E. LAMBERT.

APPARATUS FOR DRYING WOOD VENEER.

APPLICATION FILED MAY 8, 1916.

1,228,790.

Patented June 5, 1917.

2 SHEETS—SHEET 1.

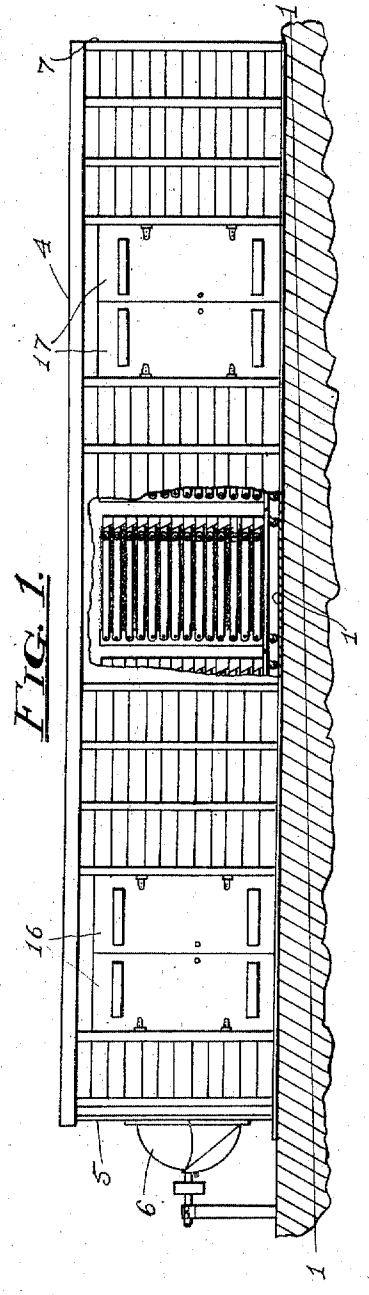


FIG. 1.

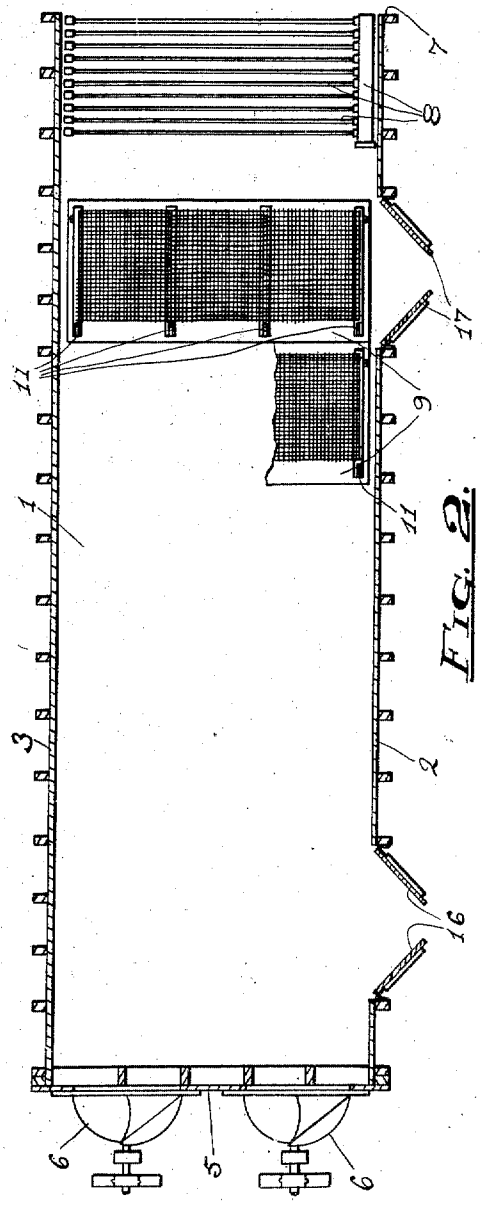


FIG. 2.

