(No Model.)

2 Sheets—Sheet 1.

D. F. NOYES.

Wood Drying Apparatus.

No. 241,407. Patented May 10, 1881.

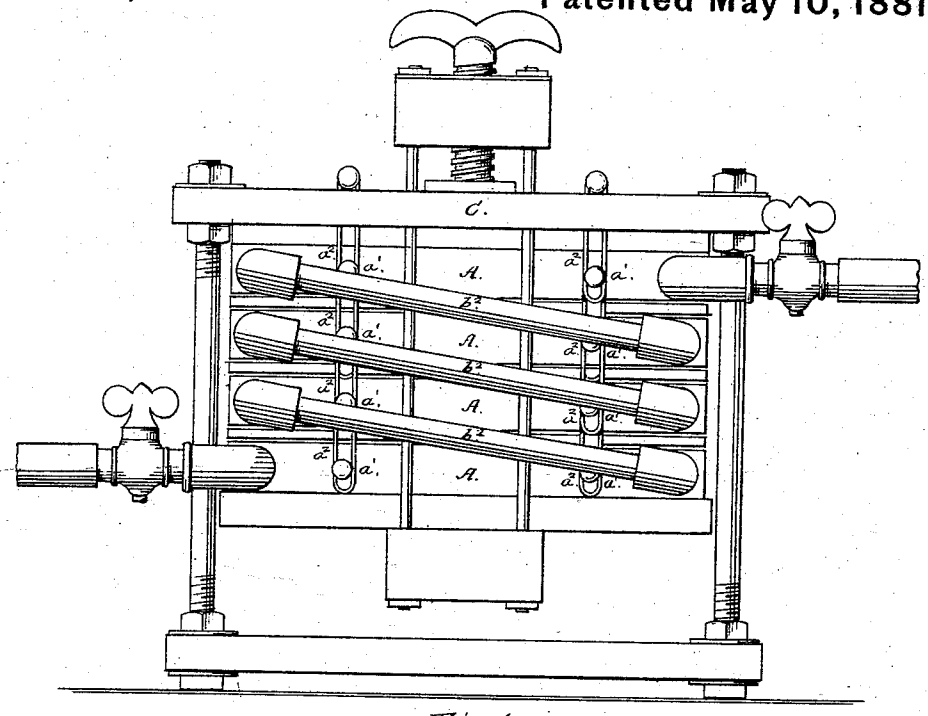

Fig. 1.

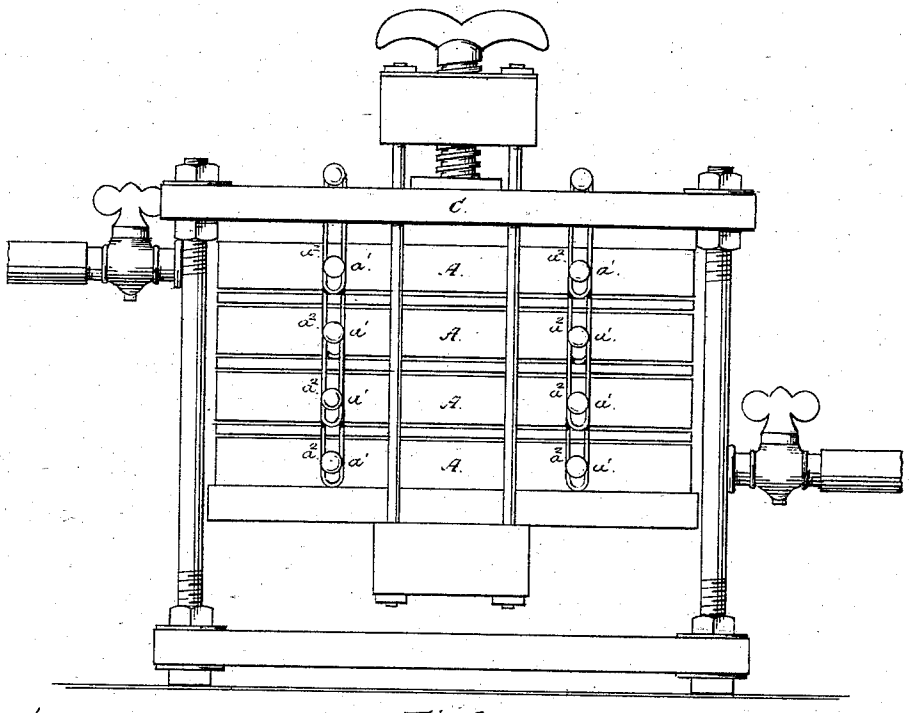

Fig. 2.

