

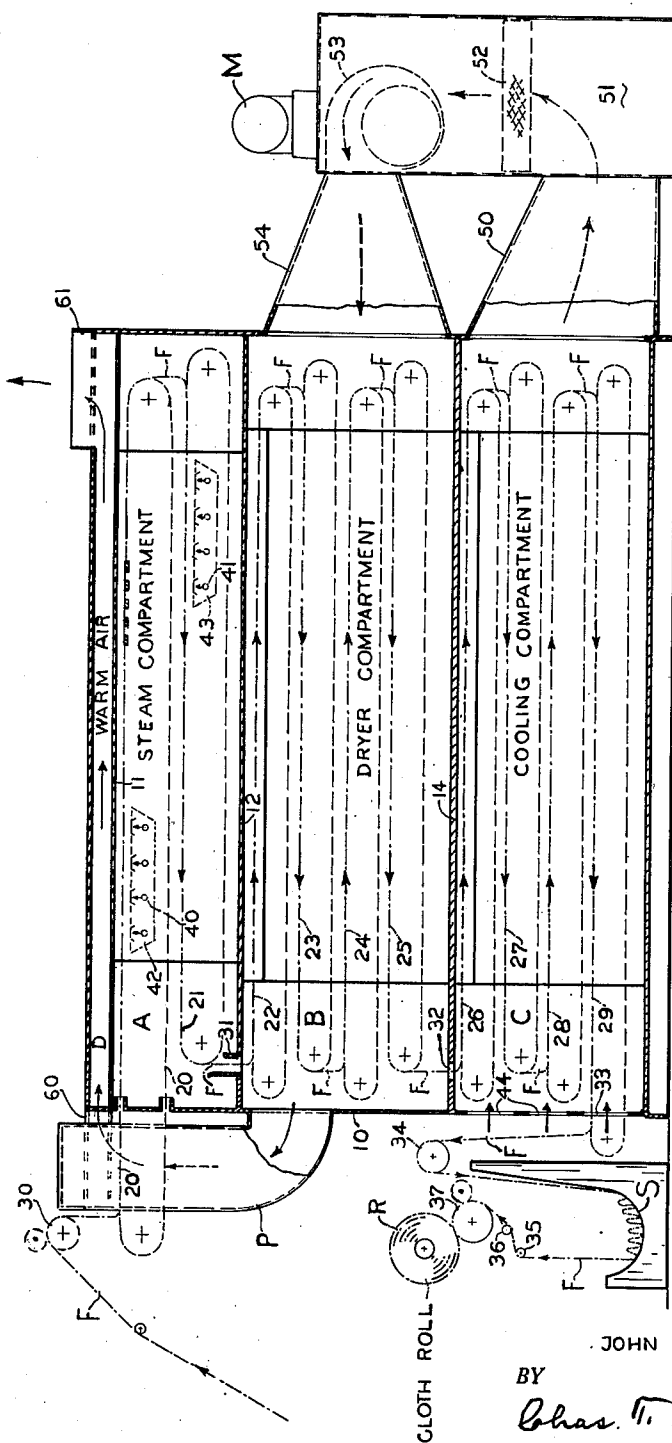
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CLOTH CONDITIONING APPARATUS

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1

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CLOTH CONDITIONING APPARATUS

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1 Claim. (Cl. 26—18.5)

This invention relates to apparatus for conditioning mill-finished cloth after it has been subjected to various and successive wet and dry finishing operations, such as dyeing, fulling, scouring, napping, gigging, carbonizing, shearing, calendering, full-decating or tentering. After such finishing operations, the cloth commonly possesses a certain residual stretch and is more or less tensioned and distorted.

It is the general object of my present invention to provide improved apparatus by which such mill-finished cloth may be permeated with moisture, dried, cooled, and given a normal moisture content, all while the cloth is relaxed and preferably agitated. Mill-finished cloth thus treated by passage through my improved apparatus is found to be in satisfactory condition for garment-making or tailoring operations.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of apparatus for carrying out the above-described cloth conditioning is shown in the drawing, which is a sectional side elevation, partially diagrammatic, and showing a combined conditioning apparatus.

My improved apparatus comprises a casing or cabinet 10 having partitions 11, 12 and 14 which divide the interior of the cabinet into compartments A, B, C and D.

The fabric F is deposited on the upper run of a conveyor 20 in the compartment A. A feed roll 30 rotates at such speed that the cloth is over-fed, and is deposited in folds on the conveyor 20, which is preferably of the slatted type indicated. The cloth is thus in relaxed condition on the conveyor and is more or less agitated as it travels through the steam compartment A on the slats of the conveyor.

