Aug. 19, 1930. W. B. BRONANDER 1,773,167

METHOD OF AND APPARATUS FOR FINISHING CLOTH

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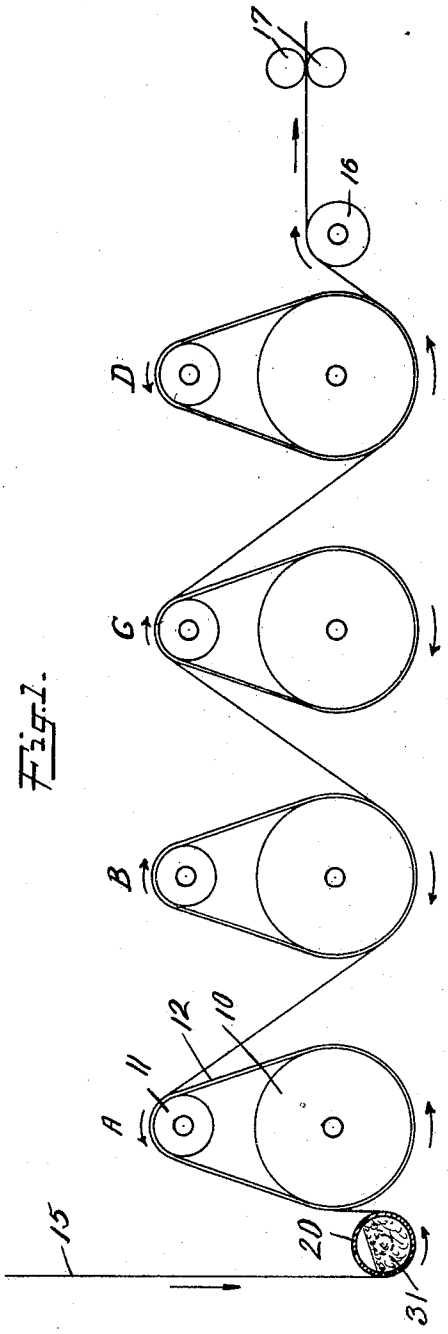


Fig. 1.

