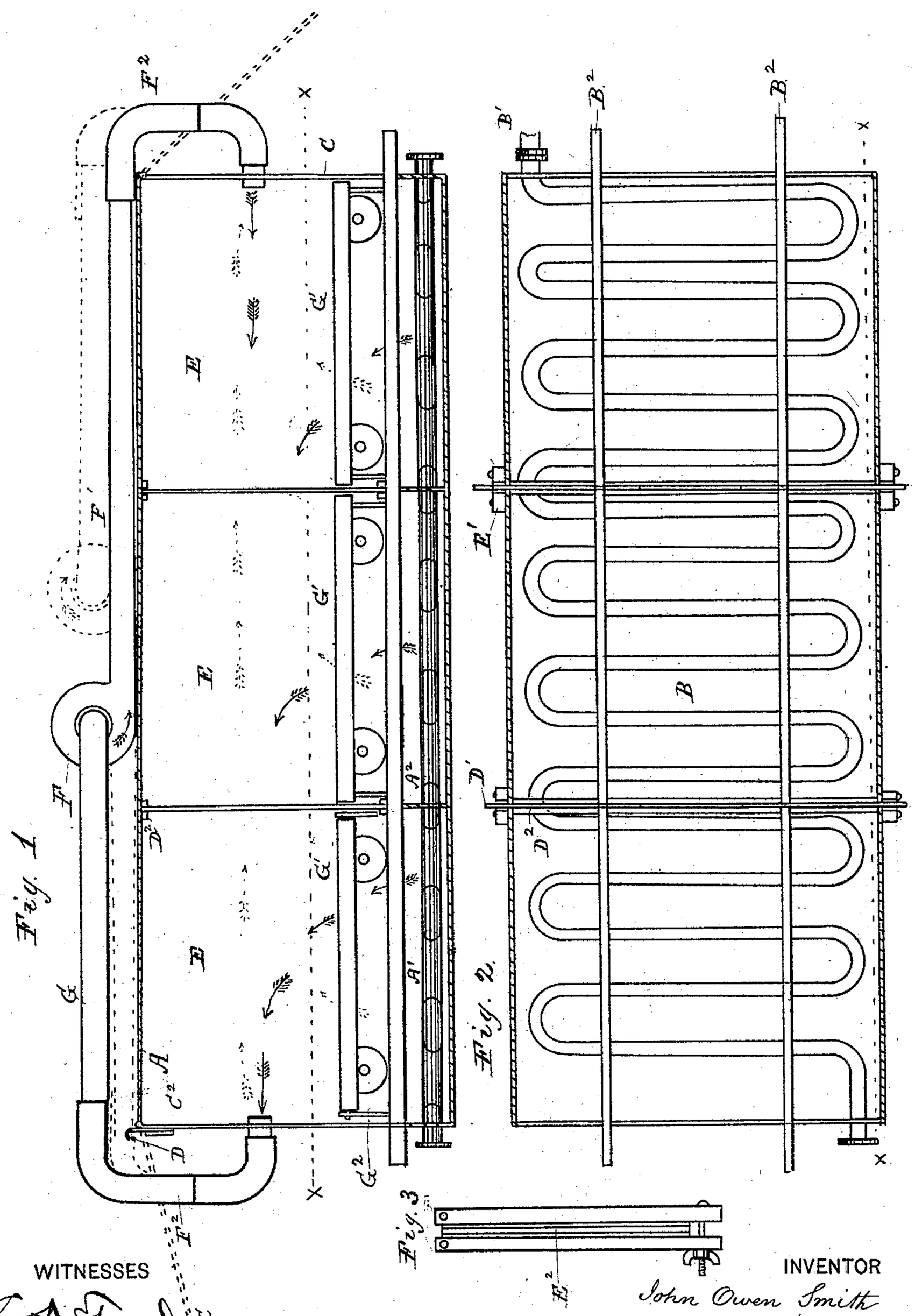
(No Model.) 2 Sheets—Sheet 1.

J. O. SMITH.

LUMBER DRIER.

No. 286,234. Patented Oct. 9, 1883.



WITNESSES

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(No Model.)

2 Sheets—Sheet 2.

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LUMBER DRIER.

