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2,670,820

DOOR CONSTRUCTION

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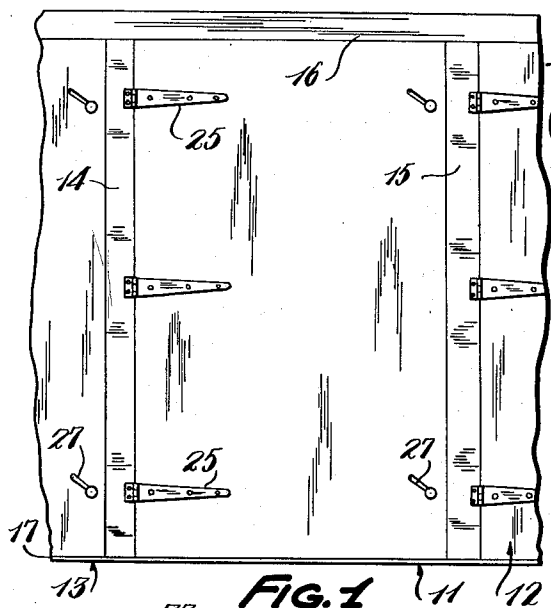


FIG. 1

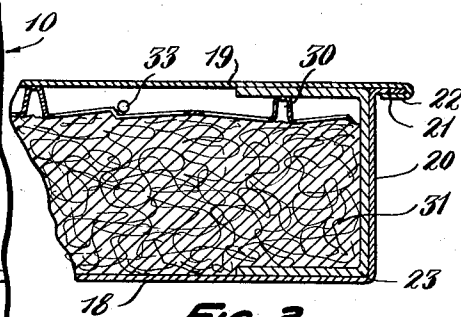


FIG. 3

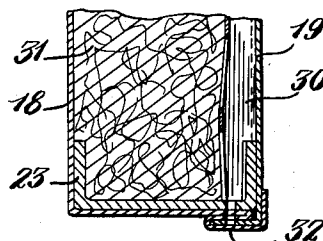


FIG. 4

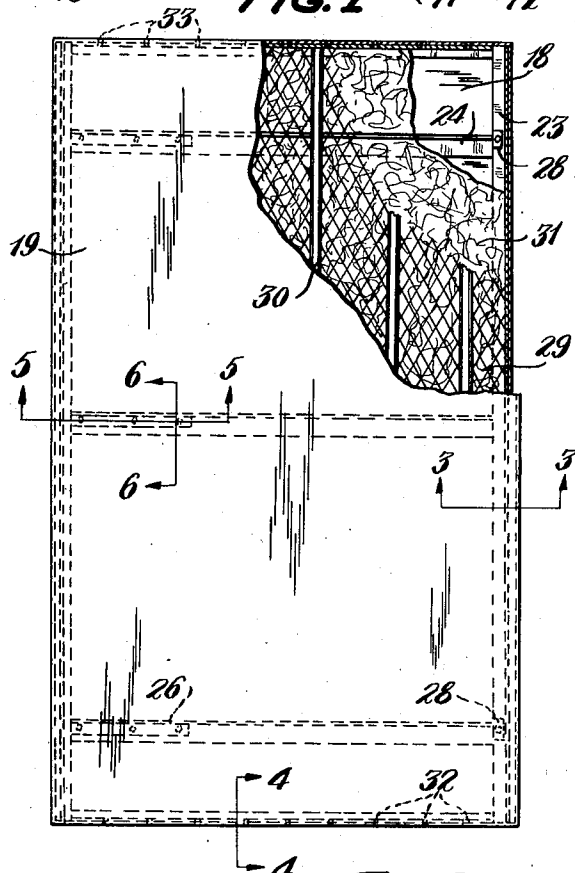


FIG. 2

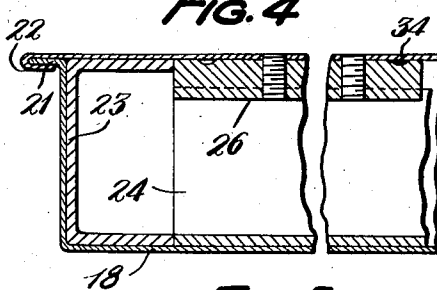


FIG. 5

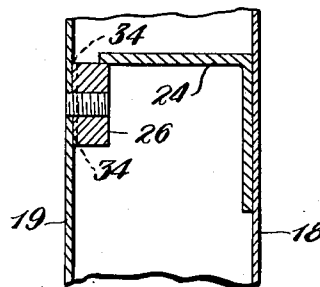


FIG. 6

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## UNITED STATES PATENT OFFICE

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## DOOR CONSTRUCTION

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2 Claims. (Cl. 189—46)

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This invention relates to a dryer for veneer and like material and, more particularly, to an improved door and wall construction for such a dryer.

In the manufacture of wood veneers and similar materials it is necessary to dry the thin sheets and for this purpose an apparatus has been devised which is known as a progressive dryer. Dryers of this general type are now well known in the art, being shown, for example, in Patent No. 1,656,802 issued on January 17, 1928 to Arthur J. Vance and also in Patent No. 1,834,962 issued December 8, 1931 to Richard C. Moore. Such dryers are of sheet metal construction, the walls generally being double with insulating material therebetween and the side walls being in the form of a plurality of panels or doors. Due to the fact that the wall members of the panels or doors, and other similarly constructed parts of the dryer, are formed from sheet metal, they cannot be readily made perfectly air tight. Because of this and also because there is generally some moisture present in the insulation, considerable condensation takes place between the wall members and particularly against the inside surface of the outside wall since the latter is considerably cooler than the inside wall. This continual condensation of moisture adjacent the outside wall or panel member results in rusting of the latter, the length of time before replacement is necessary depending upon the conditions of usage of the apparatus. This rusting of the walls or doors of the dryer is highly objectionable and prior efforts to alleviate the condition have not proved successful.

The principal object of this invention is, therefore, to provide an improved wall or door construction for a dryer of veneers or the like such that rusting of the metal sides or walls thereof is materially reduced, if not entirely eliminated.

