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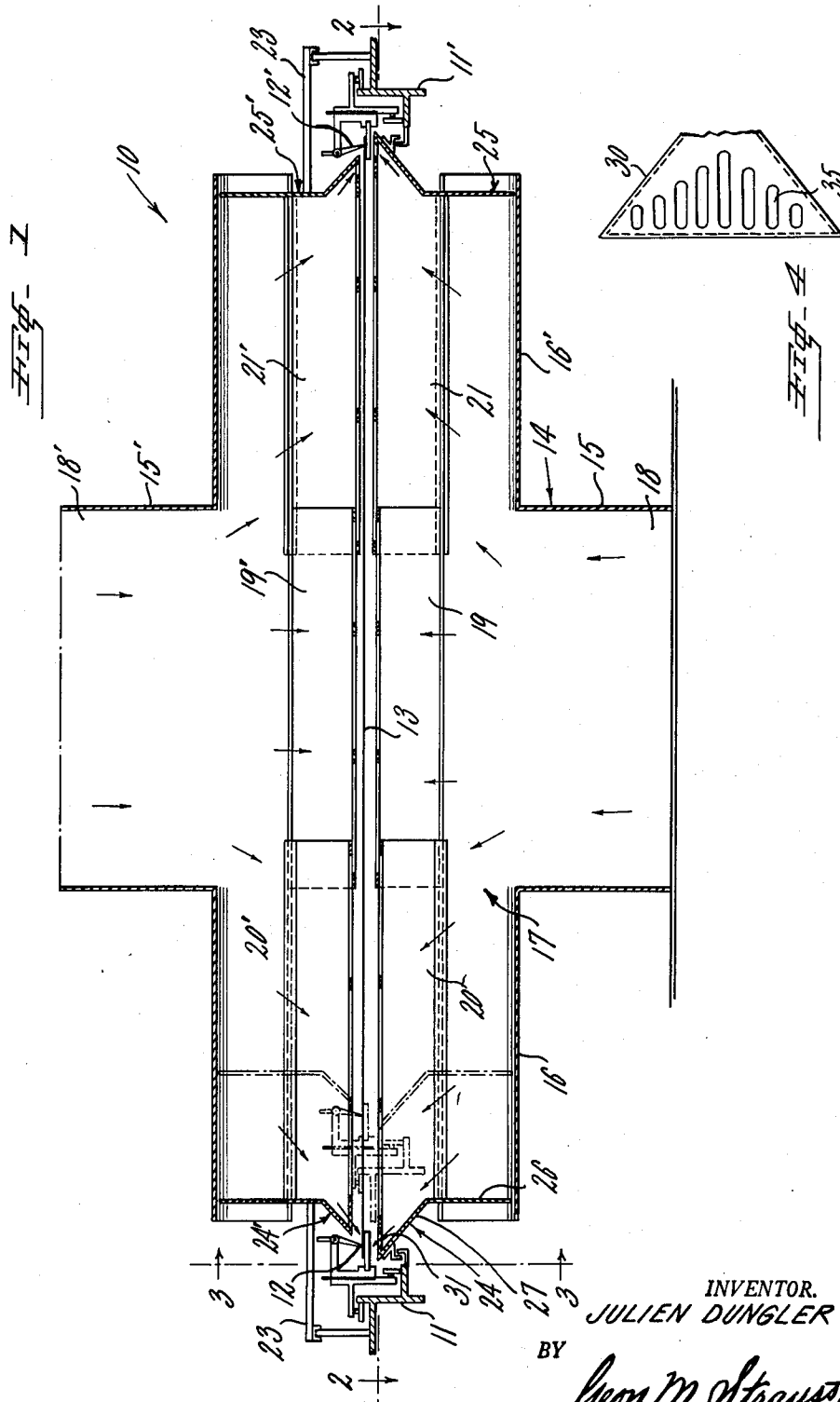
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SELVEDGE DRIER-NOZZLE