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his Atty

(No Model.) 2 Sheets—Sheet 2.

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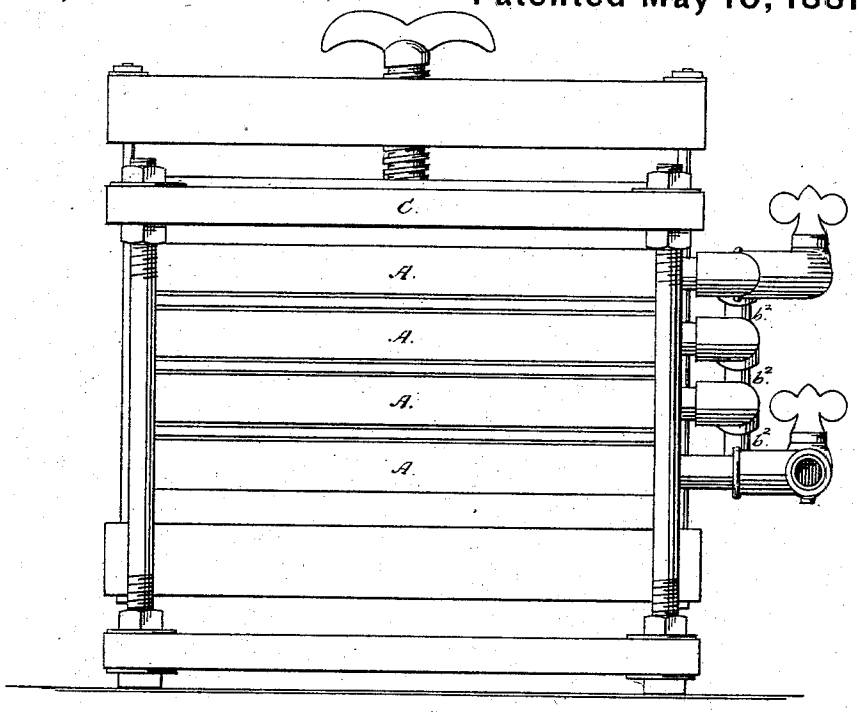

Fig. 3.

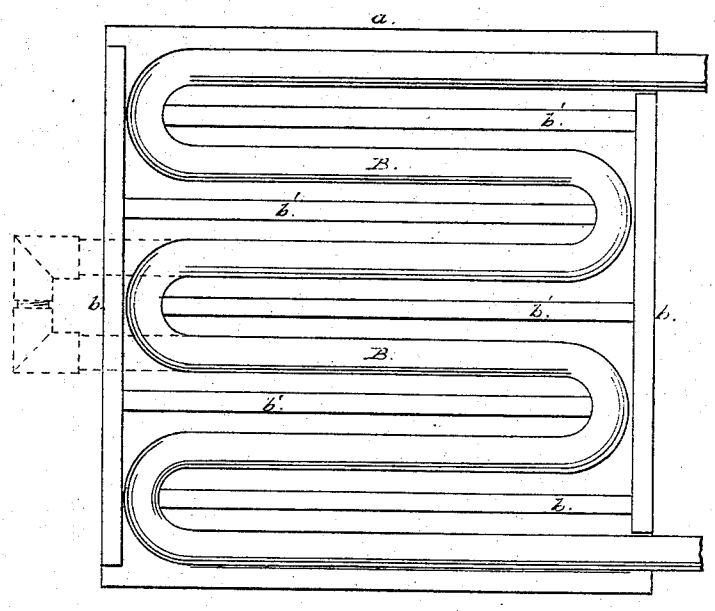

Fig. 4.

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UNITED STATES PATENT OFFICE.

DAVID F. NOYES, OF LEWISTON, MAINE.

WOOD-DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 241,407, dated May 10, 1881.

Application filed March 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, DAVID F. NOYES, of Lewiston, in the county of Androscoggin and State of Maine, have invented new and useful Improvements in Wood-Drying Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to certain improvements in wood-drying apparatus, in which the material is artificially seasoned between metal platens heated internally by steam; and these improvements consist, first, in the novel construction and arrangement of the platen, whereby the steam for heating the same will pass through the platen without the platen being subjected to pressure therefrom; second, in the novel construction and arrangement, with two or more of said platens, of means for conveying the steam directly from platen to platen; and, third, in the novel means employed for suspending the platens in horizontal planes, one beneath the other, in a connected manner, from their supporting-frame, all as more fully hereinafter set forth.

