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APPARATUS FOR RECOVERING VEHICLES USED IN APPLICATION OF LACQUER, JAPAN, AND OTHER COATINGS.

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1,069,033. Patented July 29, 1913.

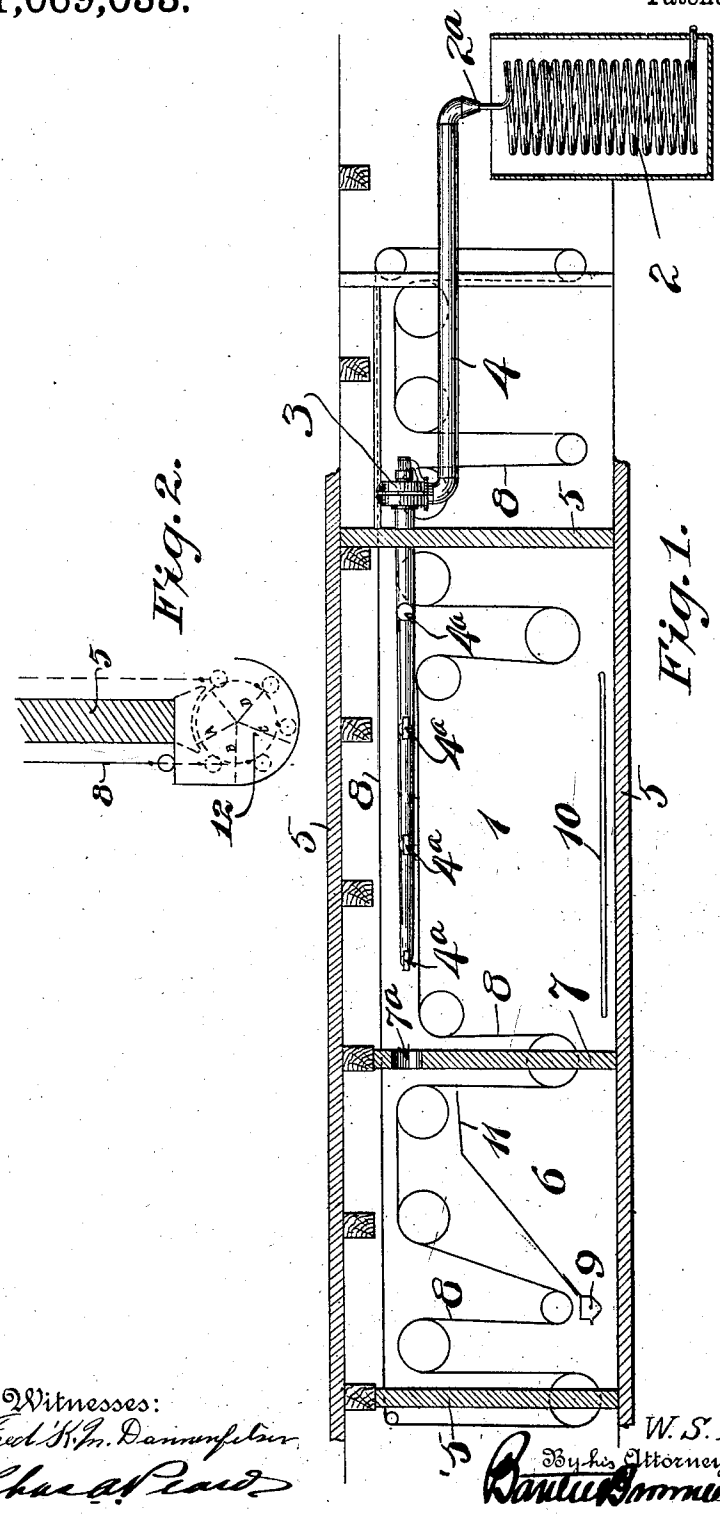


Fig. 2.

Fig. 1.