WITNESSES:

Lynn Harbison

Jerome M. Joffee

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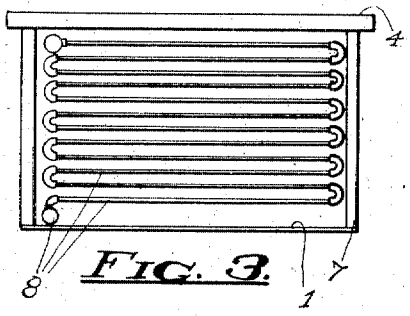


FIG. 3.

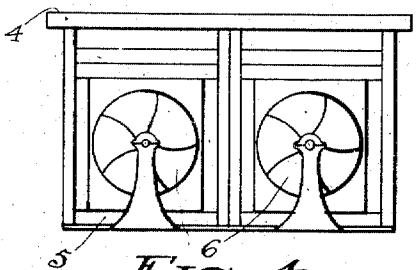


FIG. 4.

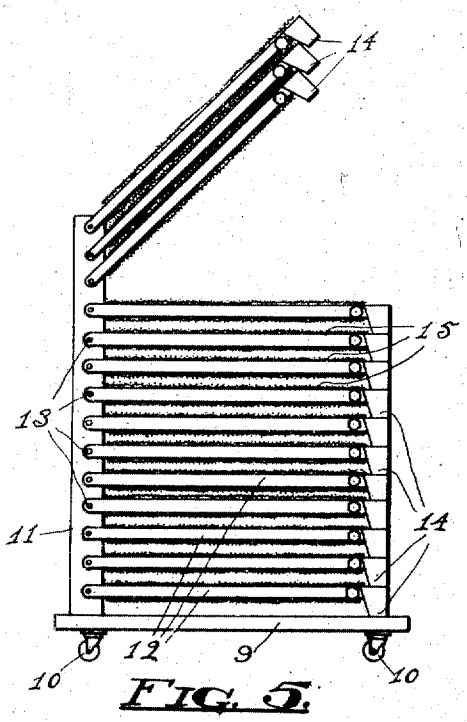


FIG. 5.

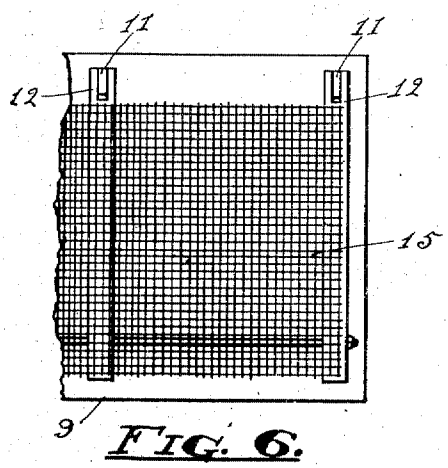


FIG. 6.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ERIC LAMBERT, OF KANSAS CITY, MISSOURI.

APPARATUS FOR DRYING WOOD VENEER.

1,228,790. Specification of Letters Patent. Patented June 5, 1917.

Application filed May 8, 1916. Serial No. 96,122.

To all whom it may concern:

Be it known that I, ERIC LAMBERT, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Apparatus for Drying Wood Veneer, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a process of, and apparatus for the rapid drying and seasoning of wood veneer and other substances, and seeks to provide a process and apparatus that will without injury to the substance, reduce the time required for drying and seasoning veneer and other substances to a small fraction of that which has heretofore been necessary.

Veneer and other substances will when subjected to a high temperature become hard on the surface while the interior is soft, and the fiber of the material will separate and show checks, sometimes splitting into several pieces, either result rendering the veneer or other substance worthless.