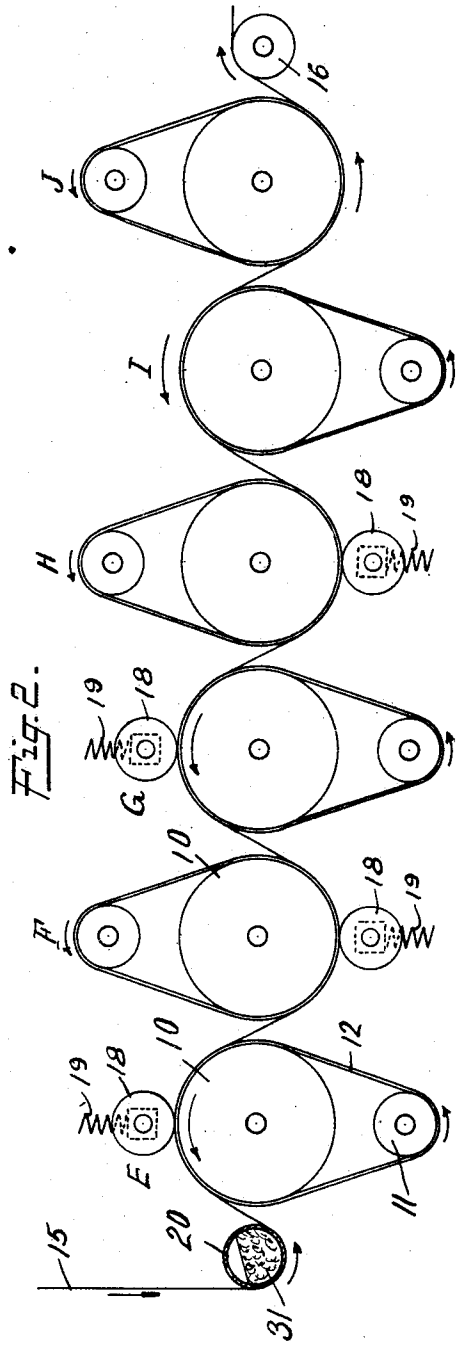


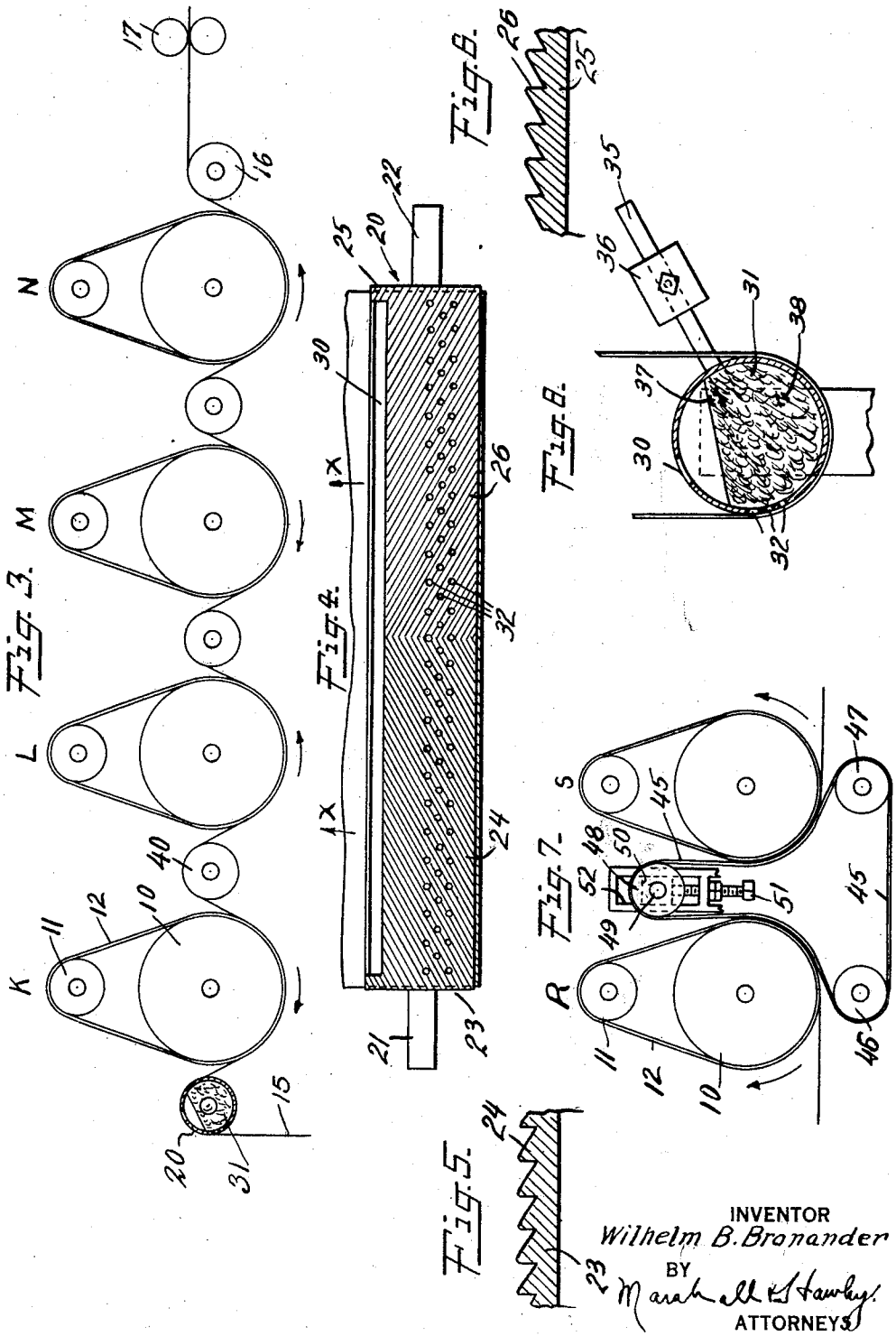
Fig. 2.

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METHOD OF AND APPARATUS FOR FINISHING CLOTH

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UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR FINISHING CLOTH

Application filed September 28, 1925. Serial No. 58,985.

This invention relates to methods of finishing textile material or cloth and to machines for carrying out the method.

Textile material or cloth in passing through the various dyeing and conditioning processes is scarred, marked or disfigured and requires finishing before it is suitable for the trade.

This invention has for its salient object to provide a method and apparatus for finishing cloth, the method being so carried out and the apparatus being so constructed and arranged that the cloth after treatment thereby will present a uniform, finished and polished appearance free from marks, blemishes or disfigurements.

Another object of the invention is to provide means for repeatedly treating the surface or surfaces of the material so as to effectively remove therefrom all marks, blemishes or disfigurements.

Another object of the invention is to provide means for spreading or stretching the material to its full width so that the web will be free from wrinkles or folds during its treatment.

Another object of the invention is to provide in a machine of the character described means for supplying treating liquid to the material to be treated as the material passes to the treating mechanism and to insure the application of the liquid to all parts of the material.

