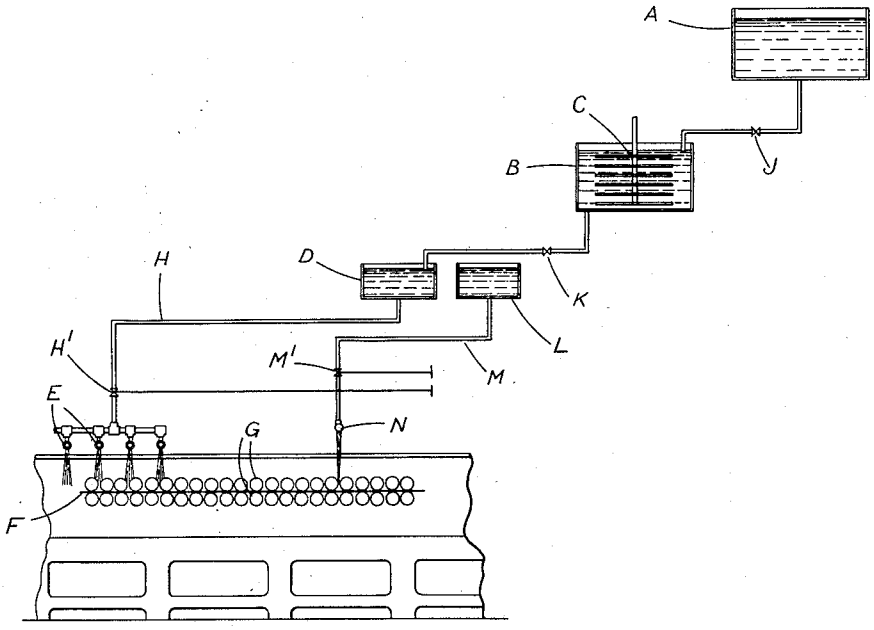
Mar. 3, 1925. 1,528,698

F. D. S. SANDEMAN ET AL

TREATMENT OF JUTE

Filed April 23, 1923



INVENTORS.
F. D. S. Sandeman,
and G. B. Craddock,
BY
Watson, Cole, Grosvenor & Goodell,
ATTYS

Patented Mar. 3, 1925. 1,528,698

UNITED STATES PATENT OFFICE.

FREDERICK DAVID STEWART SANDEMAN AND GEORGE BERESFORD CRADDOCK, OF DUNDEE, SCOTLAND, ASSIGNORS TO JUTE INDUSTRIES LIMITED, OF DUNDEE, FORFAR, SCOTLAND, A BRITISH COMPANY.

TREATMENT OF JUTE.

Application filed April 23, 1923. Serial No. 634,158.

To all whom it may concern:

Be it known that we, FREDERICK DAVID STEWART SANDEMAN and GEORGE BERESFORD CRADDOCK, subjects of the King of England, and both residents of Dundee, Forfar, Scotland, have invented certain new and useful Improvements in the Treatment of Jute, of which the following is a specification.

This invention relates to the treatment of jute and has for its object to enable a colouring of the jute to be effected in a simple and economical manner.

When it is desired to impart colour to jute yarn it is customary to dye the yarn after it has been spun this dyeing constituting an entirely separate process and adding correspondingly to the cost of the product. By means of the present invention a tinting or dyeing of the yarn can be effected at a much less cost.

According to this invention colouring matter is applied to the jute fibre while it is undergoing a treatment to which the jute is ordinarily subjected before carding and spinning. This is effected by adding colouring matter to the liquid such as the water with which the jute is treated as it passes through the softener. Thus a colouring of the fibre is combined with and carried out at the same time as the softening.

The invention may be carried out in practice, for example, by adding a suitable dyeing or colouring substance to the water in the tank which serves to supply the softener in which water and oil are sprinkled on or otherwise applied to the fibre as it passes between the rollers of the softener. The colouring liquid is caused by the softening process to permeate the mass of fibres and further impregnation of the fibres takes place while they lie in the barrows after removal from the softener. Thus by the time the fibres are passed into the breaker card they have acquired the necessary tint with the result that the finished yarn will have a corresponding tint. If desired, the dyeing or tinting liquid may be contained in a separate tank which delivers into the water supply tank for the softener or into the pipe by which this water is led to the softener or the dyeing liquid may be sprinkled over the fibres in the softener by means separate from the ordinary water or oil sprinkling means. In either case the colouring matter is applied to the fibres while they are undergoing a wet treatment to which they would normally be subjected.

The dye or colouring matter may first be made up in a fairly strong solution say 20% solution of the dye and then diluted, the requisite quantity of this dilute solution being added to the tank containing the liquid to be supplied to the softener.

The colouring matter employed may vary in accordance with the nature of the fibre, the colour which it is required to give this fibre and the intensity of this colour, but the process is more particularly intended for use in tinting the fibre, that is to say, giving thereto a relatively pale colour as distinct from a dyeing effect whereby a stronger colour is imparted to the fibre, such as would result from complete immersion of the fibre in the dye. In the present process, on the other hand, the fibre is preferably only subjected to a damping or moistening such as takes place normally during the softening process.

