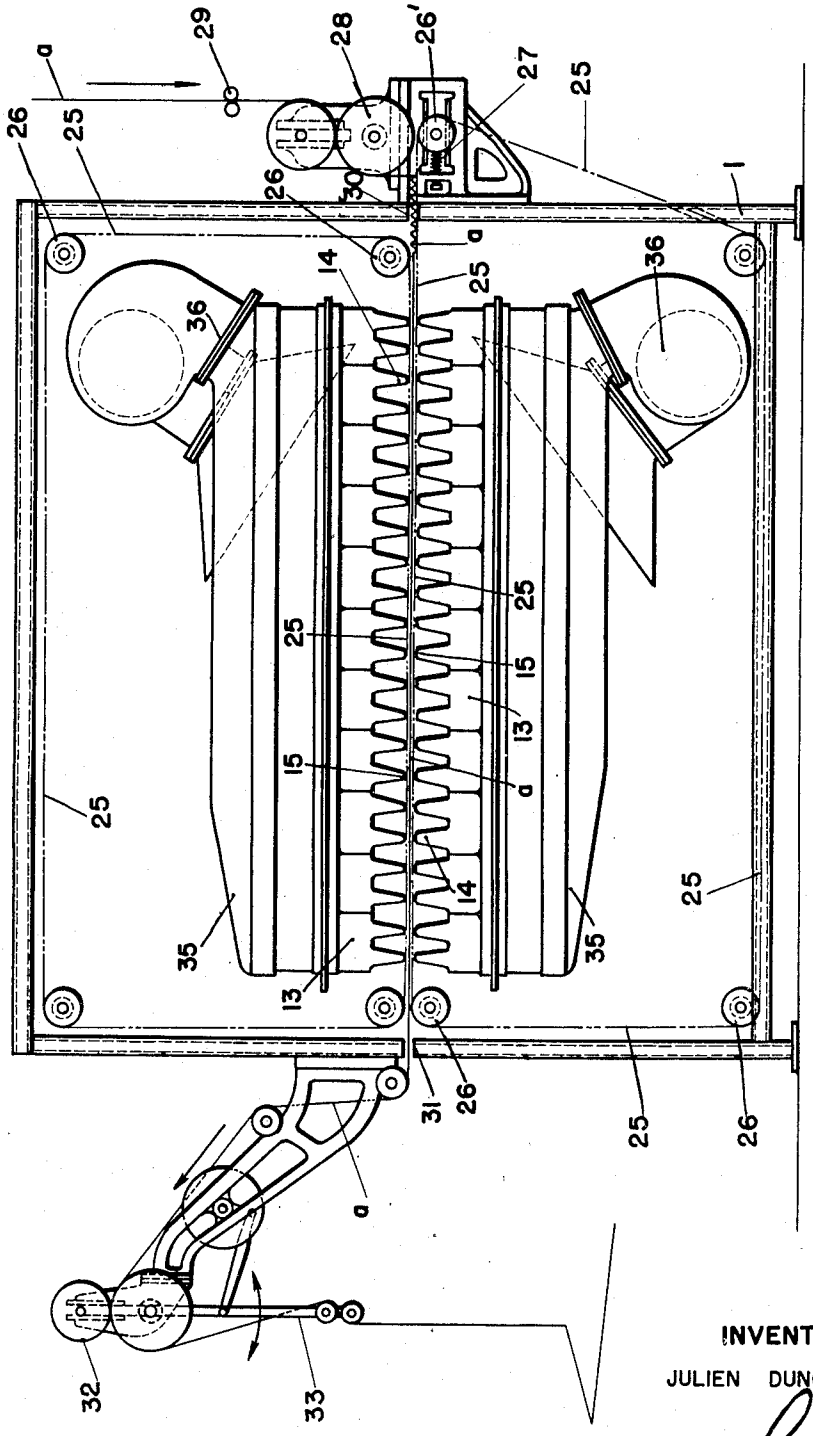
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DRYING MACHINE FOR FABRICS

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DRYING MACHINE FOR FABRICS

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1 Claim. (Cl. 34—156)

1

My invention refers to drying machines for fabrics which have been subjected to bleaching, dyeing, dressing and like treatments.

The invention has for its object the provision of means facilitating drying of the fabrics freely i. e. allowing during the drying process a uniform shrinkage in the direction both of the warp and of the weft.

As a matter of fact the formation of more or less long fabric folds in mechanical dryers, produces on the one hand an elongation of the fabric under the action of its own weight which is increased by the weight of the water contained therein; on the other hand, it produces an irregular drying by reason of the water accumulating through gravity inside the lower part of the folds of the fabric which requires an extension of the time during which the fabric must remain inside the drying chamber; lastly, there are also produced marks at the point of contact with the bars used for hanging the fabric.

The present invention has therefore as one of its objects the provision of means affording rapid and free drying of the fabric over a limited or predetermined path under regular working conditions; the drying is ensured according to my invention by a flow of hot gases or fluid, preferably blown in the form of jets for instance, by means of nozzles arranged along the path followed by the fabric and throughout its width, said jets of hot air impinging on the fabric as it passes through the machine.

