

Oct. 24, 1939.

M. J. BRIZARD

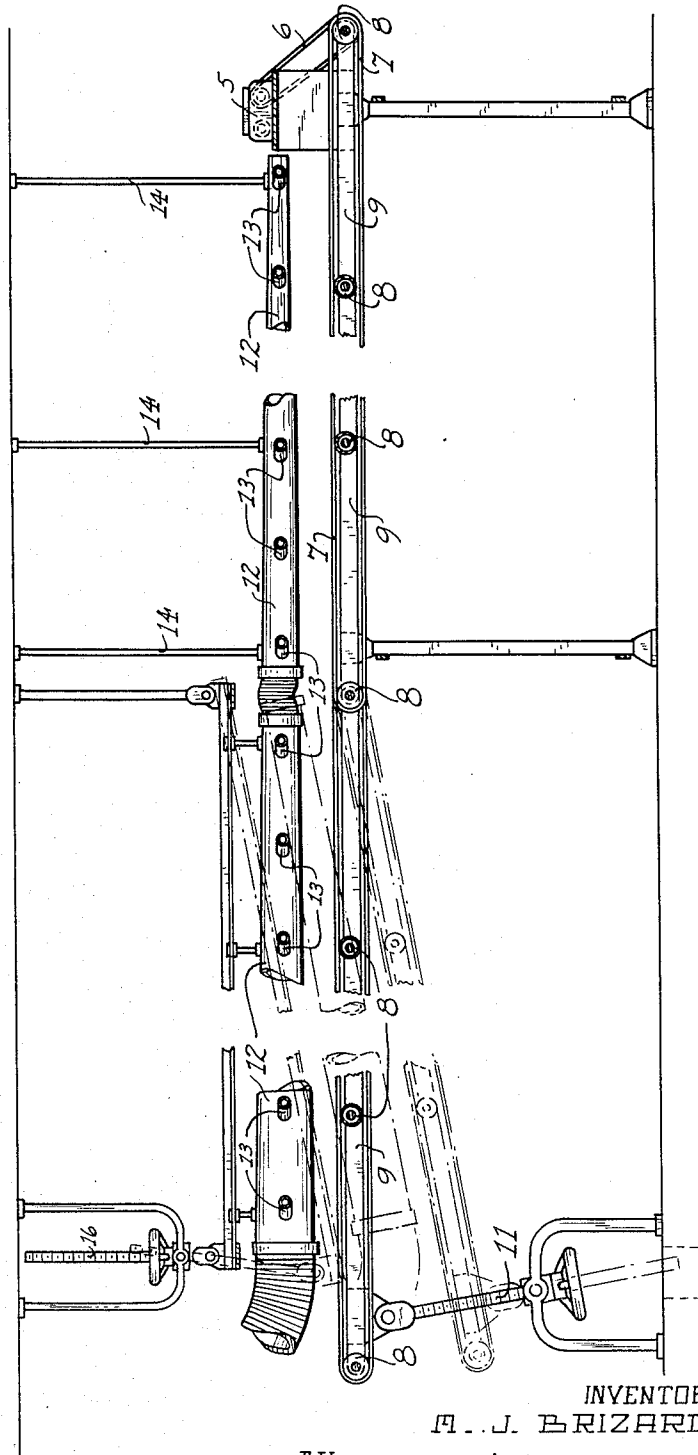
2,177,016

DRYING APPARATUS FOR LABEL MACHINES

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2 Sheets-Sheet 1

FIG -1 -



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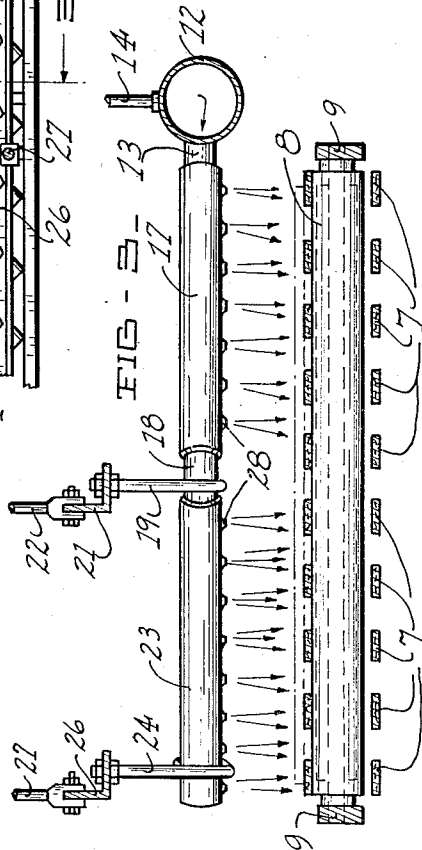
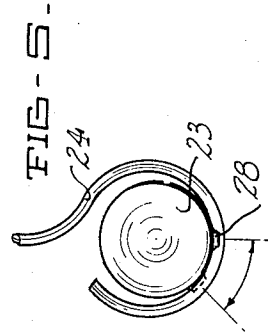
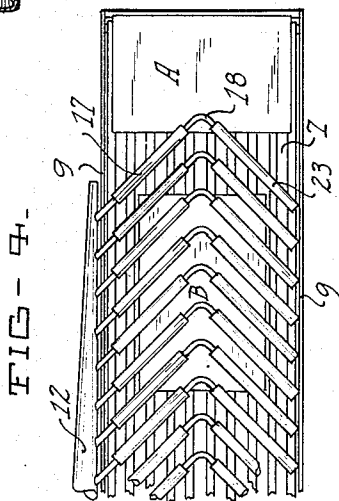
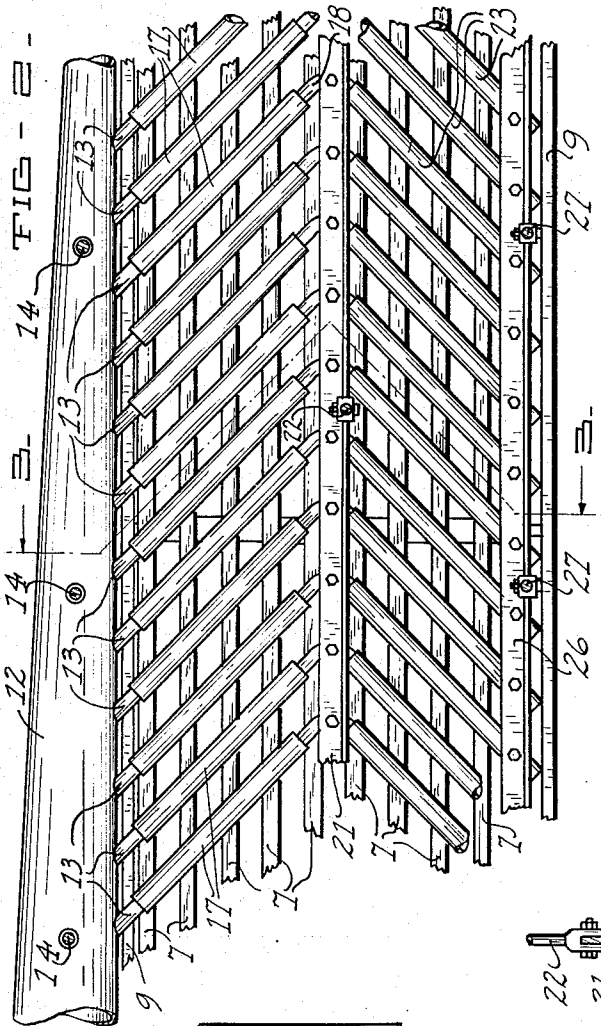
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DRYING APPARATUS FOR LABEL MACHINES

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2 Sheets-Sheet 2



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DRYING APPARATUS FOR LABEL MACHINES

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2 Claims. (Cl. 34—12)

This invention relates to improvements in drying apparatus for label machines and has particular reference to a device for drying and, at the same time, cooling paper delivered from a varnish machine or a varnish dryer of the heater type.

A further object is to produce a device of this character which will conduct sheets through the device, maintaining them flat at all times, irrespective of moisture content of the sheet, static, or atmospheric conditions under which the plant may be working.

A further object is to produce a device of this character which may be adjusted from end to end of the machine to accomplish various objects to be later explained.

A further object is to produce a device of this character which is economical to manufacture, one which takes up a minimum amount of floor space, and one which may be used with other standard equipment where such a device would be applicable.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a side elevation of my device;

Fig. 2 is an enlarged fragmentary top plan view of the air delivery manifold and jet directing pipe;

Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary top plan view on a reduced scale, showing the manner in which the paper proceeds through the device; and

Fig. 5 is an enlarged end elevation of one of the jet directing pipes and its hanger.