Another object of the invention is to provide an improved wall or door construction for a veneer dryer or the like characterized by the provision of impervious metallic inner and outer wall members secured in spaced relationship with heat insulating material therebetween and with means providing a vented drainage space between the outer wall member and the insulating material.

A further object of the invention is to provide an improved wall panel or door construction for a veneer dryer or the like such that the inner and outer wall members thereof are spaced from each other and have heat insulating material therebetween with a means spacing the insulating material from the outer wall member suf-

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ficiently to provide a vertically extending space adjacent the outer wall which is drained and vented through openings at the top and bottom of the panel or door thereby providing for escape of condensed and uncondensed moisture.

A more specific object of the invention is to provide an improved door for use in a veneer dryer or the like such that substantially impervious inner and outer metal walls provide a closed hollow interior in which reticulated metal is placed adjacent the outer wall and heat insulating material is provided intermediate the inner wall and the said reticulated member so that drainage and venting space is provided adjacent the outer wall, which space communicates with the atmosphere through openings at the top and bottom of the door.

The invention further resides in certain novel features of construction and combination and arrangements of parts, and further objects and advantages thereof will be apparent to those skilled in the art to which the invention pertains from the following description of the present preferred embodiment thereof described with reference to the accompanying drawing, in which identical parts in the several views are designated by the same reference numerals, and in which:

Fig. 1 is a fragmentary side elevational view of a portion of a veneer dryer showing the manner in which the doors are employed therein;

Fig. 2 is a side elevational view of one of the doors detached from the dryer, this view being to an enlarged scale with respect to Fig. 1 and having portions thereof broken away to reveal the improved internal construction;

Fig. 3 is a fragmentary sectional view to an enlarged scale taken substantially on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary, enlarged, sectional view taken substantially on the line 4—4 of Fig. 2;

Fig. 5 is a fragmentary, enlarged, sectional view taken substantially on the line 5—5 of Fig. 2 with the insulation and reticulated material omitted; and,

Fig. 6 is a fragmentary, enlarged, sectional view taken substantially on the line 6—6 of Fig. 2 with the insulation and reticulated material omitted.

