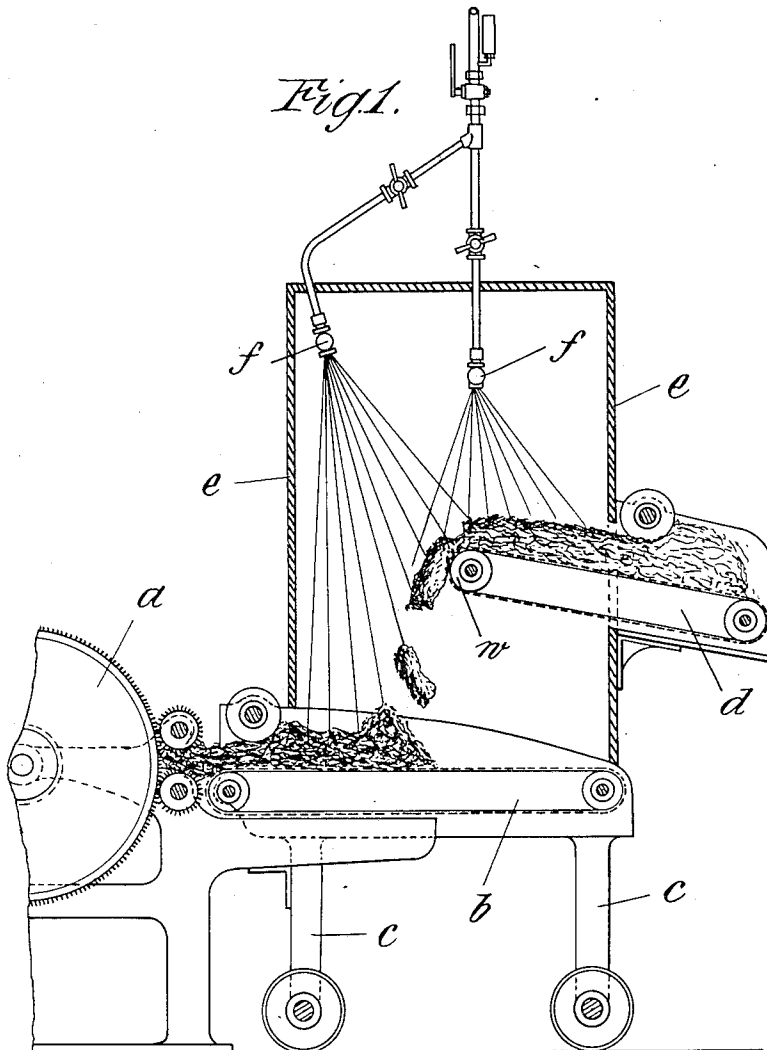


C. MARX.
 PROCESS OF SOFTENING TEXTILE FIBERS.
 APPLICATION FILED JUNE 3, 1910.

1,120,730.

Patented Dec. 15, 1914.

2 SHEETS—SHEET 1.



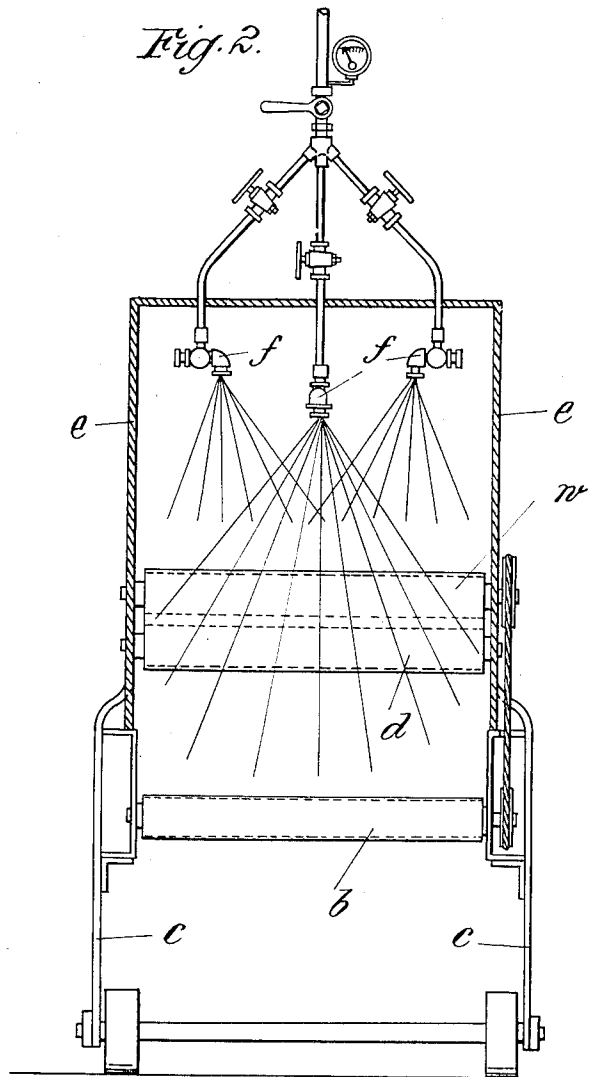
Witnesses
Herman Eisele
Winifred Walz

Inventor:
Carl Marx
By *Paul P. Mueller*
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UNITED STATES PATENT OFFICE.