In the printing industry, particularly in printing labels, a great deal of difficulty is experienced for the reason that many of these labels and sheets from which the labels are cut are coated with various materials, such as varnish, lacquer, and the like. The result is that as these sheets are delivered with the coating thereon, they must be kept from curling; which they tend to do as the coating surface commences to dry. Some of these sheets will roll into tubes during the drying process, and, consequently, the sheet is lost. Others will merely fold upon themselves, and others may be only cornered. In any event the sheet is entirely lost. This is, of course, very expensive, as at this point the sheet has reached its highest cost to the owner. Also, as these

sheets must be handled very rapidly, a great deal of static electricity develops, which static is particularly bad at certain periods and is greatly influenced by atmospheric conditions.

I have, therefore, devised a system of handling sheets rapidly, which sheets may come from a cold coating apparatus, or may come through a heated dryer to my cooling apparatus.

In the accompanying drawings wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 5 designates any particular form of driving mechanism which, through the medium of a belt 6, drives a plurality of belts 7, which pass over rollers 8 supported upon a frame 9. One end of this frame may be pivoted so as to be vertically adjusted by a screw 11, as shown in dotted lines in Fig. 1. The arrangement thus far described merely forms a conveyor for the sheets shown at A and B in Fig. 4.

Positioned at one side of the frame 9 is a manifold pipe 12, which pipe is tapered from end to end so that a uniform pressure will be exerted on all of the nozzles 13 issuing therefrom. This pipe 12 is preferably hung from the ceiling by hangers 14, and an adjustable hanger 16 is provided for the portion of the manifold overlying the adjustable portion of the conveyor. Attached to each of the nozzles 13 is a jet directing pipe 17, which in turn connects to an elbow 18 supported by a hook 19 from an angle bar 21 supported from the ceiling by hangers 22. Connected to the opposite end of the elbow 18 is a jet directing pipe 23, the free end of which is supported by a hanger 24 suspended from the angle bar 26 which is suspended from the ceiling by hangers 27. It is obvious that there are two jet directing pipes and a connecting elbow for each of the nozzles 13. These jet directing pipes each have jets 28 formed upon their undersurface whereby air may be directed downwardly or sidewise, as desired.

As a result of this construction when the sheets are delivered to the conveyor belts 7 and before they have time to start curling, they pass beneath the pipes, as best illustrated in Fig. 4. The initial blast of air strikes the center of the advancing edge of the paper, gently but firmly holding the sheet downwardly, and this blast then travels to the outer edge of the sheet as the sheet progresses through the device. Consequently, as the sheet becomes dryer and has a greater tendency to curl—and the dryer the sheet becomes the greater the static effect—it will be apparent that the sheet will now be entirely under the pipes

and be held down at all points, and, therefore, will be unable to curl.

As before mentioned, atmospheric conditions very materially alter the characteristics of the drying operation. In other words, some days the air must be directly downwardly on the paper throughout the entire course of the paper through the device. At other times, it is necessary to turn certain of the jet directing pipes by rotating them with relation to their nozzle and to the elbows, so that the air may be directed slightly ahead of the vertical position of the pipe, or slightly back, or some jets may be blown against others so as to produce a more turbulent effect than a straight down effect. By thus adjusting the various jet directing pipes, I am enabled to definitely control the curling of the paper under all conditions.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In a device of the character described, a

conveyor, a tapered manifold pipe positioned adjacent said conveyor and parallel to the movement of material passing thereover, nozzles extending from said manifold pipe, jet directing pipes rotatably positioned on said manifold pipe and diagonally arranged with relation to the travel of said conveyor, elbows connected to each of said jet directing pipes, and a second set of jet directing pipes connected to the free ends of said elbows, all of said jet directing pipes being rotatable with relation to each other and to said manifold pipe.

2. In a device of the character described, a conveyor, a tapered air conducting pipe mounted parallel to said conveyor, the small end of said tapered pipe extending away from the direction of movement of said conveyor, diagonally disposed nozzles extending from said pipe, jet directing pipes rotatably positioned on said nozzles, elbows connected to each of said jet directing pipes, and a second set of rotatable jet directing pipes connected to the free ends of said elbows, said jet directing pipes and said elbows being so arranged as to form a V-shaped arrangement, the apex of the V extending away from the direction of movement of the conveyor.

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