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APPARATUS FOR RECOVERING VEHICLES USED IN APPLICATION OF LACQUER, JAPAN, AND OTHER COATINGS.

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To all whom it may concern:

Be it known that I, WILLIAM S. ROWLAND, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Apparatus for Recovering Vehicles Used in Application of Lacquer, Japan, and other Coalings, of which the following is a full, clear, and exact description.

My invention relates to a means and process for the recovery of the vehicle or solvent used in the application of lacquer, japan and other coatings to material or manufactured articles.

The object of the invention is to secure economy.

In the accompanying drawings Figure 1 is a conventional showing of my improved apparatus, said view being partly in section. Fig. 2 is a detail view, slightly enlarged and showing conventionally one of the features of construction.

In the drawing—1 conventionally represents what I may term a kiln or drying chamber.

2 is a conventional representation of a condenser of any suitable form.

3 represents a blower, pump or exhauster, or equivalent means, so associated with the kiln and condenser as to operate in a manner to cause the vapors in the kiln to flow to the condenser. In the particular apparatus shown this blower 3 is placed between the kiln chamber 1 and the condenser 2 and located in a suitable conduit 4.

4^a 4^a are openings in and near one end of the pipe 4 arranged to receive the vapors, these openings being disposed in any suitable location best adapted for the intended purposes.

2^a represents the point where the conduit or pipe 4 is connected with the condenser 2.

As is indicated, the kiln chamber 1 is bounded by a suitable wall 5. In the preferred form of the apparatus I provide another chamber 6 which I will term the dipping chamber wherein the application of the material to the articles to be coated occurs.

7 conventionally represents a partition which preferably separates the chambers 1 and 6.

In the particular form of my invention shown herein, 8 represents a belt or chain conveyer upon which the articles to be coated may be placed or hung at some convenient point outside of the apparatus and by which said articles are conveyed first into the dipping chamber 6, where said articles may be lowered into a dipping tank 9, and then passed on over a dripping board 11 into the kiln chamber 1, wherein the articles are dried. Suitable passages trapped in any suitable way are provided in the walls of the chambers to permit the entrance and exit of the goods, and it is preferred that the entrance and exit passages in the outer walls of the chamber should be comparatively tight, while, as will later be seen, this is of no material consequence as to the passages in the partition 7, where the means for accelerating the drying is such as later described.

10 represents conventionally one length of a heating coil located in the chamber 1, which serves as one means for accelerating the drying of the goods within the kiln chamber 1 by raising the temperature therein. Obviously, other suitable means may be substituted in place of said heater.

Traps may be located at whatever positions it is desirable to have them, and I have shown in Fig. 2 conventionally one of the many forms of traps which may be employed, in which 12 represents the revolving shutter element thereof protecting the entrance passage through the wall 5. Since I lay no claim to any specific trap construction, a further description thereof is needless.

In the process of covering material or manufactured articles with lacquer, japan and other similar coatings, an appropriate solvent or vehicle is employed, which upon evaporation leaves upon the material or articles the desired coating, previously dissolved and rendered fluid by the aforesaid solvent or temporarily thinned by the aforesaid vehicle to facilitate application. In other words, it should be understood that the coating mixture consists broadly of two principal elements, viz., the material which is to be retained upon the article and the vehicle (frequently a solvent) by which said material is temporarily thinned for the purposes of application. The vehicle or

solvent is therefore in the majority of cases only a temporary expedient and in such instances is permitted, or made to, evaporate. Heretofore, the vapors have become lost and dissipated whereas by my process it is the intention that these vapors shall be recovered and retained whereby great economies are effected. In the apparatus such as shown the wall 5 constitutes as tight an inclosure as possible, and while not necessarily air-tight, it is nevertheless constructed with as few openings as possible to provide for the proper entrance and exit of the articles to be coated, which openings may be suitably gated, if desired. The blower 3 preferably provides a means for continuous exhaustion of the kiln chamber, thereby creating a very slightly reduced pressure therein. In this way any draft through the openings which provide entrance and exit for the goods is in a direction to prevent the escape of vapor or gas caused by evaporation within the chamber or chambers.

