

Aug. 13, 1946.

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2,405,813

DRIER

Filed May 6, 1944

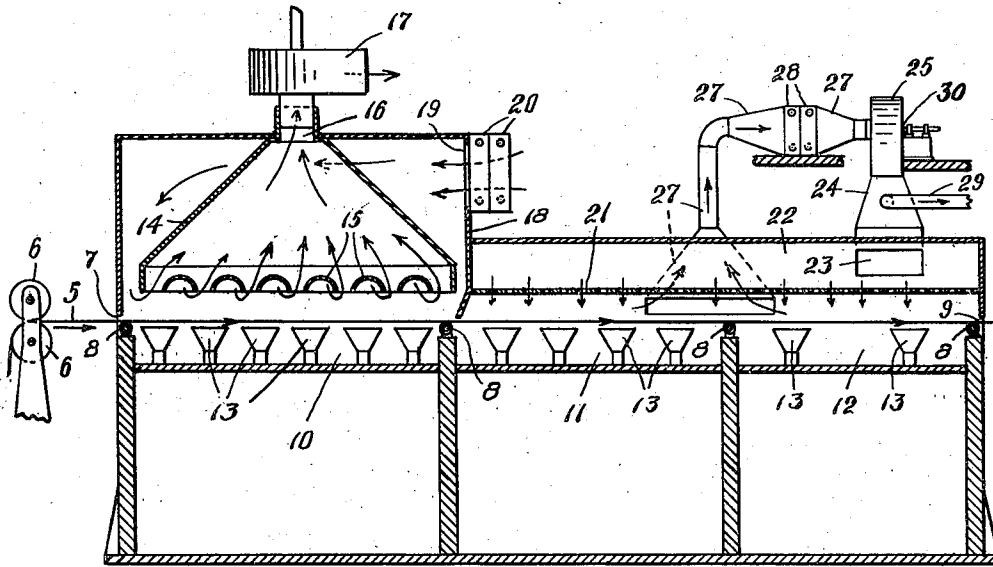


Fig. 1.

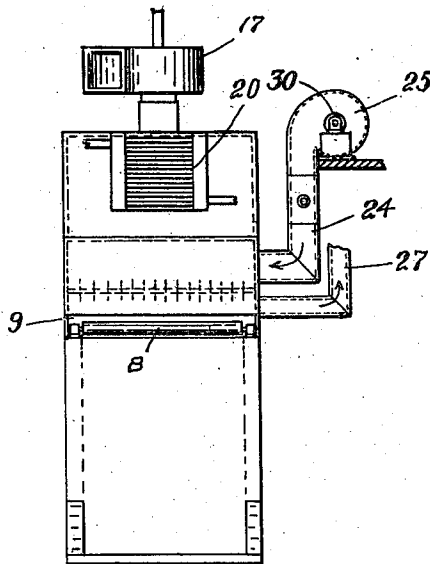


Fig. 2.

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UNITED STATES PATENT OFFICE

2,405,813

DRIER

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Application May 6, 1944, Serial No. 534,410

3 Claims. (Cl. 34-68)

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This invention relates to driers and relates more particularly to driers for drying tape which has been coated with an adhesive.

The so-called industrial tape is coated on one side with an adhesive. The solvent in the adhesive has to be removed by drying the tape before it is rolled up. In the driers now used, heated air is blown against both sides of the tape as it is moved through the driers. This results in too much heat on the coated side causing case hardening of, and the formation of bubbles in, the coating.

This invention is a drier in which the major portion of the heat is applied to the uncoated side of the tape by infra-red lamps which boil off the solvent. Tempered air is supplied to the coated side of the tape for aiding in the drying and for removing the solvent vapor.

An object of the invention is to dry coated tape and the like, without damaging the coating.

The invention will now be described with reference to the drawing, of which:

Fig. 1 is a view in vertical section of a drier embodying this invention, and

Fig. 2 is an end view of the drier of Fig. 1.

The tape 5 after having had its upper side coated with adhesive in conventional equipment, passes between the rolls 6 and then through the inlet 7 of the dryer. The tape 5 is supported in the rollers 8 while in the dryer and after being dried as will be described, passes out the outlet 9.

The drier is divided into three compartments: 10, 11, and 12. In the first compartment 10, the infra-red lamps 13 are located under the tape 5 and supply heat for boiling the solvent from the coating upon the upper side of the tape.