Owing to the extensive demand for veneer and like materials and the excessive time and heat required to dry and season the same by the usual method, which requires an excessive quantity of equipment comparative to the product treated, because of the slowness of the operation, it is essential that a more rapid process and apparatus be provided that will dry and season the veneer and other substances in a short space of time and in a manner that will draw the moisture therefrom evenly and without surface hardening, checking or splitting.

The present invention seeks to provide a process and apparatus by which the veneer and other substance to be dried and seasoned is subjected to a continuous and rapid flow of large quantities of properly tempered air under a partial vacuum, so that the moisture is drawn from the interior to the surface by the vacuum, the surface remaining moist until the interior is dried, the moisture being absorbed by the air and exhausted with the discharge thereof.

With these and other objects in view the invention consists in the features, manipulation, operation, combinations and arrangements hereinafter set forth and more particularly pointed out in the appended claims, the accompanying drawings illustrating an improved form of structure for accomplishing the objects of the invention.

In the drawings:

Figure 1 is a view in elevation of a kiln embodying the improved features of the apparatus and complying with the spirit of the invention, a portion of the inclosing wall being broken away to show the drying racks.

Fig. 2 is a plan view of the kiln with the cover removed to show the interior.

Fig. 3 is a view of the air supply end of the kiln.

Fig. 4 is a view of the air exit end of the kiln.

Fig. 5 is a view in elevation of one of the drying racks.

Fig. 6 is a plan view of one of the drying racks.

The floor 1 is preferably of concrete, the side walls 2 and 3, the roof or cover 4 and the end wall 5 being preferably of ordinary wood structure owing to the comparatively inexpensiveness of the material and the saving of time in constructing the kiln, this material and the mechanics required for building it being plentiful where it is usually desired to locate a kiln, the exact framing and joining of the inclosing structure being unimportant as any usual methods can be followed with equally favorable results, so long as the walls and cover are practically air tight so as to prevent the air from entering therethrough.

In the end wall 5 is located preferably as shown two large exhaust fans 6, each communicating with the interior of the wall and the inclosing structure, the fans being located nearer the floor 1 than the cover 4 in order to force the air through the kiln near the floor. This is important owing to the air being reduced in temperature about twenty degrees, Fahrenheit, as it passes between the layers of veneer or other substance, from the entering to the exit end of the kiln, it being understood that warm air rises and that if the fans were materially raised the circulation would not be the same near the floor as near the cover. This location of the fans however operates to maintain an even circulation and produces practically the same drying and seasoning results near the floor as that resulting near the cover and the veneer is evenly dried and seasoned whether it be near the floor 1 or near the cover 4.

Located between the walls 2 and 3, the

floor 1 and the cover 4, within the end 7 of the structure is the steam radiator 8, the radiator forming preferably the entire inclosing wall of the end 7 of the structure, the source of steam supply being omitted owing to common and well known construction, the pipes of the radiator being so close together that the resistance of the air passing between them and between the radiator and the walls, causes the fans to produce a partial vacuum, the radiator allowing sufficient air to pass therethrough and therearound to supply the fans at reduced pressure, the resistance thus provided usually reducing the pressure within the structure to about eight pounds per square foot below the normal atmospheric pressure, it is not desired however to restrict the invention to this particular reduction as a lesser amount will produce results, but more slowly.

In order to space the sheets of veneer so that the circulation will be equal throughout the structure and to attain the greatest capacity in the amount of material that can be dried and seasoned evenly in the shortest space of time the drying racks illustrated in Figs. 5 and 6 are provided, each of which comprises the base 9 mounted on the swivel casters 10 and having projecting rigidly upwardly therefrom the standards 11, the arms 12 being pivoted to the standards at 13 and the projections 14 projecting from the free ends of the arms to space and retain them horizontally when in operative position and to hold them in raised position for the purpose of placing and securing the veneer as shown in Fig. 5, the arms having secured to both the upper and lower sides thereof the wire mesh 15 to more evenly support the veneer.