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Fig. 4

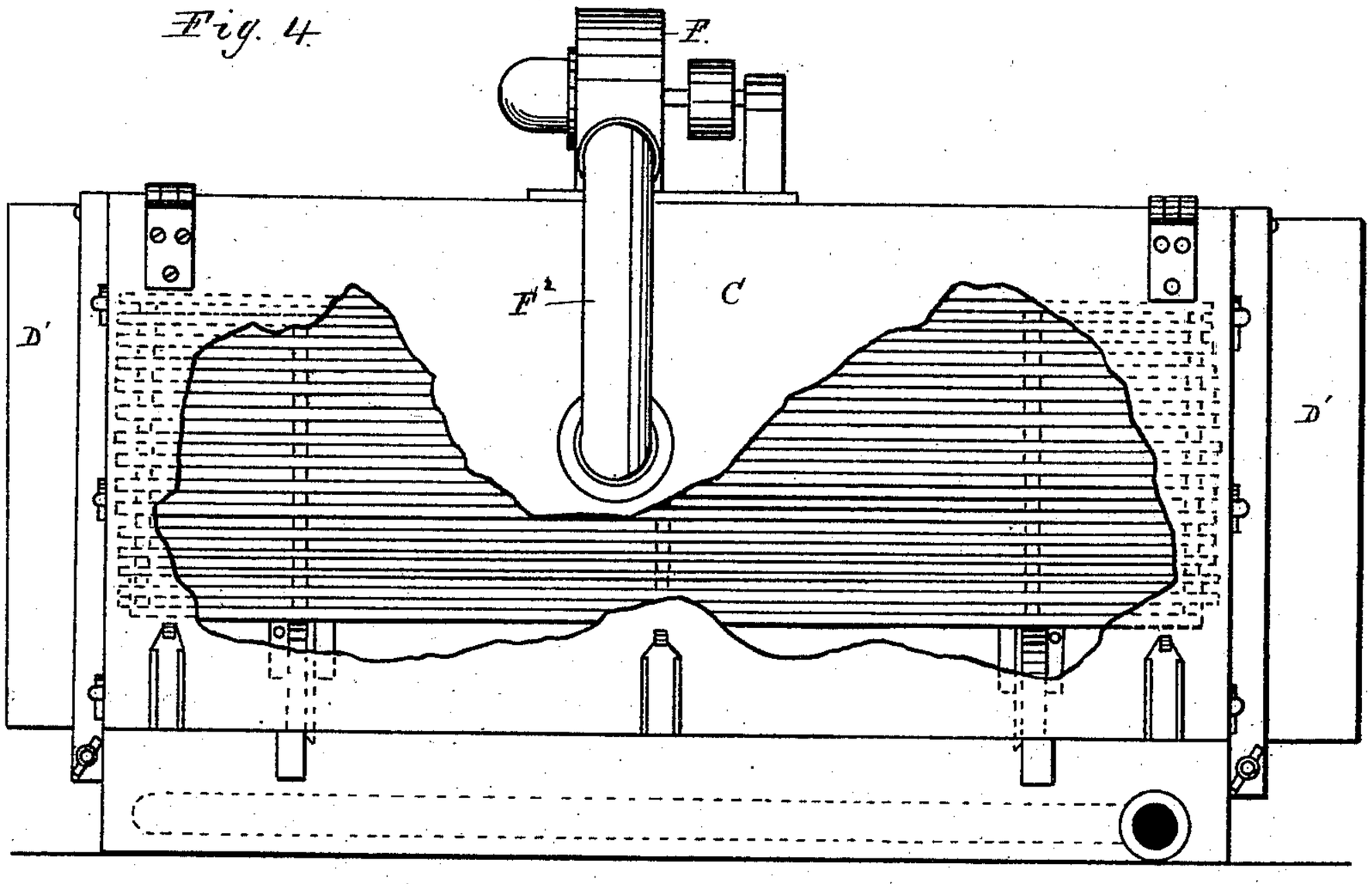


Fig. 5.

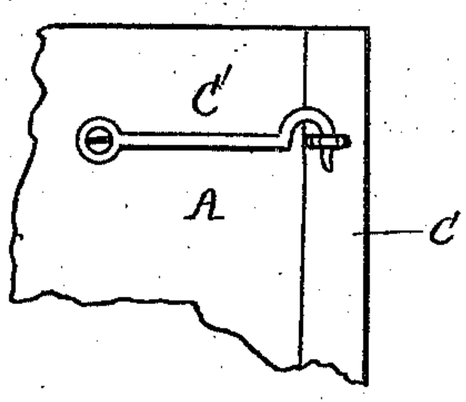
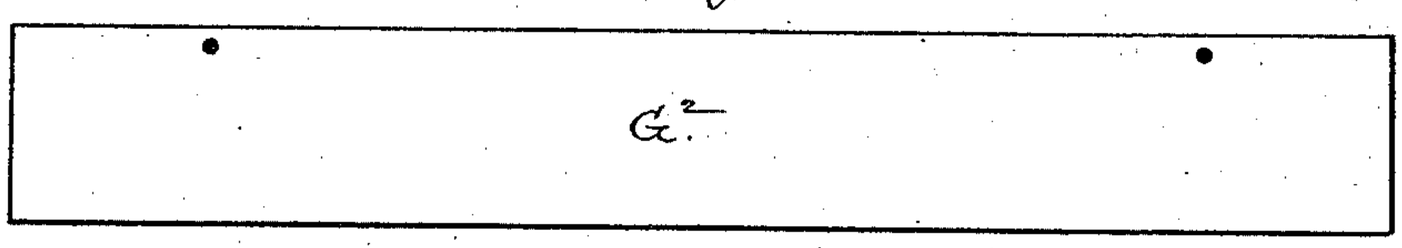


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN OWEN SMITH, OF JAMISON, ALABAMA.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 286,224, dated October 9, 1883.

