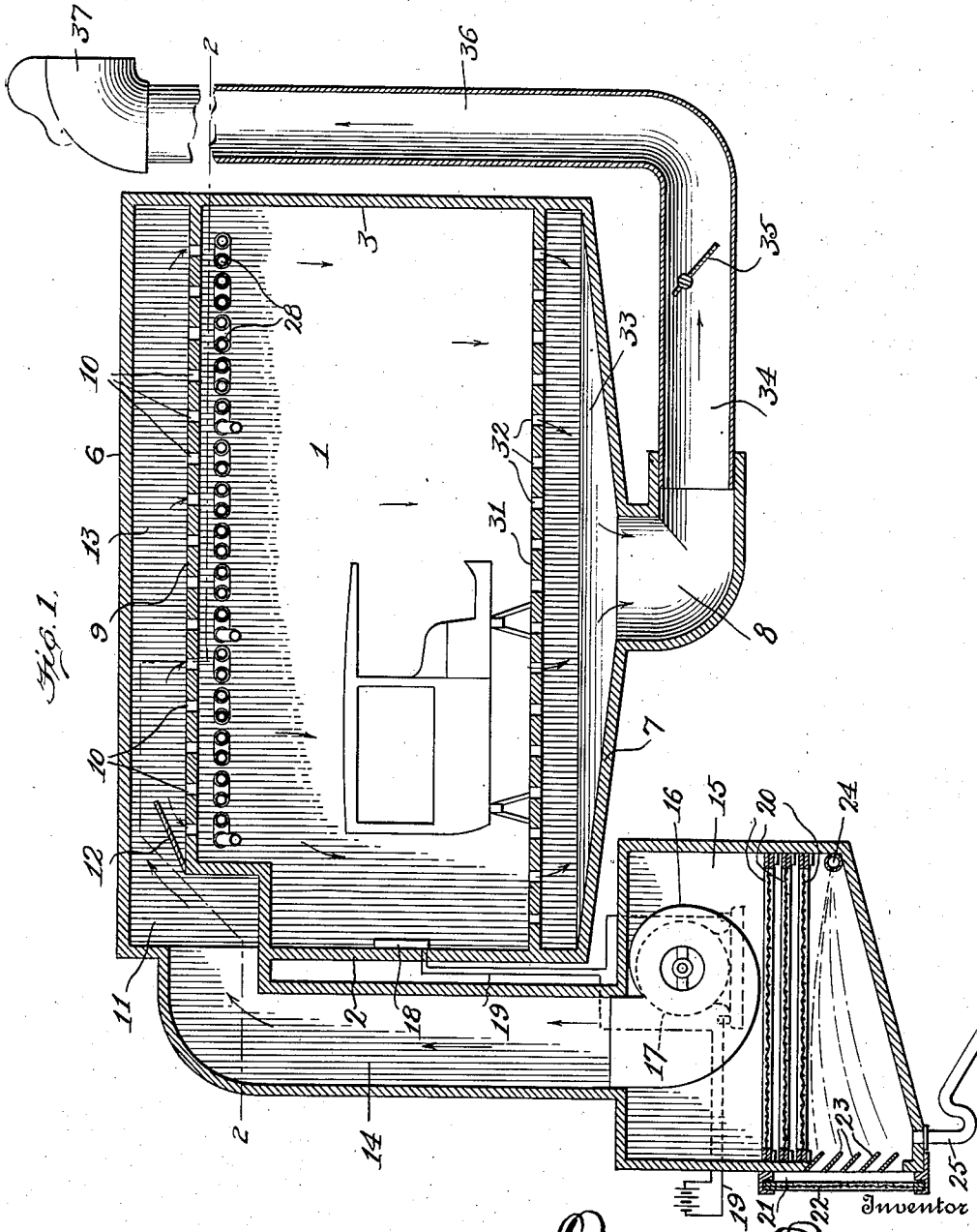


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 DRYING ROOM AND APPARATUS.
 APPLICATION FILED MAY 15, 1916.