Filed Dec. 6, 1951

2 Sheets-Sheet 1



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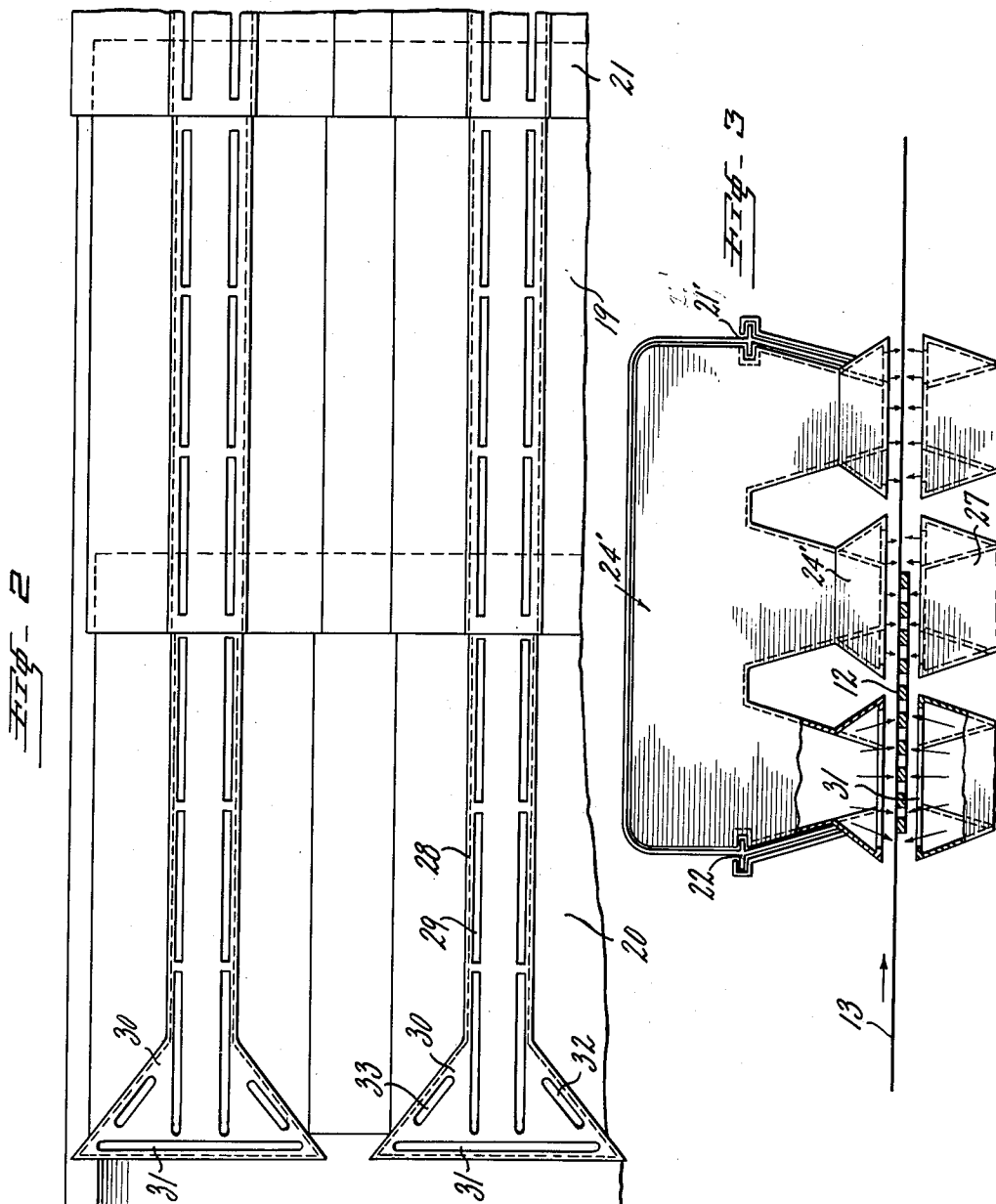
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SELVEDGE DRIER-NOZZLE

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7 Claims. (Cl. 26—60)

This invention relates to a tentering machine for treating or drying cloth or other web material, and more particularly to a telescopic selvedge drier.

In applicant's prior U. S. Patent 2,495,163, issued January 17, 1950, there is disclosed a tentering or like machine for drying cloth or other materials which includes nozzles for drying fluid on one or both sides of the plane of passage of the material to be dried. Groups of the aforesaid nozzles are carried on telescopically arranged parts which are extensible in accordance with the width of the cloth, whereby the effective dimensions of the nozzles are automatically adjustable in accordance with the width of the cloth. The cloth to be treated is movably supported on a conveyor arrangement including self-feeding clips or the like which engage the selvedge of the cloth, the clips being mounted on movable spaced chain-guide rails which are likewise adjustable in accordance with the width of the cloth. The adjustment of the effective dimensions of the nozzles is preferably effected by movement of the chain-guide rails when the spacing of said rails is altered.