Application filed May 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN OWEN SMITH, a citizen of the United States, residing at Jamison, in the county of Chilton and State of Alabama, have invented certain new and useful Improvements in Lumber-Drying Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in an apparatus for drying and seasoning lumber; and it has for its object to equalize the action of the drying or seasoning agent upon the lumber, in order that every portion thereof shall be equally acted upon, whereby checking, warping, and distorting of the lumber will be avoided, and the whole uniformly and equally dried.

With this end in view my invention consists, first, in means for creating a continuous draft of air through the apparatus from end to end; second, in means to reverse the direction of the draft; third, in means to regulate the passage through which the air or draft travels, whereby it is directed through the spaces between the load; and, fourth, in means for raising the temperature in the apparatus.

In the accompanying drawings, forming a part of this specification, and on which like letters of reference indicate corresponding parts, Figure 1 represents a longitudinal vertical sectional view of my improved apparatus, showing the internal devices in side elevation; Fig. 2, a horizontal sectional view on the line *x x* of Fig. 1, showing the tracks and the heating-pipe in plan view; Fig. 3, a detached elevation of the clamps and the packing through which the sliding doors pass; Fig. 4, an end elevation of the apparatus with a portion of the door broken away, showing the internal arrangement of the lumber upon the trucks; Fig. 5, a view showing a portion of the side of the apparatus and of the edge of one of the end doors and the means for keeping the same closed, and Fig. 6 a side view of one of the depending diaphragms.

The letter A indicates the structure constituting the walls of my improved apparatus, the same being preferably of rectangular form, and constructed of wood in any suitable manner, the lower portion of which is divided into several compartments, A′, by means of transverse partitions A^2. Within these compartments is located a steam heating-pipe, B, which is constructed, preferably, of metal, and in the present instance is of serpentine form, so as to present a greater heating-surface. To one end of the pipe is connected a steam-pipe, B′, which communicates with a suitable steam-generator, the other end of the heating-pipe B being preferably left open, so as to exhaust into the air.

Located longitudinally in the apparatus, immediately above the heating-pipe B, are the tracks B^2, the same being supported in any convenient manner.

Each end of the apparatus is provided with a hinged door, C, which is adapted to close the ends thereof, hooks or other fastening devices, C′, being employed for this purpose. One or both of said doors are provided with apertures C^2, and with sliding valves D, by which the draft and the heat in the apparatus are regulated.

Located at suitable intervals are sliding doors D′, which travel in ways D^2, secured within the apparatus, one near the bottom thereof and the other to the ceiling. The position of these doors is such as to divide the upper portion of the apparatus into several distinct though communicating compartments, E, the object of which will hereinafter appear. These doors extend through the side walls of the apparatus, and in order to form a tight joint I provide the exterior, preferably, with the clamps E′, consisting of two strips of wood pivoted near their upper ends to the wall of the apparatus, and adapted to be forced together by the screw-bolt and nut, or other suitable devices, at their lower ends. These clamps are provided with a packing, E^2, between the adjacent faces of which the sliding doors are fitted.

Located at any suitable point, but preferably on the roof of the apparatus, is a combined exhaust and blowing fan, F, the mouth of which is connected with a draft-pipe, F′, which extends to near one end of the apparatus. Connected to that end of the said pipe is an elbow, F^2, the same consisting of two sections, adapted to fit telescopically one within the other, the lower of which sections communicates with the interior of the apparatus, as seen in Fig. 1.

Connected with the exhaust and blowing

fan, preferably at the sides thereof, is a suction-pipe, G, one end of which is connected with the opposite end of the apparatus by means of another elbow, F^2, constructed in the same manner as the elbow above described. By this means the pipe G is put into communication with the interior of the apparatus. The object of the blower and its connecting-pipes is to create a draft through the apparatus from end to end, as indicated by the arrows drawn in full lines in Fig. 1, the pipe G and its connecting-elbow acting as an exhaust-conduit, through which the exhaust and blowing fan F acts to exhaust the air from one end of the apparatus, the pipe F′ and the elbow acting as a conduit, through which the air thus exhausted from one end is forced into the opposite end of the apparatus.