1,211,325.

Patented Jan. 2, 1917.

2 SHEETS—SHEET 1.



Witness

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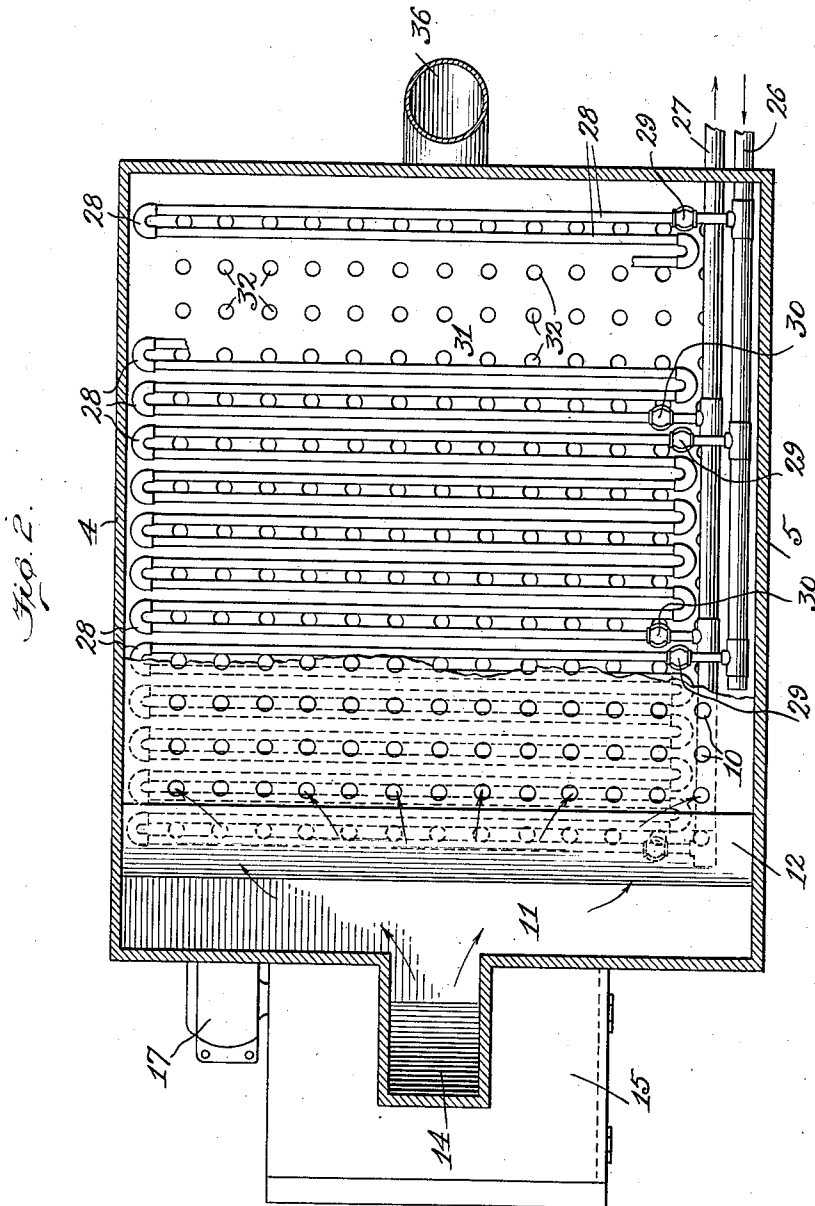
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UNITED STATES PATENT OFFICE.

OWEN LILLY, OF MEMPHIS, TENNESSEE.

DRYING ROOM AND APPARATUS.

1,211,325.

Specification of Letters Patent.

Patented Jan. 2, 1917.