An additional conveyor 21 is provided in the steam compartment A, conveyors 22, 23, 24 and 25 are provided in the drier compartment B, and other conveyors 26, 27, 28 and 29 are provided in the cooling compartment C. All conveyors are preferably of the usual slatted construction, with each conveyor comprising a plurality of transversely disposed flat bars or slats with interposed open spaces, and all of the conveyors operate continuously and at substantially the same speed, so that the cloth remains in relaxed or over-fed condition throughout its agitated passage through the apparatus.

Such slatted conveyors are commercially well known and one such conveyor is shown at M in Fig. 15 on page 17 of Poselt's Textile Library, vol. 5, 4th edition, copyrighted in 1900 and published in Philadelphia.

A port or opening 31 is provided in the partition 12 which forms the bottom of the steam compartment A. A similar port or opening 22 is provided in the partition 14 forming the bottom of the drier compartment B, and a port 33 in the left-hand end wall of the cooling compartment C permits the fabric F to be drawn upward by a feed roll 34, from which it is deposited in loose folds in a stor-

2

age device or scray S and from which it is thereafter drawn upward past guide-rods 35 and 36 and around a feed roll 37 for winding in a cloth roll R.

Spray pipes 40 and 41 are provided in open trays 42 and 43 in the steam compartment A, and low-pressure or wet steam and vapor from the spray pipes 40 is directed against the under side of the cloth F as it is moved along on the upper run of the conveyor 20. The same action thereafter takes place from the spray pipes 41 in the tray 43, but it will be noted that the fabric F is reversed as it passes from the conveyor 20 to the conveyor 21, so that the spray pipes 41 direct the steam and vapor against the opposite or reverse side of the fabric.

This moistening operation takes place at substantially atmospheric pressure, and the flow of steam and vapor is so regulated that the fabric is thoroughly permeated with moisture but does not become really wet.

After being thus thoroughly moistened in its double passage through the steam compartment A, the cloth or fabric F passes to the drier compartment B and is conveyed therethrough on the successive slatted conveyors 22, 23, 24 and 25.

Atmospheric air is drawn into the lower or cooling compartment C through openings 44 in the left-hand end wall, and this air passes through a connection 50 to the lower part of a heater 51, where it is drawn upward through a steam device 52 by a fan 53 driven by a motor M. The hot air is then delivered through a connection 54 to the drier compartment B.

With this construction, the moistened cloth from the compartment A is subjected to the action of the steam of hot air delivered through the connection 54, and the fabric F is thus thoroughly dried during its passage through the compartment B. The air pressure is not greatly above atmospheric.

The cloth then passes through the port 32 and onto the conveyor 26 in the cooling compartment C, and then passes successively along the conveyors 27, 28 and 29 to the delivery port 33. During such passage, the heated and usually over-dried cloth is subjected to the flow of atmospheric air drawn in through the ports 33 and 44 to supply the heater 51. The heated and over-dried cloth from the drier compartment B is thus cooled and also has its normal or atmospheric moisture content restored.

The cloth is then loosely deposited in the scray S, from which it is wound, substantially without tension, into a cloth roll R.

The still warm air escaping from the drier compartment B passes upward through a pipe P and enters the top or warm air compartment D through a connection 60. After traversing this compartment, the air escapes through an exhaust connection 61.

The passage of warm air through the compartment D warms the upper partition member 11 and thus prevents the excessive condensation of steam which might otherwise take place if the partition 11 was in a cold condition.

It should be particularly noted that the cloth is overfed and thus relaxed as it passes through the entire machine, and that the cloth is continuously agitated by the slatted conveyors.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

Cloth conditioning apparatus maintained throughout at substantially atmospheric pressure and comprising separated upper, middle and lower compartments, a plurality of successive and superposed conveyors in each compartment, all of said conveyors being moved continuously and at substantially the same speed and all of said conveyors

3

being of such construction that the cloth is continuously agitated thereon, means to feed the cloth to the upper conveyor in the upper compartment in relaxed and untensioned condition, means to successively moisten both sides of the cloth on the conveyors in the upper compartment, means to advance said cloth to the upper conveyor in the middle compartment, means to dry the cloth on the successive conveyors in the middle compartment, means to advance said cloth to the upper conveyor in the lower compartment, means to cool the cloth on the successive conveyors in the lower compartment and to simultaneously restore normal moisture content to the cloth, and means to continuously remove the cloth from the lower conveyor in the lower compartment.

4

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