CARL MARX, OF LAMBRECHT, GERMANY.

PROCESS OF SOFTENING TEXTILE FIBERS.

1,120,730.

Specification of Letters Patent.

Patented Dec. 15, 1914.

Application filed June 3, 1910. Serial No. 564,735.

To all whom it may concern:

Be it known that I, CARL MARX, manufacturer, and a subject of the German Emperor, and resident of Lambrecht, in the Palatinate, Germany, with the post-office address Kaiserstrasse, have invented new and useful Improvements in Processes of Softening Textile Fibers, of which the following is a specification.

My invention relates to a process for softening textile fibers.

The object is the devising of a mode of applying a softening fluid in homogeneous form and uniform quantities to all of the fibers.

Another object is the accomplishment of the desired results in a more simple, expeditious and efficient manner.

The said invention consists of the mode which is hereinafter set forth, and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be applied.

In order to render textile fibers supple and adapted to be spun, they are submitted to a preparatory treatment with an oily mixture prepared from olive oil, or olein, water and soda, or ammonia and other materials. This is effected, according to the old fashioned method, by hand, the warmed and well stirred oil mixture being deposited with a sprinkling can over the fibrous material which is spread out on a floor. This operation consumes a considerable amount of time (often several hours) during which the oil mixture cools and the water separates out from the solidified oil. This latter has the property of adhering to the bundles of fibers on which it has been sprinkled, while on the other hand only the separated water since it distributes easily is readily absorbed by the dry wool.

Inasmuch as the material feels damp all over after it has been passed through the opener, it is assumed that the oil mixture has been thoroughly distributed throughout every portion of the fibers. But this does not necessarily follow and as a consequence unfavorable effects on the results in all succeeding stages of the spinning process are generally occasioned.

Devices comprising spraying nozzles have

long since been employed for the distribution of the oil to fibers lying on the feed table of the opener, but the resultant spray is deposited upon the surface only, and since the layer of fibrous material may reach a thickness of 6 to 12 inches, 90% of the fibers remain unsprinkled, and the subsequent treatment in the opener is incapable of adequately compensating for this defective sprinkling. With a view of obviating this the fibrous material is put through the opener several times, but in the meantime the oil mixture has become cool and the oil that has separated from the water is, by reason of its adhesive properties, no longer uniformly distributed on the fibers. Furthermore, repeated passage through the opener has the disadvantage of tearing and shortening the fibers. To obviate this defect it is necessary to so carry out the sprinkling of the oil mixture that not merely the surface but the body and underlying portions of the layer of fiber shall be sprinkled at approximately one and the same time. This object is accomplished according to the present invention by passing the layer of fiber along a conveyer and then around a roller so as to open it, and thereafter sprinkling the oil mixture into the gaps formed in the layer of fibers while passing over a segment of the roller, and furthermore allowing the layer of fibers to fall down freely during which it becomes loosened and presents fresh portions to the spray. This occurs more particularly when the fibrous layer has been just previously sprinkled from above. The portions that have been sprinkled are heavier than the rest, and if the fibrous layer be now passed over a roller and allowed to fall freely by the action of gravity, those portions of the surface that have been previously sprinkled tend to fall underneath. The whole of the fibrous layer in passing over the roller becomes divided into substantially separate bundles, which acquire a rotatory movement by virtue of which the previously sprinkled portions come underneath, so that the portions that are still dry are exposed to the jets of spray coming from above and from the side.

If the superficial portions of the fibers and the falling bundles of fiber have not been previously sprinkled, the rotatory motion acquired by the fibers while on the roller will not be continued in falling, and

the forward movement of the feed device of the opener would return the layer of fibers into its original position, that is to say would bring to the top the side that was uppermost on the feed table.

The method of carrying out the invention will be evident from the accompanying drawing wherein—

Figure 1 shows a side elevation and Fig. 2 an end elevation of the apparatus.

This apparatus is preferably constructed in the form of a wheeled carriage, that can be run directly against the opener and worked in proximity thereto and then withdrawn in order that the machine may be more readily cleaned when desirable.

In the drawing *a* is the drum of the opener, and *c* the carriage on which the sprinkling device is mounted. The wool is placed on the feed table *d* which is provided in the usual manner with an endless conveyer which carries the wool toward the roller *w*. During this movement the wool enters a chamber *e* in the interior of which the sprinkling of the oil mixture is effected. For this purpose three adjustable nozzles *f* are provided which sprinkle the oil mixture in a state of very fine division and under substantial pressure.