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To all whom it may concern:

Be it known that I, OWEN LILLY, a citizen of the United States residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Drying Rooms and Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to driers or drying rooms and apparatus for artificially expediting the process of drying painted or varnished surfaces in general, and has for an object the production of means whereby the aforesaid results may be accomplished with an unusual and marked degree of efficiency, great accuracy and precision, and a minimum expenditure of time.

While capable of general use and application as a means of evaporating various menstrooms in which the body materials of paints and varnishes are ordinarily dissolved, this invention is primarily designed and adapted for drying the highly finished surfaces of vehicle bodies. Ordinarily carriage manufacturers, for example, set apart a room or rooms wherein paint or varnish is applied, the painted or varnished vehicle, or bodies of vehicles, then being allowed to remain either in the same room or in a special drying room, kept as free as possible from dust, until the paint or varnish shall have dried sufficiently. By such unaided air-drying process from one day to one week is required, depending upon atmospheric and barometric conditions, for the air to absorb the materials which are to be evaporated from the painted or varnished surfaces, and one object of the present invention is to facilitate this drying of vehicle bodies, and consequently the amount of work that can be finished in a given time.

A further object is the production of novel means for thoroughly washing and screening the air used in the present improved drying apparatus and process.

A further object is that of delivering to work in the drying room a constantly replenished air-supply under a forced, but accurately and automatically controlled draft.

A further object of the present invention is to provide means whereby the drying medium may be introduced into a drying room from above with great uniformity of pres-

sure; may be heated and caused to travel downward throughout the entire area of the room at a velocity so uniform and extremely low as to avoid streaking or disfiguring newly finished work, which would otherwise result from the action of independent or uneven air currents.

With the foregoing and other objects and advantages in view the present invention will be hereinafter particularly described, and set forth in the claims following.

In the accompanying drawings which form part of this application for Letters Patent, and whereon corresponding characters refer to like parts in the several views: Figure 1 is a longitudinal central vertical sectional view of the invention showing all parts in operative relation, and a vehicle body upon the drying floor in process of drying, and, Fig. 2 is a horizontal section of a drying room taken on the line 2—2 of Fig. 1, showing a fragment of a false ceiling, a section of underlying heating pipes, and a portion of the drying floor below.

Reference being had to the drawings and numerals thereon, it should be noted at the outset that the illustrations employed herein are merely diagrammatic representations of a form of drying room or apparatus exemplifying the present invention; and that the particular form, proportion and structural arrangement of parts shown may be variously changed and rearranged without in the least departing from the spirit of the present invention, or detracting from the novel results accomplished.

The present illustrations it will be observed, disclose a drying chamber or room 1 of substantially rectangular form, having closed end walls 2, 3, similar side walls, 4, 5, a ceiling 6, and a sub-floor 7, the latter by preference converging downward from its outer edges to a central outlet 8 of liberal dimensions as shown by Fig. 1, and for purposes which will later appear. Beneath ceiling 6 is positioned a false ceiling 9, at such distance from ceiling 6 as may be necessary to insure sufficient volumetric capacity for the air that will be introduced between said ceilings. The false or under ceiling 9 is uniformly perforated by a multiplicity of air ports 10 throughout its entire area, and as thus far described, the material, or materials, employed may be metal or wood or other suitable substances. Crossing the entire upper end of drying

chamber or room 1, above wall 2 is a transverse inlet flue 11 for delivering air over a deflector plate 12 into a compression chamber 13 between ceilings 6 and 9. At or about its center, said flue 11 is entered by a riser supply pipe 14, in direct communication with an air box 15 below. Within the said air box 15 and communicating directly with the lower end of said riser pipe 14 is a suitable rotary blower 16 arranged and adapted to be driven by an electric or other form of motor 17 preferably at one side of the air box, as shown. This motor 17 in turn is automatically controlled by agency of a thermostat 18, of any approved form, located within the room or chamber 1, and adapted to make and break the electric circuit, diagrammatically indicated at 19, to start and stop the said motor for the purpose of forcing more or less air as occasion demands.