My improved machine is characterized in particular by the fact that with a view of allowing free shrinking, during the drying of the fabric, in the direction of the warp and of the weft, said machine is designed to form for the passage of the fabric, a narrow space which is defined, on the one hand, by opposite nozzles blowing the drying fluid arranged throughout the width of the fabric and over a part of its path through the machine, and on the other hand, by conveyor means advancing through a continuous translational movement and against the carrying surface of which the fabric is urged by the fluid blown on to it so that the fabric may be carried along freely throughout the length of the narrow space thus defined, said conveyor means being disposed in such manner that a constant spacing in regard to the nozzles is maintained.

In order to allow my invention to be better understood, I will describe now by way of example and by no means in a limitative sense, a preferred form of execution thereof which is

2

illustrated diagrammatically in the accompanying drawing and wherein:

An elevational view of a horizontal machine with straight and parallel drying elements is shown a wall of the housing of the machine being removed to expose the inside thereof.

The embodiment shown in the drawing according to which the fabric moves through the machine along a rectilinear path, comprises, within the frame or casing 1, two or more similar drying units 35 with extensions 13 terminating in air blowing nozzles 14 located at either side of the path of the fabric *a* and extending throughout its width.

The arrangement is such that the ports or slots 15 of the series of nozzles 14 of the upper units 35 are located in front of the slots or ports 15 of the series of nozzles 14 of the lower units 35, the distance left between said two opposite series of nozzles defining a narrow space allowing the free progress of the fabric *a*.

Each of the drying units 35 includes a blower system 36 for producing hot compressed air which is sent through the nozzles 14, said units being shaped in a manner similar to the drying elements with preferably telescopic nozzles as described in my prior French Patent 856,315 allowing also exhaustion of said air when discharged from said nozzles.

The free passage afforded for the fabric *a* through the narrow space left between the two superposed series of nozzles 14 of the units 35 is ensured through two endless belt conveyors 25 holding the fabric between them as it enters at 30 the casing 1, said conveyors guiding it thereafter through the narrow space mentioned until it leaves the case at 31.

The upper and lower conveyors 25 are driven over their respective turning rollers 26 and may be constituted by endless strips of perforated fabric or of metal sheet or else by sheets of endless strings arranged in parallelism and held at a constant spacing, said strings passing through annular grooves provided with a suitable spacing at the periphery of the rollers 26.

The narrow space provided between the nozzles and said rollers 26 is sufficient to allow a free passage for an endless belt conveyor 25 which, inside the casing or housing, is guided by a number of turning rollers 26 of which one 26' is located on the outside of the casing, on the side facing the inlet 30 of the fabric *a*, and is submitted to the action of a spring 27 so as to ensure an equal and constant tension for the endless belt 25 at the same time as it cooperates

with the first roller located inside the casing. The portion of the belt within said space forms a feed apron for the fabric, fed by draw-in rollers 28, at a variable speed, which latter rollers are preceded by a selvage rollers-guide 29.

The continuous progress of the conveyor 25 is ensured by a certain number of rollers. The inlet and the outlet of the fabric *a* into and out of the housing is performed through slots 30 and 31, the treated fabric being finally guided to drawing rollers 32 associated for winding or for folding of the fabric at 33.

In view of this arrangement and during the rectilinear advance or progress of the fabric *a* held between two conveyors 25 in the narrow space defined by the two series of nozzles of the upper and lower drying units 35, it is apparent that the fabric is suspended simultaneously on the one hand, against the upper conveyor through the blowing action of the series of nozzles 14 of the lower heating element, and on the other hand, against the lower conveyor under the action of the blowing of the series of nozzles 14 of the upper heating unit, which means a free passage of the fabric through the narrow space bounded by the cooperating series of blowing nozzles without any contact therewith.

From the above, it is apparent that in the drying machine forming the object of my invention, the fabric *a* is submitted as it progresses through a narrow space to a drying operation through blowing of hot air while remaining always free to shrink both longitudinally and transversely.

It can thus be seen that there has been provided in accordance with the present invention a drying machine for treating lengthy fabric and similar sheet and web material, comprising a heat-insulated housing having an inlet and an outlet for said material, two horizontally extending substantially parallel and spaced apart casings extending between said inlet and said outlet, said casings being provided with opposedly arranged spaced nozzles facing each other, means for blowing air or other fluid through said nozzles and connected to said casings, respectively, heating means for said fluid, endless perforated flat belt means spaced from each other and conducted within the space between said nozzles for guarding said material, said material being maintained in a substantially floating and suspended state between said belt means when said fluid impinges through said belt means upon said material, and means without said housing for regulating tension of one of said belt means, whereby contact of said material with said nozzles is prevented.

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

A drying machine for treating lengthy fabric and similar sheet and web material, comprising a heat-insulated housing having an inlet and an outlet for said material, two horizontally extending substantially parallel and spaced apart casings extending between said inlet and said outlet, said casings being provided with opposedly arranged spaced nozzles facing each other, means for blowing air through said nozzles and connected to said casings, respectively, heating means for said air, endless perforated flat belt means spaced from each other and conducted within the space between said nozzles for guarding said material, said material being maintained in a substantially floating and suspended state between said belt means when said air impinges through the latter upon said material, and means without said housing for regulating tension of one of said belt means, whereby the latter prevent contact of said material with said nozzles.

JULIEN DUNGLER.

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