Dryers for veneer and the like are elongated apparatus of generally tunnel-like configuration and normally have the side walls formed by panels, a plurality of which are hinged doors providing ready access to the operating parts of the dryer. Thus, the numeral 10 in Fig. 1 designates generally a portion of a side wall of such

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a dryer provided with a plurality of hinged panels or doors 11, 12 and 13 supported by frame members such as 14 and 15 and cooperating with upper and lower frame members 16 and 17. Each door comprises an inner and outer wall or panel member 18, 19, respectively, formed of sheet metal material which preferably is provided with a corrosion resisting plating or coating. These walls or panel members are each preferably formed from single sheets of metal to reduce moisture leakage which might occur at joints, but where the doors are of a size such that one-piece construction of the walls 18 and 19 is not practical, separate sheets are welded or otherwise joined together.

The inner wall or panel member 18 has rearwardly extending flange portions 20 defining the edges or margins of the door, these flanges having rim portions 21 which are interengaged with rim portions of the outside wall or panel member 19. Thus, as shown in Figs. 3 and 5, the longitudinal edges of the door have a portion 22 of the margin or rim of panel member 19 turned over the rim portion 21 of member 18 while the top and bottom edges of the door have the rim portion 21 folded upon itself and then turned over the rim portion 22, see Fig. 4, the parts being preferably welded or brazed together. This construction provides a hollow interior for the door, the latter being strengthened by channel-shaped reinforcing members 23 which preferably extend around all four edges of the door, as indicated in Figs. 2-5. The door is further strengthened by spaced reinforcing members such as 24 which are preferably in the form of L-shaped angle irons secured to the channel members 23 and to the inside wall or panel member 18. The members 24 are, however, preferably spaced slightly from the outside wall or panel member 19 for a reason hereinafter explained.

The doors, such as 11, 12 and 13, are preferably provided with hinges 25 and to facilitate securing the same to the doors, the latter are provided with reinforcing members or bars 26 in the regions where the hinges are secured, these reinforcing members or bars being welded or otherwise connected within the door upon the outer or back wall member 19. The doors are secured in closed position by conventional locking members, such as 27, which may be secured in place by having a threaded member extending into a reinforcing block, such as 28, welded within the channel members 23.

In accordance with customary procedure, the hollow interior of the door is provided with a heat insulating material such as rock wool, glass wool or the like. However, in conventional constructions, this material substantially fills the entire interior and the door is made substantially air tight. In accordance with this invention, however, a means is provided for holding the heat insulating material spaced sufficiently from the inner surface of the outer wall 19 of the door to provide a drainage and venting space for vapor and condensation. This space extends from the top to the bottom of the door, either over the entire area of the wall 19 or in the form of spaced vertical channels adjacent thereto. Furthermore, in accordance with this invention, openings are provided in the upper and lower edges or margins of the door communicating with the aforementioned space or spaces adjacent the rear or outer wall so that the said space, in effect, provides a stack or chimney. Hence, uncondensed moisture may be readily vented from the interior of the door and any moisture condensing on the inner

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surface of the outer wall drains therefrom so that there is no accumulation of moisture inside the door.