The percentage of oil mixture consumed in relation to the weight of the fibrous material will vary considerably and one, two or three sprinkling nozzles may be used according to requirements. The first sprinkling is effected just before the roller *w* is reached.

The manner in which the fibrous material is opened in passing over the roller *w* so that the liquid can penetrate into the resulting intermediate spaces, can be seen in the drawing. A diagrammatic representation is also given of the manner in which the first sprinkled portions of the oil form an especially heavy layer, and how the resulting bundles of fibers become separated from one another after passing over the roller *w* to acquire a rolling and rotatory motion until they fall again on to a second conveyer *b* which feeds the fibrous material to the drum *a*.

During the whole of the falling movement and the first portion of the onward movement on the conveyer *b*, the fibers are again sprinkled. The vertical distance between the roller *w* and the conveyer *b* should be chosen so as to allow the resulting bundles to rotate through an angle of 180°. In accordance with this method of sprinkling the oil mixture, a single passage through the sprinkling apparatus is usually sufficient to insure the complete penetration of the wool and allow it to enter the opener while the oil mixture is still warm.

The invention can be carried out in various ways. It should be particularly noted

that the sprinkling is directed to both sides of the layer from different directions before as well as during the falling motion.

It is desirable to provide additional sprinkling nozzles in order that the machine may be operated without interruption in the event of the fine sprinkling nozzles becoming choked.

Experiments have shown that, through the medium of this method of softening textile fibers, not only is the expensive hand labor replaced by cheap machine labor, but a long series of further advantages are obtained in comparison with the oiling devices at present in use. Foremost among these is the considerable saving of oil which is attributable to the fact that, in the known processes large quantities of oil remain adhering not only to the bottom and sides of the opener, but also to the clothes of the operators, whereas here an economy results from the uniform and rapid distribution of the oil. Finally, the opener itself can be fed continuously, whereas hitherto it had to be frequently stopped while the fibers were being softened.

Now what I claim and desire to secure by Letters Patent is the following:

1. A process of softening textile fibers by oily mixtures preparatory to opening and spinning which consists in feeding the fibers in a layer and causing both sides of the layer to be sprinkled by a constant stream with such mixture.

2. A process of softening textile fibers by oily mixtures preparatory to opening and spinning, which consists in interruptedly feeding the fibers in a layer, causing gaps to be formed in the layer by reason of such interruption, and applying the oily mixture to both sides of the disrupted portions.

3. A process of softening textile fibers by oily mixtures preparatory to opening and spinning, which consists in feeding the fibers in a layer, sprinkling the layer, disrupting the layer by causing the same to span a gap, and sprinkling both sides of the disrupted portions at said gap.

4. A process of softening textile fibers by oily mixtures preparatory to opening and spinning which consists in feeding the fibers in a layer, breaking the layer into separate portions by causing the same to be drawn across a gap, and successively sprinkling opposite sides of said layer.

5. A process of softening textile fibers by oily mixtures preparatory to opening and spinning, which consists in feeding the fibers in a layer, breaking the layer into separate portions by causing the same to fall, reuniting the portions in a continuously moving layer, and sprinkling the unbroken layer, falling portions and the reunited layer.

6. A process of softening textile fibers by oily mixtures preparatory to opening and

spinning, which consists in feeding the fibers in a layer, breaking the layer into separate portions by causing the same to change its direction by allowing the separated portions to fall freely downward, and sprinkling the same from one side so as to cause the same to turn freely while falling.

7. The process of softening textile fibers with oily mixtures preparatory to opening and spinning, which consists in feeding the fibers in a layer, sprinkling such layer, breaking such layer into separate portions by permitting the same to fall by the action of gravity, sprinkling such separate portions, and finally leading away the separate sprinkled portions.

8. The process of softening textile fibers with oily mixtures preparatory to opening and spinning, which consists of feeding the fibers in a layer, sprinkling such layer, breaking such layer into separate portions by permitting the same to fall and turn over by the action of gravity, sprinkling both falling and fallen portions, and finally leading away the separate sprinkled portions.

9. The process of softening textile fibers with oily mixtures preparatory to opening and spinning, which consists in feeding the

fibers in a layer, sprinkling said layer, breaking said layer into separate portions by causing the same to acquire a rotatory motion, and fall by the action of gravity, sprinkling such separated portions, and finally leading away the latter.

10. The process of softening textile fibers with oily mixtures preparatory to opening and spinning, which consists in feeding the fibers in a layer, sprinkling said layer, breaking said layer into separate portions by causing such portions to acquire a rotatory motion, sprinkling them during such motion, permitting such portions to fall by the action of gravity through an angle of approximately 180°, sprinkling them during such falling movement, continuously leading away such inverted portions, and finally sprinkling the latter.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 18th day of May, 1910.

CARL MARX.

Witnesses:

KARL CLEWAN,
JEAN LANG.