Due to the arrangement of the selvedge-engaging clips with respect to the nozzles of the machine, the selvedge previously has not been subjected to the drying fluid which is normally directed toward the portions of the cloth within the machine and beneath the nozzles. Accordingly it has been necessary to materially decrease the speed of the machine to permit the selvedge to dry or to employ additional selvedge drying means.

Further, the effect of the drying fluid was not uniform throughout the entire width of the material, either on one side of the material or both sides thereof, thereby resulting in wrinkling or curling of the selvedges and portions of the material contiguous thereto.

Accordingly, it is an object of the present invention to provide means contributing to an improved apparatus for treating cloth and similar web material which overcomes the above difficulties and disadvantages. More particularly, it is an object of the present invention to provide means facilitating the treatment of cloth and similar web material in its entirety.

It is another object of the present invention to provide means permitting the drying of the selvedges of material simultaneously with and at the same rate as the portions of the material intermediate said selvedges.

It is a further object of the present invention to provide means rendering it possible to materially increase the speed of treatment in tentering machines of the aforesaid type.

It is a still further object of the present invention to provide means facilitating the reduction in length of tentering machines while retaining the same output thereof, or facilitating a substantial increase of output of existing machines.

It is a still further object of the present invention to provide means assuring the complete and uniform treatment of cloth or similar web material on one or both sides thereof to thereby overcome the difficulties

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encountered by non-uniform treatment, such as deformation, wrinkling and curling.

The foregoing and still further objects and advantages of the present invention will become apparent upon consulting the detailed description of the invention when taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a transverse sectional view of the telescopic selvedge drier made according to the invention;

Fig. 2 is a fragmentary plan view taken along the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1, with parts broken away and shown in section and drawn to an enlarged scale; and

Fig. 4 is a fragmentary plan view of a modified form of an end portion of one of the movable nozzle extensions.

Referring now to the drawings, there is illustrated the tentering machine of the present invention designated by the reference numeral 10, which includes a pair of movably mounted chain-guide rails 11, 11' arranged in parallel spaced relation with respect to each other and adjustable in accordance with the width of the material to be treated. Movably supported on the chain-guide rails 11, 11' are the self-feeding clips or conveyor means 12, 12' which engage the selvedge of the cloth 13 and maintain the cloth in a stretched condition as the latter passes through the machine 10.

Arranged intermediate chain-guide rails 11, 11' is a distributing device 14, which includes the longitudinally extending conduits 15, 15' and the laterally projecting conduits 16, 16'. The respective conduits of the distributing device 14 cooperate to form an elongated chamber 17 extending between the rails 11, 11' and communicating passageways 18, 18' depending from and extending from elongated chamber 17.

The passageways 18, 18' are adapted to be connected to a source of fluid which is set in motion by a fan or other suitable device. The fluid can be pre-heated, or passed over heating elements disposed within the chambers or passageways 18, 18'.

Within the manifold or distributing device 14, and communicating therewith, are the fixed medial or central tubular parts 19, 19' which terminate in nozzles. On either side or end of the fixed parts 19, 19' are the movable tubular parts or extensions designated by the reference numbers 20, 20' and 21, 21' respectively. The respective movable extensions are shaped similar to the fixed parts 19, 19', terminate in nozzles movable with the extensions, and serve to extend the fixed parts in the axial direction thereof in accordance with the width of the material.

The extensions 20, 20' slide internally of the movable parts 19, 19', while the extensions 21, 21' slide externally thereof. When the distance between the rails 11, 11' is changed, the extensions are slidably and telescopically moved, and while being moved are supported and guided by slideways engaging on flanges 22, 22' carried on the laterally extending conduits 16, 16'.

The extensions 20, 20' and 21, 21' are displaceable in response to the transverse movements of the rails 11, 11' by the action of the connecting members 23. The movable nozzle extensions are formed on their end portions remote from the fixed nozzle part, with openings directed toward selvedge clips 12, 12', whereby the clip is subjected in its entirety to a treatment fluid introduced into the fixed and movable nozzle parts.

The closing of the end of the nozzle extensions 20, 20' remote from the fixed parts 19, 19', is effected by means of slidable end plates 24, 24'. Similarly, the ends of

the nozzle extensions 21, 21' remote from the fixed parts, are closed by end plates 25, 25'. The aforesaid end plates are rigidly secured to the respective extensions and are provided with fluid-tight packings (not shown), whose shape follows the contour of the cross-sectional shape of the conduits 16, 16'.

