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Z. OSTENBERG

COATING MACHINE

Filed Aug. 31, 1921

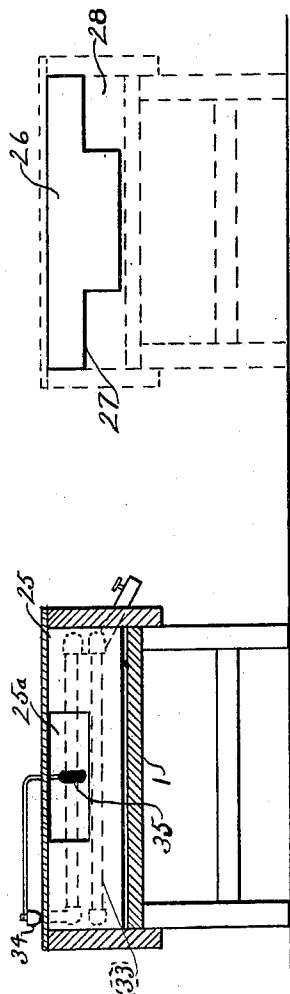


FIGURE 2

FIGURE 3

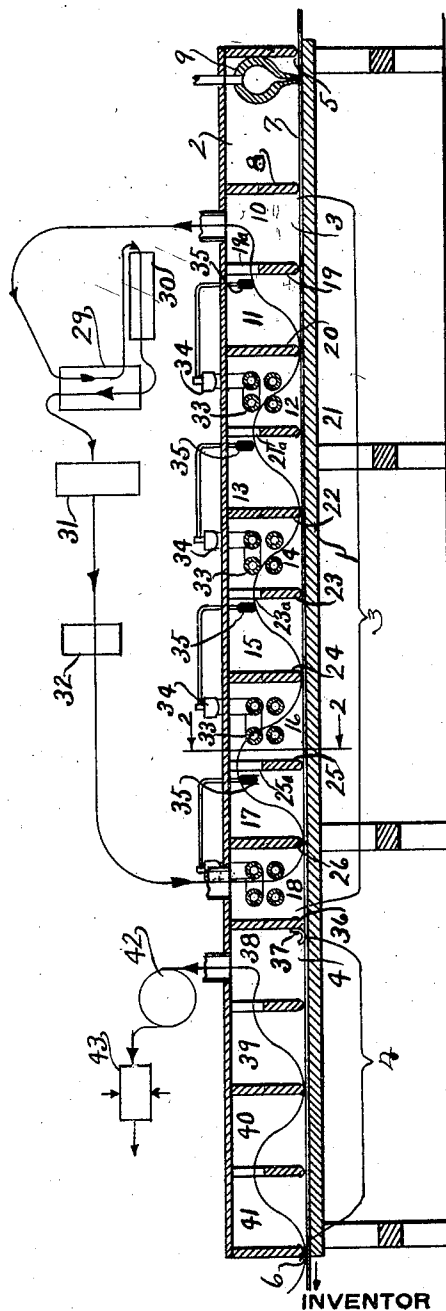


FIGURE 1

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COATING MACHINE.

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To all whom it may concern:

Be it known that I, ZENO OSTENBERG, a citizen of the United States, and resident of San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Coating Machines, of which the following is a specification.

This invention relates to machines for coating a moving strip of material with a suitable composition as in the manufacturing of artificial leather.

It is the object of the invention to provide a machine of the character indicated in which means is provided for removing the minute bubbles present in the newly applied coating material; in which a chamber of novel construction is provided to effect the uniform diffusion of drying air over the moving strip of coated material; in which novel means are arranged in said drying chamber to maintain the drying air at a substantially uniform temperature throughout the drying process; in which certain novel methods of solvent recovery are utilized. It is a further object of my invention to provide a machine of the character indicated which will be simple in construction, positive in operation and highly efficient in its practical application.

In the drawing,—

Figure 1 is a longitudinal and vertical section through my improved coating machine.

Figure 2 is a section on 2—2 of Figure 1.

Figure 3 is a side elevation of one of the baffle plates used in my machine.

Referring more particularly to the drawing, 1 indicates a table of suitable material and dimensions having three chambers as 2—3 and 4 built thereon, but having slots as 5 and 6 formed in its ends to permit the passage therethrough of a strip of material to be coated as indicated at 7.

Partition 8 dividing chambers 2 and 3 depends from the top of the structure to a point close to the surface of material 7 so as to prevent any material passage of air through chamber 2 which is in consequence called a dead air chamber, and in which a coating knife as 9 is arranged as shown.

Chamber 3 is divided into a number of small compartments as 10—11—12—13—14—15—16—17—18 formed by depending par-

titions 19—20—21—22—23—24—25—26 extending to points in close proximity to the material being coated. The partitions 19—21—23—25 are preferably formed as shown in Figure 2 with openings formed in their upper edges as at 19^a—21^a—23^a—25^a. The alternating partitions 20—22—24—26 are preferably formed with spaced openings in their lower edges as shown at 27—28 in Figure 3. The effect of this construction is that air entering compartment 18 must pass to the sides and bottom thereof to pass partition 26 and then to the center and top of the next compartment to pass the partition following, so that the air is effectually diffused and mixed in its passage through chamber 3 and all portions of the strip 7 are reached by it.