From the foregoing it will be understood that the arms 12 may be raised as shown in the upper part of Fig. 5 and successively lowered as the sheets of veneer are placed in the rack, as shown in the lower part of Fig. 5.

The doors 16 and 17 are provided for the entrance and exit respectively of the racks which are usually filled and emptied outside the structure as a matter of convenience and in order to attain the greatest capacity of the kiln.

The floor 1 is higher at the end wall 5 than at the end 7 as indicated by the horizontal line 1—1 of Fig. 1 so that the trucks may be more easily moved in the direction of the radiator 8, the racks filled with the veneer being placed in the kiln through the door 16 and moved by hand power toward the radiator until the kiln is filled with racks.

The veneer in the rack nearest the radiator is always dried and seasoned first owing to the air being drier and of a higher temperature nearer the radiator, the air becoming more moist as it gathers moisture from each sheet of veneer in the passage through the kiln, the action however is very rapid, as it is found practical to pass the air through the kiln at the speed of sixty feet per second producing a vacuum of approximately eight pounds per square foot below atmospheric pressure, the vacuum drawing the moisture from the veneer and the hot air vaporizing and absorbing it and carrying it from the kiln through the fans.

The moisture being rapidly drawn from the veneer preserves the surface thereof moist until the interior thereof is dried and prevents the surface hardening commonly called case hardening, also checking and splitting of the veneer.

When the veneer in the rack nearest to the radiator 8 is sufficiently dry the fans are slowed down or stopped to reduce the vacuum so that the doors can be opened and the rack nearest to the door 17 is withdrawn, the remaining racks being moved in a body by hand power toward the radiator 8, which is easily accomplished owing to the incline of the floor 1, until the next rack occupies the space occupied by the rack just removed, after which a rack containing green veneer is inserted through the door 16 and all the doors closed, the fans being returned to full speed and the drying proceeds as before.

The time required to dry and season veneer by this process is a small fraction of that required in any kiln at the highest temperature to which the veneer can be subjected without injury thereof, and the vacuum would only produce sweating and fail to attain the desired results were the radiator or fans reduced materially from the comparative sizes and capacities hereinbefore described, the speed of the flow of the air in order to carry off the moisture being important as well as the temperature and vacuum.

What I claim as new and desire to secure by Letters Patent, is:—

1. A drying kiln comprising a rectangular shaped housing, a heating unit forming a part of a wall thereof and provided with openings in said heating unit through which air may pass, the opposite wall of said housing provided with openings for the location of exhaust fans, and exhaust fans in said openings.

2. A dry kiln comprising a rectangular shaped housing, a radiator located in one end of said housing forming an end way thereof and provided with openings through which air may be drawn, the opposite end of said housing closed by an end wall, and an exhaust fan connecting with the interior of said housing through said wall.

3. A dry kiln comprising a housing, said housing comprising a floor and sides and cover and end walls, doors arranged in one

of said side walls, said floor and cover and side walls being continuous and free from projections on the interior sides thereof when said doors are closed, a radiator mounted in one wall of said housing provided with air passages therethrough, the opposite wall of said housing closed excepting an opening for an exhaust fan, and an exhaust fan communicating with said opening.

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

ERIC LAMBERT.

Witnesses:

REBECCA JOFFEE,

MILDRED OGLE.

Disclaimer in Letters Patent No. 1,228,790

DISCLAIMER.

1,228,790.—*Eric La. ert*, Kansas City, Mo. APPARATUS FOR DRYING WOOD VENEER. Patent dated June 5, 1917. Disclaimer filed July 23, 1920, by the patentee.

Enters this disclaimer—

"To that part of the claim in said specification which is in the following words, to wit:

"2. A dry kiln comprising a rectangular shaped housing, a radiator located in one end of said housing forming an end wall thereof and provided with openings through which air may be drawn, the opposite end of said housing closed by an end wall, and an exhaust fan connecting with the interior of said housing through said wall."

[*Official Gazette August 10, 1920.*]