Since the respective nozzle extensions are all alike, it will suffice to describe only one in detail. The nozzle extension 20 includes a longitudinally extending plate 28 provided with nozzle slots 29 which are arranged in pairs, the respective pairs being disposed in end to end aligned and spaced relation with respect to each other and extending between the ends of plate 20.

Plate 28 terminates in an enlarged triangular end portion or end extension 30 provided with a transverse slot 31 contiguous to the base thereof, and with angular slots 32, 33 along the sides thereof, all said slots being coplanar with said nozzle slots 29.

The end plate 24 is secured to the base of the triangular extension portion 30, and includes section 26 arranged normal to the adjacent walls of the conduit 16, and a fluid deflecting section 27 which diverges outwardly from the normal section 26 and terminates contiguous to, and below, the self-feeding clip forming cloth conveyor means 12.

The similarly formed extension 20' cooperates with the extension 20, contiguous to the clip 12, to form a fluid-directing body.

As clearly indicated by the arrow in Fig. 1, the fluid introduced into the tentering machine will be directed toward the end and upper surfaces of the cloth throughout the entire width thereof. By suitably dimensioning the respective movable extensions and the slots provided therein, the entire cloth can be subjected to the treatment fluid in like amounts, thereby ensuring uniformity in the treatment of the cloth.

As shown in Fig. 4, the triangular end portion 30 of the extension 20 and the similar portions of the other extensions may be provided with a group of slots 35 intermediate the converging sides thereof, the slots being arranged in substantially parallel relation and increasing in length from the respective sides toward the center of the portion 30. Any other similar slot arrangement may be provided for directing the fluid toward the selvedge of the cloth being treated.

In actual use, the fluid directing portions of the respective movable extensions are automatically positioned with respect to the selvedge clips due to the coupling of the rails 11, 11' to the respective movable extensions. The diverging slots 27 of the extensions will, in combination with the slots provided in the triangular portions, which lie coplanar with the openings or nozzle slots 28, direct the fluid on to the upper and lower surfaces of the portions of the cloth engaged by the self-feeding clips.

It can be thus seen that there has been provided, according to the invention, improvements relating to tentering or like machines, for treating web material, characterized by the combination of a central fixed part carrying nozzles directed to and positioned adjacent to the plane of the cloth to be treated when passing through said machine, the extent of said central fixed part corresponding to the minimum width of the cloth to be treated, with a movably arranged extension provided with nozzles and positioned for slidable movement to and from either end of said central part, flange means arranged to slidably support said extension nozzles when moved in the direction of said central fixed part to thereby adjust the total operative extent of all nozzles commensurate with the width of the cloth to be treated, a distributing manifold arranged to supply a fluid to said central part and to said extensions, clips positioned at the outer ends of said extensions, said clips being adapted to engage said cloth when passing through said machine, and means on said extensions for directing said fluid toward said clips

and the respective portions of said cloth engaged by said clips whereby said cloth is subjected in its entirety to said fluid.

Although only one embodiment of the invention has been described and shown in the drawing, it should be noted that the invention may be realized in modified form and adaptations of the arrangements herein disclosed may be made as may readily occur to persons skilled in the art without constituting a departure from the spirit and scope of the invention as defined in the objects and in the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. A tentering machine for treating cloth and like web material comprising fixed nozzle means positioned adjacent the plane in which said cloth extends, the length of said fixed nozzle means corresponding to the minimum width of said cloth, movable nozzle means located on at least one side of said fixed nozzle means and arranged for slidable movement relative thereto to thereby vary the total operative length of said fixed nozzle means and said movable nozzle means in accordance with the width of said cloth to be treated, conveyor means located for engagement with said cloth at the side edges thereof for moving the latter in said plane past said fixed nozzle means and said movable nozzle means, said fixed nozzle means and said movable nozzle means having respective openings directed toward said cloth, whereby said cloth is subjected in its entirety to uniform fluid treatment from said fixed nozzle means and said movable nozzle means, and outwardly flared extension means forming part of said movable nozzle means and disposed for movement adjacent said conveyor means, said extension means being provided with additional openings directed toward said adjacent conveyor means and said side edges of said cloth when engaged by said conveyor means, said additional openings terminating substantially coplanar with the openings of said fixed nozzle means and said movable nozzle means, said extension means being coupled with said conveyor means and projecting above and below the latter, said openings in said fixed nozzle means and said movable nozzle means being in the form of elongated slots arranged to extend substantially parallel to each other and in crosswise direction to the length of the cloth to be treated, said additional openings being in the form of slots extending angularly to said slots of said fixed nozzle means and said movable nozzle means to thereby reach an area of said cloth larger adjacent the side edges thereof than the area of said cloth positioned at said elongated slots.