The hood 14 is located in the compartment 10 above the tape 5 and has in its inlet, the baffles 15. The outlet 16 of the hood 14 is connected to the inlet of the exhaust fan 17. The wall 18 of the compartment 10 has an air inlet opening 19 therein and in alignment with which are placed the air heaters 20.

The fan 17 draws outdoor air through the heaters 20 and into the compartment 10 where it passes between the sides of the hood 14 and the upper vertical walls of the compartment 10 and into the inlet of the hood 14. The outdoor air tempered by the heaters 20 passes over the upper surface of the tape 5 as it enters the hood 14 and acts to remove the solvent vapors evaporated from the coating on the tape and to aid in the drying of the tape. The solvent laden air

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is then exhausted by the fan 17 into the atmosphere or into a suitable solvent recovery system.

It is desired not to overheat the coating on the tape 5 so that all the drying is not accomplished in the first compartment 10. The partially dried tape after leaving the compartment 10 passes into the second compartment 11 where it passes over infra-red lamps, fewer in number than those in the compartment 10, and then into the third compartment 12 where it passes over infra-red lamps, fewer in number than those in the compartment 11.

The perforated wall 21 extends over the tape 5 in the compartments 11 and 12 and forms the lower wall of the plenum chamber 22. The chamber 22 has the air inlet 23 which is connected by the duct 24 to the outlet of the fan 25.

The air outlet 26 is in one of the vertical side walls of the drier, above the tape 5 in the compartments 11 and 12 and is connected by the ducts 27 to the inlet of the fan 25. The air heaters 28 are inserted between the ducts 27 in the path of the air flow.

The duct 29 vents solvent laden air to the atmosphere or to a solvent recovery system. Fresh make-up air is drawn into the axial inlet of the fan 25 at 30.

The heated air from the plenum chamber 22 passes through the perforated wall 21 and passes over the tape before being exhausted through the outlet 26, and removes the vapors evaporated from the tape by the heat from the lamps 13, and aids in the drying.

By the use of the infra-red lamps for evaporating the solvents from the coating on the tape, the heated air supplied in contact with the coating on the tape is not depended upon for this function so that no intense heat is applied to the coating. As a result the coating is not case hardened, and no bubbles are formed therein.

By the use of the three described compartments in the drier, the drying is tapered from maximum in the first to minimum in the third with the result that the drying is completed in the dryer with the tape as it passes therefrom being relatively cool, so that it can be handled for being rolled up, etc.

While three compartments have been illustrated as being included in the drier, other arrangements involving features of this invention could be used.

While the material treated has been described as cooled tape, other material such, for example, as wire could be treated.

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What is claimed is:

1. A drying system for drying coated tape and the like, comprising a housing containing a plurality of infra-red lamps, means for passing a tape to be dried past said lamps, whereby the heat from said lamps is applied to one side of said tape, a hood converging from its inlet to its outlet, said hood having its inlet opposed to, and spaced from, said lamps, spaced baffles in said inlet, an air heater, means including said housing defining a passage on opposite sides of and into said hood for air from said heater, and a fan connected to said outlet for drawing air through said heater and for withdrawing heated air and vapor from the other side of said tape.

2. A drier for coated tape and the like, comprising a housing containing a plurality of infra-red lamps arranged in a row, means for passing a tape to be dried past said lamps whereby heat from said lamps is applied to one side of said tape, a hood converging from its inlet to its outlet, said hood having its inlet opposed to, and spaced from, lamps of said plurality, spaced baffles in said inlet, a fan connected to said outlet for withdrawing heated air and vapor from the other side of said tape, a perforated wall opposed to and spaced from other lamps of said

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plurality, said other lamps being located downstream with respect to tape movement, from said lamps opposed to said hood inlet, an air heater, an air outlet between said passing means and said wall, and means for recirculating air through said heater, the perforations in said wall and said outlet.

3. A drier for coated tape and the like, comprising a housing containing a plurality of infra-red lamps arranged in a row, means for passing a tape to be dried past said lamps whereby heat from said lamps is applied to one side of said tape, a hood converging from its inlet to its outlet, said hood having its inlet opposed to, and spaced from, lamps of said plurality, spaced baffles in said inlet, means for supplying heated air into said inlet, a fan connected to said outlet for withdrawing heated air and vapor from the other side of said tape, a perforated wall opposed to and spaced from other lamps of said plurality, said other lamps being located downstream with respect to tape movement, from said lamps opposed to said hood inlet, an air heater, an air outlet between said passing means and said wall, and means for recirculating air through said heater, the perforations in said wall and said outlet

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