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SOLVENT RECOVERY APPARATUS FOR RUBBER SPREADING MACHINES

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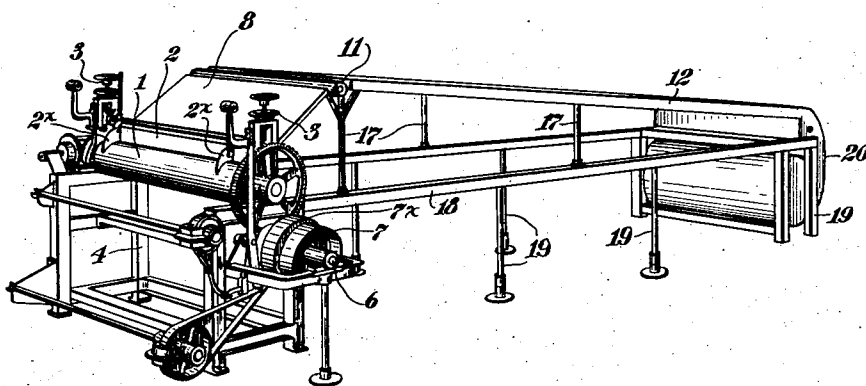


Fig. 1

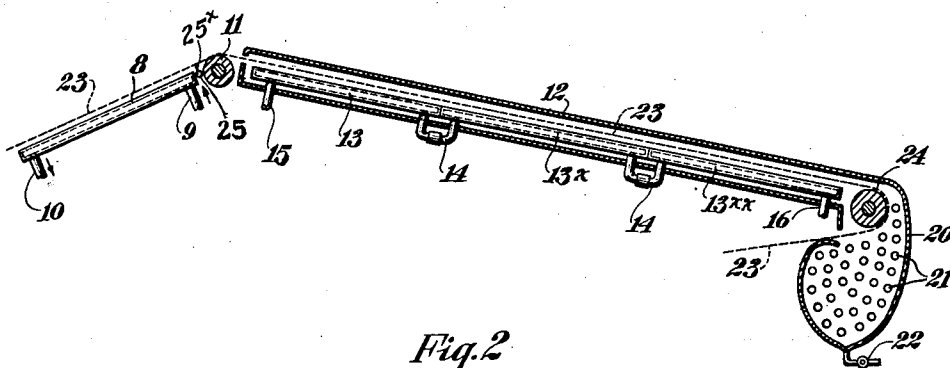


Fig. 2

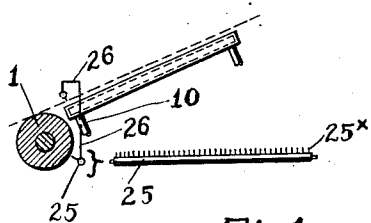


Fig. 1a

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SOLVENT-RECOVERY APPARATUS FOR RUBBER-SPREADING MACHINES

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The object of the present invention is to provide an effective apparatus applicable to rubber and other plastic spreading machines for the recovery of solvent from rubber applied to fabrics. The invention will be described with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of an embodiment of the invention as applied to a rubber spreading machine, and

Figure 1A is a diagrammatic view showing the static ground arrangement.

Figure 2 is a longitudinal section of the same, omitting driving elements of the machine and the frame.

In the drawings 1 indicates a power driven spreader roll, 2 a spreader blade, 3 adjusting screw members for raising and lowering the plate and 4 a supporting frame, the spreader roll being driven through a gear and pinion connection with shaft 6 having pulley 7, 7* for connection with driving belts. Disposed rearwardly of the spreader roll is a hollow cooling plate 8 which may cool in any suitable way as by the passage of water through pipe 9 into the interior of the plate at the top thereof, the water being withdrawn through pipe 10. At the right of cooling plate 8 is a roller 11 over which the fabric passes, the fabric entering a chamber 12. Within the chamber is a heating plate or a series of heating plates, three being shown in the present instance, indicated at 13, 13* and 13**. The plates are hollow and communicate with one another via the pipes 14. Steam may be passed into one of the plates, as for example plate 13, via pipe 15 and the steam with any condensate may be withdrawn through pipe 16.

Chamber 12 and the heating plates are supported by risers 17 from a frame 18 held by the vertical supports 19.

The heating chamber is downwardly inclined and at its lower and discharge end communicates with a condenser 20 within which may be arranged cooling pipes 21, the condenser at its base being provided with an outlet 22 for the condensate. The fabric is indicated at 23, Figure 2. After leaving roller 11 it passes through the heating cham-

ber, lying upon or adjacent the heating plates 13, 13* and 13**, thence passing within the condensing chamber over a roller 24 in said chamber and thence from the outlet of the condensing chamber to a take-up member.

Fabric in passing under blade 3 has spread thereon a usual rubber compound which lies adjacent the blade and is held against lateral displacement by the sub-blades 2*, the compound being in a soft plastic condition containing a considerable proportion of solvent. As the fabric passes over the cold plate 8, the rubber compound just spread is congealed in order to prevent premature evaporation of the solvent. It will be noted that the plate is upwardly inclined, the angle being such as to give ready visibility of the fabric and enable continual inspection thereof by the operator.

As the fabric passes over the heated plates the solvent is evaporated and the heavy fumes tend to pass downwardly, the inclination of the heating chamber assisting such movement so that the fumes are guided to the condenser which causes the solvent to revert to its fluid state.

As the solvent is collected within the condenser it may pass therefrom through pipe 22.

In the drawings and particularly Figure 1A, I have shown diagrammatically means for removing static electricity from the spreading roller, from the top of the fabric as it leaves the spreading roller and from the bottom surface of the fabric as it leaves the cooling plate. Such means comprises a plurality of rods 25, which rods may be hollow, each rod having connected thereto a plurality of closely spaced fingers 25* adapted to lie in contact with spreader roller in the one case and in contact with the top and bottom of the fabric sheet in the other cases. The said bars and fingers may be made of brass or other material having ready conductivity, and they may be grounded, as by wire 26, to a suitable member as for example cold water pipe 10. By such means the static generated by the frictional contact of the spreader plate and spreader and the spreading and cooling elements upon the cloth

is effectively removed and carried to a point away from the apparatus so that all danger of ignition of the vapors within chamber 12 is obviated.

5 Having described my invention what I claim and desire to secure by Letters Patent is as follows:—

1. In apparatus of the character described, an upwardly inclined hollow cooling plate
10 for receiving and guiding a sheet of fabric in flat condition, a heating chamber relatively long and narrow and downwardly inclined relatively to said cooling means, a guide roller intermediate the cooling plate and heating
15 chamber, a condensing chamber communicating with the heating chamber at the discharge end of the latter and means for guiding the sheet of material from the heating chamber into and out of the condensing chamber.
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2. In apparatus of the character described, a means for receiving and cooling a fabric sheet, means for thereafter heating the fabric sheet, comprising a hollow plate member,
25 a chamber within which the heating means is disposed and adapted to confine vapors, means for condensing said vapors, said means being in communication with the fabric heating means, and sets of contacting fingers disposed for contact with the surfaces of the
30 fabric prior to its entry into said chamber and grounding means for said fingers.

In testimony whereof, I have signed my name to this specification.

35 ERNEST ARENT ABELES.

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