Crossing the interior of air box 15 is a series of horizontally arranged parallel air screens 20, of cloth or other suitable material, for the purpose of screening the air supply before it reaches the blower 16 aforesaid; while similarly guarding the entrance 21 of box 15 is a corresponding but vertically positioned air screen 22 as shown by Fig. 1. The said entrance 21 of air box 15 is further provided with a series of louvers 23, upon which are directed a multiplicity of streams of water from a spray-pipe 24 crossing the back of said air-box transversely and communicating with a suitable water supply (not shown). There is provided also a drain pipe 25 at the lowermost point in air box 15, as a means of discharging water which has thus been employed in practically washing the air supply in its passage through box 15 between the outer and inner screens aforesaid.

Immediately below the false ceiling 9, and at one side of room 1, are positioned main supply and exhaust or discharge pipes 26 and 27, respectively, for a suitable heating medium, such as steam or hot water from any suitable source of supply (not shown), the circulation of such heating medium being as indicated by arrows in Fig. 2. Projected from the said main supply pipe 26, in a transverse direction across the room or drying chamber 1, immediately beneath its false ceiling 9, are lateral heating pipes 28 arranged in groups as best shown by Fig. 2. Each of the said groups of lateral pipes 28 after flanking several lines of ceiling perforations 10, discharges into the common exhaust pipe 27 as clearly shown, each group being provided with suitable inlet and outlet valves 29 and 30 respectively, whereby said groups of pipes may be independently controlled.

Above the sub-floor 7 is positioned the main drying or work floor 31, of wood, metal

or other material, which, like the false ceiling 9, is perforated by a multiplicity of air ports or outlets 32, and assists in producing what may be termed an air exhaust chamber 33 between said floor and sub-floor. Connected to and communicating directly with outlet 8 from exhaust chamber 33 is a horizontal flue 34 provided with a damper 35 as shown by Fig. 1, and communicating with a vertical stack 36 provided at its outlet with a rotary cowl 37 for purposes of preventing downdrafts, and producing a natural updraft.

One approved embodiment of the present invention having been particularly set forth as above, its use and operation are quite obvious, and for that reason need not be dwelt upon at length. It should be particularly noted, however, that in a structure of the character described, the heating and ventilating agencies are entirely independent and independently controlled, and that, moreover, the drying action results rather from the relatively slow, but constant and uniform, current of warmed air gently flowing over the newly painted or varnished surfaces, rather than from application of the extreme heat of more ordinary drying methods, as the result of which latter working conditions are proverbially bad, fire risks are great, and, with refinished jobs, axle grease and oils are frequently caused to run over the newly painted or varnished surfaces.

In the present method of operation fresh air entering box 15 through the screen 22 passes louvers 23. It is then practically washed by contact with a multiplicity of streams of water from spray-pipe 24, and finally robbed of any dust which may possibly remain as it filters through horizontal screens 20. Blower 16, automatically controlled by agency of the temperature of drying chamber 1, then forces the air supply through riser pipe 14, past deflector 12, over the entire area of chamber 13, and thence through all perforations 10, downwardly past pipes 28, the latter being more or less heated as heretofore described. Passing thus gently and uniformly over the work in process of finishing, the drying medium is conducted thence through floor outlets 32 into exhaust chamber 33 below, via flue 34, past regulating damper 35, to stack 36 to the outside atmosphere.

This being a description of my present invention, and a general statement of its use and operation, it should be noted that various changes in the form, arrangement and combination of parts may be made and substituted for those herein shown without materially altering the results accomplished, and to all such changes and modifications I lay claim the same as if herein set forth. Having thus described my invention, what

I now claim and desire to secure by Letters Patent is:

1. In a structure of the character described the combination with intercommunicating compression drying and exhaust chambers superimposed in the order mentioned, of means for forcing a drying medium downwardly from the compression chamber through said drying and exhaust chambers, and means for heating said drying medium as it enters the drying chamber.