In the drawings which form a part of this specification, Figure 1 is a side view of a wood-drying apparatus provided with my improvements; Fig. 2, a view of the opposite side of same; Fig. 3, an end view of the same, and Fig. 4 a view of one of the platens with one of the inclosing-plates removed.

The letter A represents one of my improved platens. This platen is made by taking gas-piping, the usual length of which is about twenty feet, and bending it backward and forward upon itself until it assumes the shape of a fivefold U, whose sides are some four feet long, with a space of four to six inches between.

The letters B B represent a length of the piping bent into the form described.

Although I prefer to form the piping in the above manner, I might, without departing from the spirit of the invention, have the piping cut into lengths of about four feet, and then connect these lengths at their opposite ends by means of elbows fitted thereon, and united to one another by a right-and-left nipple or screw; but the objection to this lies in the fact that it is quite expensive, and the joints are liable to allow the escape of steam into the interior of the platen.

Upon the upper and lower sides of the folds B, I provide a plate, *a*, of brass or any other suitable metal, and about one-eighth of an inch in thickness, adapted to rest against the folds, covering their upper and lower surfaces entirely and projecting beyond their ends and sides a distance equal to, or a little more than, the thickness of the side pieces, to be presently described. These plates *a* are united by means of the side pieces, *b*, of metal, about three-eighths of an inch in thickness, adapted to be secured to the projecting edges of the plates by screws or any other suitable means, thereby entirely inclosing the folds B, except at the points where the piping enters and leaves the platen. Supports *b'* pass transversely between the plates *a* in the spaces between the folds B, and may be made of wood or metal, as desired.

By consulting Fig. 4 of the drawings it will be seen that the piping enters and leaves the plates *a* from the same side. This arrangement is intended when only a platen of the capacity of one length of the piping is needed, in which case the platens would, in length and width, be a little more than four feet and weigh about three hundred pounds. This size of platen is intended for drying thin material, such as veneers, &c., although it is equally as well adapted to the seasoning of lumber of an inch in thickness in lengths of less than four feet.

For long lumber, such as boards of twelve or sixteen feet, the plates *a* may be made three or four feet wide and twelve or sixteen feet long, as the occasion requires.

As I cannot obtain the piping longer than twenty feet, I form the U-folds from one piece, as described, with the exception that they must be bent so as to have the piping pass out from the plate *a* from the side opposite to that it enters, as shown in dotted lines in Fig. 4. To this end of the piping, by means of elbows and a right and-left nipple or screw, I secure the entering end of the next fold, which, in turn, is secured to the succeeding fold in the same manner and from the same side of the platen. I continue putting in the folds and connecting

them until the space between the plates is properly filled. The last fold of piping must have exit from the side of the platen in which the first fold enters.

The arrangement of the long plates upon the folds of piping is the same as heretofore described, and also that of the side pieces connecting said plates together; but, instead of supporting the plates *a* transversely between and lengthwise of the spaces between the folds of piping, I prefer to place the supports between the folds lengthwise the plates and about one or two inches apart.

Where the lengths of piping are coupled together it is necessary to have these ends in one platen break joints with those in the adjacent platens, so that when suspended the meeting surfaces of the platens can be brought near enough together to accommodate the thinnest material to be seasoned.

In constructing the long platens I might, without departing from the spirit of the invention, use a sufficient number of the full lengths of piping, placing them lengthwise the plates and couple their opposite ends together, as heretofore described; but I prefer the manner of forming the piping into folds and then connecting the folds.

I will now describe the manner in which a series of two or more of these platens are suspended.

To the under side of a top piece, C, with which the frame for supporting the platens is provided, is permanently fastened, in any suitable manner, one of my improved platens, A. I provide this platen and each succeeding one with headed pins or studs *a'*, arranged on opposite sides thereof, and at such a distance apart as to safely and properly sustain the suspended platens. By means of flat links a^2, removably fitted upon the pins *a'*, the first and second platens are connected. The third platen is connected in a similar manner to the second, the fourth to the third, and so on until the desired number of platens are suspended in horizontal planes, one beneath the other, in a connected manner. In placing the links upon the pins while connecting the platens each alternate link must rest against the outer faces of the links adjacent, so that there will be no binding or wedging of the links in raising and lowering the platens. These links permit the platens to separate from one another a sufficient distance to allow the ready insertion of the material to be seasoned, and they are made of different lengths and removable, so as to accommodate in the same apparatus the various thicknesses of the material to be seasoned. For instance, the apparatus could be used for seasoning one-eighth-inch material, and then by placing on longer links allow the insertion of material of a greater thickness. The studs or pins *a'* are secured to all the platens in the same relative positions, so that when the platens are suspended each series of links shall be in a vertical line and about two or three feet apart.