When a comparatively strong colour is to be imparted to the dye it may be necessary to saturate all the fibre to an extent greater than is usual or desirable in the normal softening process. In such circumstances the fibre may be partially dried in any suitable apparatus after it leaves the softener and before it passes to the breaker card.

If the nature of the colouring matter or dye is such as to require fixing this operation may be performed also before the fibre is passed to the breaker card.

If desired the oil with which the fibre is to be treated in the softening process may be the vehicle for the colouring matter instead of the latter being contained in the water then used, or substances which when combined will give the required colour to the fibre may be contained respectively in the oil and in the water.

Thus various effects may be obtained by this process so as to enable the resultant yarn to have such a tint or distinct colour as may be required. The cost of effecting the colouring of the fibre by the present process is considerably less than if the fibre is dyed

or coloured after spinning or at any other stage by a separate process with the result that it is possible to produce an article which is commercially cheaper than yarns having such tints or colours as produced heretofore.

When carrying the invention into practice it is desirable to spread the jute fibre rather more carefully than usual as it enters the softening machine so that the fibre will pass through the rollers of the softening machine in a layer of substantially even thickness throughout the width of this machine. In this way the softening liquid containing the colouring matter will permeate more thoroughly all the fibres. The spreading of the fibres in the necessary manner is effected by hand as these fibres are fed into the softener.

The accompanying drawing illustrates diagrammatically in sectional elevation one arrangement of the apparatus for carrying out the above described process.

A concentrated liquor of the colouring matter is disposed in a tank A and this liquor in the required proportion is delivered into the main water tank B where the colouring matter is diluted to the required strength a thorough mixing of the colouring matter and the water being effected by means of some type of stirrer or mixer C. The water containing the colouring matter then flows from the main supply and mixing tank B into a subsidiary tank D whence the coloured liquid is delivered through sprayers E to the jute fibres F as they pass through the rollers G of the softening machine. In the pipe H which conveys the water containing the colouring matter from the tank D to the sprayers E there is a cock H′ for controlling the flow. The flow of the colouring liquor from the tank A into the mixing tank B and the flow of liquid from the tank B into the tank D is also suitably controlled as for example by cocks at J and K. The oil with which the fibre is also treated in the softening machine is contained in a tank L whence it flows through a pipe M controlled by a cock M′ to the nozzles N.

The fibres are spread out as evenly as possible across the feed sheet of the softening machine so that they will pass in an even blanket between the rollers G of that machine. These fibres pass first beneath the nozzles N which deliver oil and then the fibres pass beneath the sprayers E which deliver the water containing the colouring matter the fibres during the whole time being subjected to a kneading effect by the rollers G. By the time that the fibres reach the end of the softening machine an effective impregnation with the colouring matter has been effected and this impregnation is effected while the fibres lie in a moist state in the barrows in which they are placed after removal from the softening machine and before these fibres are delivered into the breaker card.

In the process of softening jute, the quantity of oil used is quite small and it is applied as a fine spray so that by the time the water is applied to the jute this oil has not reached all parts of the fiber, and the water can also wet the fibers. During the following kneading process the oil and water are worked together in the form of an emulsion so that the dye contained in the water is worked into the fibers, it of course being understood that the water does not strike all parts of the fibers and they are thus rather spotted and unevenly dyed, only parts of each fiber receiving the coloring matter.

The details of the construction and arrangement of the apparatus employed for carrying out the process may vary in accordance with requirements.

What we claim as our invention and desire to secure by Letters Patent is:—

1. A process for coloring jute, consisting in the application of coloring matter to the fiber while the latter is undergoing a wet treatment to which it would be normally subjected before carding and spinning.

2. A process for coloring jute in a single operation, consisting in the application of liquid coloring matter to the fibers in the form of a spray before said fibers have been formed into a sliver in the earliest stages of the spinning process and while said fibers are spread out in a mat-like layer so as to dye the fibers only partially.

3. A process for colouring jute consisting in the application of colouring matter to the fibre while it is undergoing the softening treatment to which it is subjected before the fibre is passed into the breaker card.

4. A process for colouring jute consisting in the addition of colouring matter to the liquid employed in the process of softening the fibre so that colouring of this fibre takes place simultaneously with the softening.

5. A process for colouring jute consisting in the application of colouring matter to the fibre while it is passing through the softener.

6. A process for colouring jute consisting in the addition of colouring matter to the liquid with which the jute is treated as it passes through the softener.

7. A process for colouring jute consisting in the addition of colouring matter to the water with which the jute is treated as it passes through the softener.

8. A process for colouring jute consisting in a strong solution of colouring matter being added to the liquid with which the jute is treated as it is passing through the softener, the added solution of colouring matter being in such proportion as is necessary to

produce the desired intensity of colour in the fibre.

9. A process for colouring jute consisting in so feeding the jute fibre to the softener that this fibre will pass through the rollers of the softener in a substantially even mat thereby enabling the liquid with which the fibre is treated as it passes through the softener to effectually permeate all the fibre, colouring matter having been added to this liquid so that the colouring of the fibre takes place during the softening process.

In testimony whereof we have signed our names to this specification.

FREDERICK DAVID STEWART SANDEMAN.
GEORGE BERESFORD CRADDOCK.