Chamber 3 forms a part of a closed air circuit, the air passing from said chamber through a heat exchanger 29, thence through a condenser 30, back through heat exchanger 29 and thence to compartment 18 in chamber 3 through a pre-heater 31 and fan 32.

Since it is highly desirable that the temperature of the air be maintained somewhat uniform throughout chamber 3 a series of steam coils as 33 is inserted in each of the chambers 12—14—16—18. In order to secure the desired degree of heat from each coil the valve as 34 controlling the flow of steam therethrough is automatically operated by a thermostat as 35 arranged in the path of the air current at the point where it flows through the center opening in the partition between the next two succeeding compartments. By this means the moisture bearing air in compartment 11 may be kept up to the same temperature as the dry air entering compartment 18.

Partition 36 extends downwardly to a point approaching material 7 and carries a flexible lip 37 in order to entirely close off chamber 3 from chamber 4. Chamber 4 is provided with several compartments as 38—39—40—41 in the same manner as chamber 3 but no heating coils are provided. The air drawn into chamber 4 through a slot 6 by fan 42 is discharged into an absorption recovery system forming no part of this invention and therefore indicated diagrammatically at 43.

In operation the material 7 is moved through the machine in the direction indicated by the arrow by a mechanism not

shown. Passing under knife 9 the coating material is deposited upon it, but in this flowing on of the coating material numerous small bubbles are formed. By passing the freshly coated material first through dead air chamber 2, these bubbles are allowed to break so that the material enters chamber 3 perfectly uniform in distribution and covering. As it travels through chamber 3 the air heated and diffused as described effectually removes most of the solvents from the coating material, the balance being removed during its passage through chamber 4. After emerging from chamber 4 the material is ready for additional coating or embossing as the case may be.

I claim:

1. A coating machine including a drying chamber provided with openings for permitting the passage of a strip of coated material therethrough, baffle plates arranged therein in close proximity to said material, alternate plates having central openings formed in one edge thereof, and the intermediate plates having openings formed in the ends of the opposite edge.

2. A coating machine including a drying chamber provided with openings for permitting the passage of a strip of coated material therethrough; baffle plates arranged therein in close proximity to said material, to form a series of compartments, alternate plates having central openings formed in one edge thereof and the intermediate plates having openings formed in the ends of the opposite edge, heating units arranged in alternate compartments, and a thermostat arranged in each intermediate compartment and operatively connected to the controlling valve of the heating unit in an adjoining compartment.

3. A coating machine including a drying chamber provided with openings for permitting the passage of a strip of coated material therethrough; baffle plates suspended therein in close proximity to said material, alternate plates having central openings formed in their upper edges, and the intermediate plates having openings formed in the ends of their lower edges.

4. A coating machine including a drying chamber provided with openings for permitting the passage of a strip of coated material therethrough; baffle plates suspended therein in close proximity to said material, alternate plates having central openings formed in their upper edges and the intermediate plates having openings formed in the ends of their lower edges; a valve

controlled heating element arranged between two of said plates, and a thermostat arranged adjacent the upper opening in the next succeeding plate and operatively connected to the valve of said heating element.

5. A coating machine including a drying chamber provided with openings for permitting the passage of a strip of coated material therethrough, baffle plates arranged therein in close proximity to the coated side of said material, said plates having openings formed therein, the openings in adjoining plates being offset with relation to each other.

6. A coating machine including a drying chamber provided with openings for permitting the passage of a strip of coated material therethrough, baffle plates arranged therein in close proximity to the coated side of said material, and having openings formed therein thereby forming communicating compartments, a valve controlled heating element arranged in one compartment, and a thermostat arranged in an adjoining compartment and operatively connected to the controlling valve of said heating element.

7. A coating machine including a table, a chamber arranged thereover, and provided with openings for permitting the passage of a strip of coated material over said table and through said chamber, baffle plates arranged in said chamber to form compartments therein, automatically regulating heating units arranged in alternate compartments of said chamber, a moisture extracting and heat regenerating mechanism, means for drawing air from one end of said chamber passing it through said moisture extracting and heat regenerating system and returning it to the other end of said chamber.

8. A coating machine including a table, a plurality of chambers arranged thereover, and provided with openings for permitting the passage of a strip of coated material over said table and through said chambers, baffle plates arranged in said chambers to form compartments therein, automatically regulated heating units arranged in alternate compartments of one chamber, a moisture extracting and heat regenerating mechanism, means for drawing air from one end of said chamber passing it through said moisture extracting and heat regenerating system and returning it to the other end of said chamber, and means for circulating air through the other chamber in an opposite direction to the movement of the coated material.

ZENO OSTENBERG.