Another object of the invention is to provide in a machine of the character specified single means for spreading the web to its full width and for applying treating liquid to the web.

Another object of the invention is to provide a novel and efficient method of finishing and polishing cloth.

Further objects of the invention will appear from the following specification taken in connection with the drawings, which form a part of this application, and in which

Fig. 1 is a diagrammatic elevational view showing one form of apparatus constructed in accordance with the invention.

Fig. 2 is a view similar to Fig. 1 but showing a different arrangement of cloth rubbing means, the rubbing means in this form of the invention being adapted to rub both sides of the material.

Fig. 3 is a view similar to Fig. 1 but showing another arrangement of rubbing means.

Fig. 4 is an elevational view of the device for spreading the web to its full width and applying treating liquid thereto.

Figs. 5 and 6 are sectional elevations of portions of the left hand and right hand halves of the device shown in Fig. 4.

Fig. 7 is an elevational view showing another arrangement of the rubbing devices; and

Fig. 8 is a transverse sectional elevation of the device shown in Fig. 4.

The invention briefly described comprises a plurality of cloth rubbing elements arranged to rub one or both surfaces of the cloth in opposite directions as the material passes through the machine. Means is also provided for stretching the material to its full width to prevent any longitudinal folds or wrinkles as the web passes to the rubbing devices, and this means also is constructed and arranged to finish and apply to the web of material treating liquid. In the particular form of the invention illustrated, the means last mentioned has a plurality of inclined or spirally arranged ribs extending laterally from the central portion thereof and arranged by their engagement with the material to spread the material laterally. Treating liquid is contained within the spreading device and has access to the web through a plurality of apertures so arranged that when the web is not progressing through the machine the apertures will be disposed in such a position that the treating liquid will not flow therethrough. Further details of the invention will appear from the following specification and claims.

In the embodiment of the invention illustrated in Fig. 1, the cloth rubbing means comprises a plurality of devices indicated as A, B, C and D. Each of these devices consists of a relatively large roll 10 and a relative small roll 11, around which extends an endless belt 12 formed of suitable flexible absorbent material such as felt.

Suitable driving means is provided for each of the rubbing devices, this means preferably

being connected to the shaft of the relatively large roll 10 and the driving connections are so made to the respective rubbing devices that certain of the devices such as A and D will be rotated in one direction and others of the rubbing devices such as B and C will be rotated in the opposite direction. In this way the surface of the cloth web 15 will be rubbed in opposite directions as it passes through the machine.

After the cloth web has been acted on by the rubbing devices it can be led over an an idler roll 16 and be withdrawn from the machine by feed rolls 17.

Before the web of material passes to the rubbing devices it is led around a non-rotating hollow drum or roll 20. This roll is supported on trunnions 21 and 22 and as shown in Figs. 4, 5 and 6, approximately one-half 23 of the roll has formed on its outer surface a plurality of spiral ribs 24 which extend laterally from the center of the roll. The other half 25 of the roll 20 has formed on its peripheral surface spiral ribs 26 which also extend laterally from the center of the roll but in the opposite direction from the ribs 24. It will be readily seen that when the material is drawn around or across the surface of the roll 20 in the direction of the arrows *x*—*x* the material will be spread laterally to its full width, thus removing any wrinkles or longitudinal folds.

The hollow shell or roll 20 also has for its function to provide treating liquid to the material as the material is drawn around the roll. A longitudinal opening 30 is formed in the upper half of the roll for receiving the treating liquid and the roll is preferably partially filled with absorbent material 31 such as cotton or waste. The roll also has formed therein a plurality of outlet openings 32 through which the liquid has access to the web.

One or both of the trunnions 21, 22 has secured thereto an arm 35 on which is adjustably mounted a weight 36 and stops 37 and 38 are provided for limiting the movement of the arm 35. When the material is being drawn around the roll the tension on the material and the friction between the material and roll will cause the roll to be swung on its trunnions to the position shown in Fig. 8 in which position it should be noted that the openings 32 are disposed below the horizontal center plane of the roll in position to permit the treating liquid to flow therethrough and permeate the web of cloth. When the cloth has been fed through the machine and no longer engages the roller 20, the weight will swing the roll in a clockwise direction (Fig. 8) so that the arm 35 will engage the stop 38 and the openings 32 will be positioned above the center of the roll. With the openings in this position the flow of the treating liquid will cease.