From the foregoing it will be seen that when the apparatus is in use the volatilized or gasified solvent or vehicle is restrained within the aforesaid chambers and is permitted to escape only through the aforesaid pipe 4, which conducts said volatilized or gasified element to the condenser wherein it is transformed to a liquid state, in which latter form it may be retained and preserved for further use.

It is apparent that when this process is practised on a substantial scale great commercial economies heretofore unattained are secured.

It should be understood that my process broadly should not be limited to the employment of any particular apparatus, and indeed, it is not essential to the broad apparatus claimed that a separate dipping chamber be associated with the kiln chamber. It is however very desirable that an apparatus embodying the elements broadly speaking referred to herein be employed for the attainment of the greatest economies.

It will be understood, of course, that any volatilized or gasified elements contained in the dipping chamber will be drawn off through the pipe 4 and conveyed to the condenser. In this particular instance the partition 7 may have a passage 7^a to permit said element to flow from said dipping chamber into the kiln chamber and thence to the conduit openings 4^a.

It should be understood that I have shown herein conventionally only the preferred form of an apparatus suitable for the practice of the process and method described, and that various modifications may be resorted to without departing from the spirit or scope of the invention.

What I claim is:

1. An apparatus for the recovering of solvents used as a vehicle for coating manufactured articles with japan, lacquer or other coating, comprising a kiln for heating the coating material and driving off and confining the vapor of the solvent thereof, in combination with a carrier extending partially within said kiln and by which the articles to be coated are passed through said kiln, a tank containing the coating material so placed relatively to the carrier that the articles to be coated may be passed therethrough before entering the kiln, an inclosure for the space in which said tank may be placed and within which inclosure the coated articles may be allowed to drip before entering the kiln, said inclosure being arranged adjacent to the kiln and connected therewith by a passage, trapped passages for allowing the articles on the carrier to enter and depart from the dipping inclosure and the kiln with the least admission of air and loss of vapor-laden air, and means for transferring the solvent vapors and the air containing them to a condenser, and a condenser by which said solvent vapors are converted into liquid form.

2. An apparatus for the recovering of solvents used as a vehicle for coating manufactured articles with japan, lacquer or other coating, comprising a kiln for heating the coating material and driving off and confining the vapor of the solvent thereof, in combination with a carrier extending partially within said kiln and by which the articles to be coated are passed through said kiln, a tank containing the coating material so placed relatively to the carrier that the articles to be coated may be passed therethrough before entering the kiln, an inclosure for the space in which said tank may be placed and within which inclosure the coated articles may be allowed to drip before entering the kiln, said inclosure being arranged adjacent to the kiln and connected therewith by a passage, trapped passages for allowing the articles on the carrier to enter and depart from the dipping inclosure and the kiln with the least admission of air and loss of vapor-laden air, means for transferring the solvent vapors and the air containing them to a condenser, a condenser by which solvent vapors are converted into liquid form, and a trap for the passage from the dipping inclosure into the kiln through which the coated articles are passed by said carrier.

3. In an apparatus for the recovering of a solvent used as a vehicle for coating manufactured articles with japan, lacquer or other coating, which comprises a kiln for heating the coating material and for confining the vapor of the solvent driven off during said heating, in combination with a carrier extending partially within said kiln and by which articles to be coated are passed

therethrough, a second inclosure adjacent to said heating kiln and through which said carrier also passes, with means therein for applying a coating to the articles to be coated as they pass through said inclosure, a passage connecting said second inclosure with said kiln through which the coated articles are conveyed by said carrier from said second inclosure to said kiln, with a trap for said passage, a condenser by which the solvent vapors are converted into liquid form, and means for transferring the solvent vapors in the kiln to said condenser.

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