In some instances I contemplate employing an independent set of pipes and an exhaust and blowing fan connected therewith, as shown in dotted lines in Fig. 1, so as to reverse the direction of the current. When this is done, the upper sections of the elbows F^2 are removed from the pipes F′ and G and placed upon the substitutes shown in dotted lines, the telescopic construction of said elbows admitting of their elongation, so as to be capable of proper adjustment with the said supplemental pipes.

Adapted to travel upon the tracks B^2 are two or more trucks, G′, the same being of any approved construction, save that each is provided at or near its ends with depending cut-off diaphragms G^2, which extend downward slightly below the upper edges of the transverse partitions A^2, and which, in connection with said partitions, serve to effect a complete cut-off, the object of which will more fully appear. The trucks G′ are loaded with lumber, which is placed upon them in the direction of the axes of their shafts, cleats or strips being interposed between the several pieces of lumber, in order to form small draft-passages, one of the elbows being disengaged from its door C by sliding the upper section of such elbow outwardly by means of the telescopic connection with its pipe until its lower section clears the door, and by swinging the same out of the way the door is raised, and the cars or trucks are successively run into the apparatus. Steam is then allowed to enter the pipe B, the heat from which raises the temperature within the apparatus, the mean temperature being from 130° to 150° Fahrenheit, it being desirable not to exceed the latter, as an excess has a tendency to warp and injure the lumber, the temperature being regulated by opening and closing the sliding valve D, which may be supplied with a thermometer, if desired. The exhaust and blowing fan F is then put into motion and a suction created at one end of the apparatus, the air so exhausted being received by the said exhaust and blowing fan and forced through the pipe F′ and the elbow F^2 into the opposite end of the apparatus, whereby a simultaneous exhaust and influx action is carried on at the respective ends of the apparatus, which results in creating a strong draft or current of air longitudinally therethrough and a slight upward suction from the heating-pipe.

As already observed, the lumber is so placed upon the trucks as to form spaces through which the current thus created rapidly passes. The diaphragms G^2 and the partitions A^2 serve to cut off all communication below the trucks between the compartments E E at the bottom of the apparatus, so that the only passage for the air is through the spaces between the lumber.

The doors D′ can be reciprocated in their ways in and out of the apparatus, so as to adjust the size of the draft-passage, and to prevent premature action of the air on the ends of the lumber, whereby checking is prevented.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, of a combined exhaust and blowing fan, its communicating pipes connecting it with the opposite ends of the chamber, and the doors within the chamber capable of extending between the ends of the respective cars, substantially as described.

2. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, of the tracks running therethrough, an exhaust and blowing fan, having a suction-pipe connected therewith and with one end of the chamber by a telescopic elbow, and a force-pipe connecting the fan by a telescopic elbow with the other end of the chamber, whereby a continuous current of air from end to end of the chamber is produced and maintained, substantially as described.

3. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, of the heating-pipe located in the lower part thereof, the tracks situated above said pipe, the exhaust and blowing fan, and the suction and force pipes connecting it with the ends of the chamber by means of telescopic elbows, substantially as described.

4. In an apparatus for drying and seasoning lumber, the combination, with the main frame thereof, constituting an inclosed chamber, an exhaust and blowing fan, its suction and force pipes, of the sliding doors for regulating the size of the draft-passage, and the heating-pipe located within the chamber, substantially as shown and described.

5. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, and provided with means for creating a simultaneous exhaust and influx of air, with transverse partitions and means for regulating the size of the draft-passage, of the trucks provided with depending diaphragms, whereby

the current of air is directed through the spaces between the load of lumber, substantially as shown and described.

6. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, and provided with steam heating-pipes, transverse partitions, and sliding doors, of the exhaust fan and blower, its suction and force pipes, and their connecting-elbows, substantially as shown and described.

7. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, of the tracks, the transverse partitions, the sliding doors, their packing and clamps, and the trucks provided with depending diaphragms, for the purpose set forth.

8. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, and provided with the heating-pipe and the tracks, of the combined exhaust and blowing fan, adapted to be rotated in opposite directions, and its exhaust and force pipes connecting the one with the mouth and the other with the side, and adapted to act vice versa, respectively, and connected with the opposite ends of the chamber by telescopic elbows, whereby a draft may be created from end to end of the apparatus in either direction, substantially as shown and described.

9. In an apparatus for drying and seasoning lumber, the combination, with the main structure thereof, constituting an inclosed chamber, of a combined exhaust and blowing fan, its pipes connecting it with the ends of the chamber, the independent set of pipes, and the exhaust and blowing fan connected therewith, arranged to reverse the direction of the air-current through the apparatus, and the telescopic elbows capable of connecting either set of pipes, substantially as described.

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

JOHN OWEN SMITH.

Witnesses:
MORTON TOULMIN,
R. D. O. SMITH.