2. A machine according to claim 1, wherein said slots of said extension means extend substantially at the outermost end of said extension means, some of said slots being of the same, other of said slots being of a length different from each other.

3. A machine according to claim 1, at least one of said extension means being longer than the other of said extension means.

4. A tentering machine for treating cloth and like web material comprising fixed tubular means having upper and lower fixed nozzle means positioned adjacent the plane in which said cloth extends, the length of said fixed nozzle means corresponding to the minimum width of said cloth, movable tubular means having upper and lower movable nozzle means and arranged at either lateral end of said fixed nozzle means for slidable movement relative to said fixed nozzle means to thereby vary the total operative length of said fixed nozzle means and said movable nozzle means in accordance with the given width of said cloth to be treated, conveyor means located for engagement with the side edges of said cloth and for moving the latter in said plane past said fixed nozzle means and said movable nozzle means, said upper and lower fixed nozzle means and said upper and lower movable nozzle means having respective fluid discharge slots directed to-

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ward said cloth, whereby said cloth is subjected to uniform fluid treatment, and respective outwardly flared upper and lower extension portions connected to said upper movable nozzle means and to said lower movable nozzle means and disposed adjacent said conveyor means, said extension portions being provided with additional fluid discharge slots directed to said adjacent conveyor means and to said side edges of said cloth when engaged by said conveyor means, said additional slots terminating in a plane substantially level with that of the slots of said upper and lower fixed nozzle means and said upper and lower movable nozzles means, said upper and lower extension portions being coupled with said conveyor means and projecting with their respective slots directly above and below said conveyor means, each of said extension portions being triangularly shaped with the respective base thereof larger in width than that of each of said lateral ends of said movable tubular means.

5. A tentering machine for treating cloth and like web material comprising oppositely disposed rows of nozzle means spaced to provide a path therebetween through which said cloth extends, said nozzle means including opposite, substantially horizontal end walls, conveyor means adjacent the ends of said rows of nozzle means and located for engagement with the side edges of said cloth to thereby move the latter along said path intermediate said rows of nozzle means, said end walls of said nozzle means being provided with respective slots extending in crosswise direction to the length of said cloth, whereby said cloth is subjected to uniform fluid treatment from said rows of nozzle means, and respective outwardly flaring wall extension portions forming respective lateral continuations of said end walls and arranged for location adjacent said conveyor means, said extension portions being provided with additional slots directed to said conveyor means and to said side edges of said cloth when engaged by said conveyor means, said additional slots terminating in a plane substantially level with the slots in said end walls and extending at the outermost ends of said outwardly flaring wall extension portions.

6. A tentering machine for treating cloth and like web

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material comprising oppositely disposed rows of nozzle means, opposite and substantially horizontal end walls defining adjacent ends of said nozzle means to thereby provide a path along which said cloth is moved for treatment by fluid discharged from said nozzle means, conveyor means arranged adjacent the lateral ends of said rows of nozzle means for engagement with the side edges of said cloth to thereby move the latter through said path intermediate said rows of nozzle means, said end walls of said nozzle means being provided with respective slots extending in crosswise direction to the length of said cloth, whereby said cloth may be subjected to uniform treatment of fluid when discharged from said slots of said nozzle means, and triangular-shaped wall extension portions, each wall extension portion forming a corresponding lateral continuation of the end wall of a respective nozzle means and being arranged adjacent said conveyor means, said extension portions being provided with additional slots directed to said conveyor means and to said side edges of said cloth when engaged by said conveyor means, said additional slots and said slots of said end walls terminating in a common horizontal plane, some of said additional slots extending in a direction angularly to that of said slots provided in said end walls.

7. A tentering machine according to claim 6, wherein each of said triangular-shaped wall extension portions is provided with a base larger in width than that of each of said end walls of said nozzle means, one of said wall extension portions projecting toward said conveyor means to a greater extent than the opposite and adjacent wall extension portion.

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