In the embodiment of the invention illustrated in Fig. 2 a plurality of rubbing devices E, F, G, H, I and J is provided and the web 15 is led alternately over and beneath successive rubbing devices and engages the belts 12. As these belts pass around the relatively large rollers 10 the driving connections are so made that the belts in all the rubbing devices will be driven in the same direction, but since the material passes alternately above and beneath the belts the material will be rubbed alternately in opposite directions. Furthermore, the belts in the devices E, G and I, will rub the under surfaces of the material and the belts in the devices F, H and J, will rub the upper surfaces of the material. In this way both surfaces of the material will be treated.

In order to obtain the best results from the rubbing action of the belts 12, pressure rolls 18 may be mounted as shown in Fig. 2, to hold the material against the belts. Springs 19 press the rolls 18 toward the belts.

A roll 20 similar to that already described is used in conjunction with the rubbing devices shown in Fig. 2.

In Fig. 3 rubbing devices K, L, M and N are shown and an idler roll 40 is interposed between each pair of rubbing devices. The material in this arrangement passes beneath the large rolls 10 of the rubbing devices and is rubbed on its upper surface only. Furthermore, the successive rubbing devices are arranged to be driven in opposite directions so that the surface of the material will be rubbed alternately in opposite directions.

Fig. 7 illustrates another arrangement of the rubbing devices. In this form of the invention two devices, R and S, are shown and intermediate these devices there is arranged an idler belt 45 which passes around stationary idler rolls 46 and 47 and a vertically adjustable idler roll 48. The roll 48 has trunnions 49 carried by blocks 50 which are vertically adjustable by screws 51, the blocks being slidably mounted in vertical guide-ways 52.

From the foregoing description it will be seen that simple and practical means has been designed for treating one or both surfaces of a web of textile material and furthermore that the material will be spread or stretched to its full width as it passes to the treating devices. By means of the repeated treatment or repeated rubbing of the material all marks, scars or blemishes will be effectively removed and the material will pass from the machine in perfect condition.

Although certain specific embodiments of the invention have been particularly shown and described, it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the

spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. In a machine for finishing cloth, means for rubbing the cloth and a hollow tubular member disposed in the path of the material and in advance of the rubbing means, said member having means for spreading the web laterally from the central portion toward the longitudinal edges thereof and having openings therein for permitting the passage of treating liquid to the cloth surface as the material passes said member.

2. In a cloth finishing machine, cloth rubbing devices, a hollow roll mounted for limited pivotal movement and disposed in the path of movement of the material, said roll having a plurality of apertures therein, said roll being pivotally movable from a position in which the apertures are disposed in the upper half of the roll to a position in which the apertures are disposed in the lower half of the roll.

3. In a cloth finishing machine, cloth rubbing devices, a hollow roll mounted for limited pivotal movement and disposed in the path of movement of the material, said roll having a plurality of apertures therein, said roll being pivotally movable from a position in which the apertures are disposed in the upper half of the roll to a position in which the apertures are disposed in the lower half of the roll, said roll having a filling opening disposed in the upper half thereof in all positions of the roll.

4. A method of finishing cloth which consists in leading the cloth in an undulating path over and beneath oppositely rotating rubbing belts and in rubbing engagement therewith.

5. In a cloth finishing machine, a plurality of rubbing devices, each device comprising a roller, a belt of absorbent material around each roller, the roller axes being disposed in the same plane, certain of the belts being driven in one direction and others of the belts being driven in the opposite direction, the material being finished being led through the machine above and below successive rollers and belts and crossing the plane of the roller axes between each two successive rubbing devices.

6. In a cloth finishing machine, a plurality of rubbing devices, each device comprising a pair of rolls spaced apart and having different diameters, a belt of absorbent material mounted on each pair of rolls and means including rolls for supporting a web of material against the rubbing device.

7. In a cloth finishing machine, a plurality of rubbing devices, each device comprising a pair of rolls spaced apart and having different diameters, a belt of absorbent material mounted on each pair of rolls, and means including rolls for supporting a web of material in engagement with the major part of each belt portion which is engaged by the roll of greater diameter.

8. In a cloth finishing machine, a plurality of rubbing devices, each device comprising a pair of rolls vertically spaced apart and having different diameters, the lower roll having the greater diameter, a belt of absorbent material mounted on each pair of rolls, and means including rolls for supporting a web of material against the rubbing devices.

9. In a cloth finishing machine, a plurality of rubbing devices, each device comprising a pair of rolls, spaced apart and mounted on parallel axes, a belt of absorbent material mounted on each pair of rolls and a pressure roll for pressing the material being treated against each of said rubbing belts.

In witness whereof, I have hereunto set my hand this 22nd day of September, 1925.

WILHELM B. BRONANDER.