2. In a structure of the character described the combination with a drying chamber having a perforated under ceiling and a similarly perforated work floor, a compression chamber above said under ceiling, an exhaust chamber beneath said work floor, means for forcing a drying medium from the compression chamber through said drying and exhaust chambers, and means for heating said drying medium as it enters the drying chamber.

3. In a structure of the character described the combination with a drying chamber having a perforated under ceiling and a similarly perforated work floor, a compression chamber above said under ceiling, an exhaust chamber beneath said work floor, means for forcing a drying medium from the compression chamber through said drying and exhaust chambers, and heating pipes within said drying chamber for heating the drying medium during its passage there-through.

4. In a structure of the character described the combination with intercommunicating compression drying and exhaust chambers, of means for forcing a drying medium from the compression chamber through said drying and exhaust chambers, and independently controllable heat radiators within said drying chamber for heating the drying medium in its passage there-through.

5. In a structure of the character described the combination with a drying chamber, of means for forcing a drying medium through said chamber, independently controllable pipes within said drying chamber for heating the drying medium in its passage therethrough, and main supply and exhaust pipes common to all of the aforesaid pipes.

6. In a structure of the character described the combination with a drying chamber, of a superposed compression chamber communicating with said drying chamber through a multiplicity of perforations, a fresh air supply pipe communicating with said compression chamber, and means for forcing air from said compression chamber into and through the drying chamber.

7. In a structure of the character described the combination with a drying chamber, of a compression chamber communicat-

ing with said drying chamber through a multiplicity of perforations, a fresh air supply pipe in open communication with said compression chamber, and a blower for forcing air through said supply pipe compression chamber and drying chamber.

8. In a structure of the character described the combination with a drying chamber, of a compression chamber and an exhaust chamber oppositely disposed with relation to said drying chamber and communicating therewith by means of a multiplicity of equidistant perforations, a fresh air supply pipe in open communication with said compression chamber, and a suitable blower for forcing air through said supply pipe compression chamber and drying chamber.

9. In a structure of the character described the combination with intercommunicating compression drying and exhaust chambers in vertical arrangement, of heating pipes within the drying chamber, an air supply pipe communicating with said compression chamber, an outlet pipe communicating with said exhaust chamber, and a suitable blower for forcing a drying medium through all of said pipes and chambers.

10. In a structure of the character described the combination with intercommunicating compression drying and exhaust chambers, of an air supply pipe leading into said compression chamber, means for washing the air supply in its passage through said supply pipe, and means for forcing the drying air through said drying chamber at a uniform and predetermined rate of movement.

11. In a structure of the character described the combination with intercommunicating compression drying and exhaust chambers, of an air supply pipe leading into said compression chamber, means for washing the air supply in its passage through said supply pipe, a suitable blower for forcing the drying air from said supply pipe through the chambers aforesaid, and an outlet flue leading from the exhaust chamber to the atmosphere.

12. In a structure of the character described the combination with intercommunicating compression drying and exhaust chambers, of an air supply pipe leading into said compression chamber, an air box at the intake end of said pipe, a series of louvers crossing the inlet to said air box, a multiplicity of air washing streams playing upon said louvers from the opposite side of the air box, and means for forcing the washed drying air through said supply pipe and chambers at a uniform and predetermined rate of movement.

13. In a structure of the character described the combination with intercommunicating compression drying and exhaust

chambers, of an air supply pipe leading into said compression chamber, means for washing the air supply in its passage through said pipe, a thermostat located in the drying chamber, a suitable blower for forcing
5 drying air through said supply pipe and chambers, and electrical connections between said thermostat and blower for thermostati-

cally and automatically controlling said blower.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

OWEN LILLY.

Witnesses:

W. L. QUISENBERRY,
H. E. HITZEL.