I will now describe the means employed for conveying the steam directly from platen to platen.

By consulting Fig. 1 of the drawings it will be seen that a pipe, b^2, connects the fold of piping in the first platen with the fold in the second, and so on throughout the series of platens with which the drying apparatus is provided. This pipe b^2, as shown, is connected by means of elbows to the exit end of the fold of piping in the first platen and the entering of the fold in the second. The second is connected with the third in a similar manner, the third with the fourth, and so on throughout the series of platens. The entering end of the fold of piping in the first platen is connected with the steam-generator and provided with a suitable stop-cock. The exit end of the fold or folds of piping in the last platen is also provided with a stop-cock, and is connected with a pipe to convey away the steam after it has been used in heating the platens.

To prevent condensation of steam the pipes b^2 can be covered, if desired. The deflection of these pipes is sufficiently great to readily allow the necessary adjustment of the platens for the insertion of the material to be seasoned. The piping B may be of any desired diameter, from one-fourth to one-half inch, the pipes b^2 from one-eighth to one-fourth inch.

The operation of a drying apparatus provided with the above improvements is as follows: The suspended platens are separated to the full length of the links, and then the material placed between the adjacent surfaces of the platens from one end of the apparatus, as shown in Fig. 3. When the spaces between the several platens are properly filled the platens are raised until the material between each set is firmly held against their adjacent surfaces.

In the drawings I have shown the platens raised and held by means of a clamp device operated by a screw from the top of the supporting-frame; but the platens can be raised equally as well, if not better, by hydraulic power or toggle-joints applied directly under the series. It should be borne in mind, however, when the power for raising the platens is applied, to have the under surface of the lowest platen provided with a separate plate, of metal or wood, of a proper thickness to allow pressure to be applied thereto without bending or warping the plates composing the platen. After the platens have been properly adjusted to the material steam is admitted from the generator, and, passing through the various folds of piping and their connections from platen to platen, under a pressure of five atmospheres, raises the temperature between the platens to about three hundred degrees, thereby very quickly converting the moisture in the material into vapor, which readily passes off into the atmosphere through the ends and sides of the lumber. To thoroughly season the material requires from ten to thirty minutes, according to its thickness. The steam is then shut off,

the platens lowered, and the material removed from the end of the apparatus opposite to that where it was inserted.

Among the principal advantages obtained by my improvements over the devices heretofore employed for artificially seasoning lumber and like material are, first, my platens can be made very cheaply and readily and by any person of ordinary skill; second, the steam-piping within the platens avoids all danger of the platens bursting by the internal pressure of steam against their sides, as is frequent where the steam is admitted directly into a hollow cast platen; third, the weight and thickness of my platens, as compared with that of cast platens, enables four times their number to be put into effective operation in the same apparatus, and consequently affords a greater drying capacity; fourth, the passing of the steam directly from platen to platen renders the operation of seasoning the material more effective and at a much less expense; and, fifth, the manner of suspending the platens is simple and cheap, and affords ready means for adapting the platens to various thicknesses of material in the same apparatus.

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

1. The platen A, formed of metal plates *a*, side plates, *b*, and a fold or a series of folds of piping, B, constructed and arranged substantially as described.

2. A series of platens, A, provided with studs *a'*, and by means of links a^2 adapted to be suspended in horizontal planes, one beneath the other, substantially as described and shown.

3. A series of platens, A, provided with a fold or a series of folds of piping, B, and a series of pipes, b^2, connecting the platens together, substantially as described and shown.

4. A series of platens provided with means for their suspension in horizontal planes beneath each other, and having a fold or series of folds of piping, provided with connecting-pipes between the platens, substantially as set forth.

This specification signed and witnessed this 26th day of March, A. D. 1881.

DAVID F. NOYES.

Witnesses:
C. S. DRURY,
W. O'BRIEN.