The aforementioned space adjacent the inside surface of the outer wall or panel member 19 of the door is provided, in accordance with the presently preferred embodiment of this invention, by employing perforated or reticulated material 29, which preferably is formed of expanded metal lathe or the like and has substantially vertically extending ribs such as 30 offset from the main body of the material thereby providing substantially parallel channels, see Figs. 2, 3 and 4. The reticulated or perforated material 29 is disposed within the door with the ribs 30 extending vertically and engaging the wall or panel member 19 and with the heat insulating material 31 between the reticulated or perforated material and the inside wall or panel member 18. By employing reticulated or perforated material the heat insulating substance 31 is prevented from obstructing the aforementioned space adjacent the rear or outer wall 19, while at the same time sufficient openings are provided for free passage of moisture from the heat insulating material 31 rearwardly of the door to the said space. The condensed moisture does not, however, collect in the said space but instead readily drains therefrom by virtue of a plurality of holes or openings 32 formed through the lower edge or margin of the door, see Figs. 2 and 4. Similar openings 33 are provided in the upper edge or margin of the door to permit venting of uncondensed moisture and gases from within the door, this venting being assisted by the chimney-like action of the space provided adjacent the rear wall. In order that there can be no obstruction to the free passage of moisture through the space adjacent the rear surface of the door, the reinforcing members such as 26 may be provided at spaced points with vertical grooves or channels such as 34, see Fig. 5, which are preferably in alignment with the openings 32 and 33.

It will now be apparent that, in accordance with this invention, an improved construction has been provided for wall panels, such as doors or the like, employed in dryers for veneer and similar materials wherein rusting due to interior condensation has been substantially eliminated.

While the invention has been specifically described and illustrated with respect to its embodiment in a door for a veneer dryer, it will be evident that the invention is not limited to doors or wall panels but may be employed in forming other portions of the dryer, for example the air ducts or other parts wherein similar problems of moisture condensation are present. Furthermore, while the invention discloses the use of expanded metal as the reticulated or perforated material, it will be evident that other substances may be employed to provide the desired space adjacent the outer wall. Also, while the door has been disclosed as employing certain reinforcing members and other constructional details, it will be evident that the invention is not restricted to the specific construction herein shown and described so long as there is provided a space or channels adjacent the inner surface of the outside wall of the door for the drainage of moisture from the interior thereof, which space is vented through openings at the top and bottom of the door. Moreover, while the said openings are preferably disclosed as being in the edge or margin of the door, it will be evident that they could, in some instances, be provided in the outer side or face of the door adjacent the tops and bottoms thereof. These and

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other modifications will be readily apparent to those skilled in the art, and consequently the invention is not to be considered as limited to the details of the specific embodiment disclosed except as required by the spirit and scope of the subjoined claims.

Having thus described the invention, I claim:

1. A door for use in a veneer dryer or the like comprising an impervious metal inner wall having integral flange portions at the edges thereof extending in a plane normal to the plane of the wall to define the edges of the door, a substantially planar impervious metal outer wall united to said flange portions thereby providing a hollow interior for said door, reticulated material in said hollow interior extending from one edge to the other edge of the door and having portions thereof spaced from the inner surface of said outer wall to provide a vertically extending space adjacent thereto and substantially coextensive with the height of said wall, and heat insulating material intermediate said inner wall and said reticulated material, the upper and lower flanges of the door being provided with openings communicating with the said space intermediate the outer wall and said reticulated material thereby providing for drainage and venting of moisture from within said door.

2. A door for use in a veneer dryer or the like comprising an impervious metal inner wall having integral flange portions at the edges thereof extending in a plane normal to the plane of the wall to define the edges of the door, a substantially planar impervious metal outer wall spaced

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from said inner wall by said flange portions and secured to the latter thereby providing a hollow interior for said door, metal reinforcing members intermediate said inner and outer walls and welded thereto, reticulated metal in said hollow interior extending from one edge to the other edge of the door and having offset vertically extending portions adjacent the inner surface of said outer wall providing vertical channels adjacent the latter, and heat insulating material filling the spaces between said inner wall and the said reticulated metal, the upper and lower edges of the door being provided with generally vertical openings therethrough communicating with the said channels intermediate the outer wall and said reticulated metal thereby providing for drainage and venting of moisture from within said door.

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