

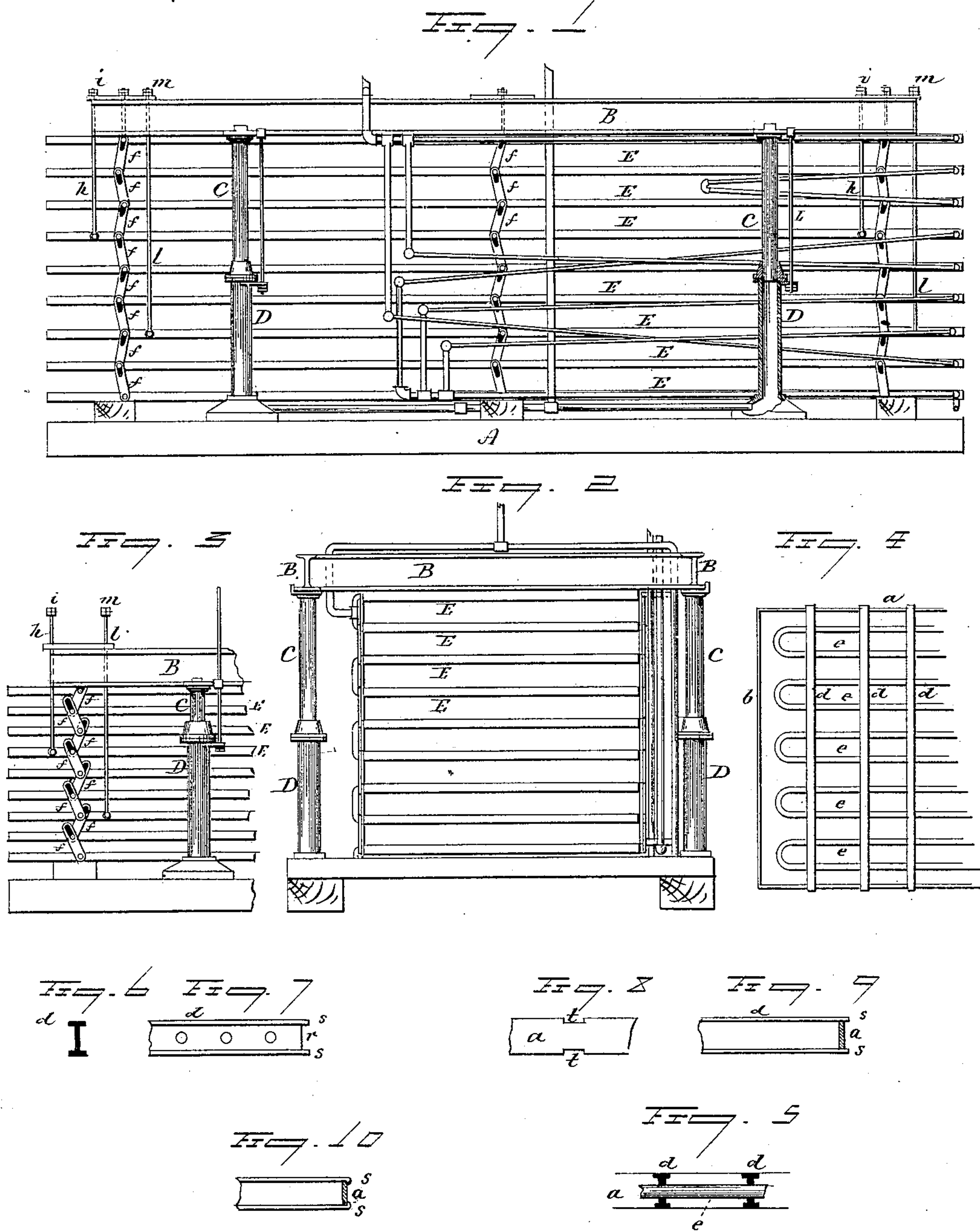
(No Model.)

A. S. NICHOLS.

LUMBER DRIER.

No. 390,697.

Patented Oct. 9, 1888.



Witnesses
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AARON S. NICHOLS, OF CHICAGO, ILLINOIS.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 390,697, dated October 9, 1888.

Application filed December 15, 1884. Serial No. 150,390. (No model.)

To all whom it may concern:

Be it known that I, AARON S. NICHOLS, of Chicago, in the county of Cook and State of Illinois, have invented a new Improvement in Lumber-Driers; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the apparatus complete, showing it in the open condition; Fig. 2, an end view of the same; Fig. 3, a partial side view showing the apparatus in the collapsed condition; Fig. 4, a partial top view of one of the platens; Fig. 5, a longitudinal section through two of the transverse bars, showing the tube as arranged therein; Fig. 6, a transverse section of one of the transverse bars; Fig. 7, a side view of a portion of one of said bars, showing the end as fitted for attachment to the sides of the frame; Fig. 8, a portion of one of the sides of the frame, showing the notches cut to receive the transverse bars; Figs. 9 and 10, transverse sections through the side bars at the notches to illustrate the method of connecting the transverse bars to the side bars, Figs. 5 to 10 enlarged.

This invention relates to an improvement in apparatus for drying lumber, and particularly to that class of apparatus which consist of several platens each composed of a pipe coiled in a flat horizontal plane, a layer of lumber and platens alternating, the steam-pipe arranged to receive steam or hot water to circulate therein and by its heat to dry the lumber.

In Letters Patent No. 295,418, granted to me, I made an improvement in this class of platens, which consisted in arranging bars transversely across the platens, leaving the space between the bars open for the circulation of air. Prior to that patent the platens were made close. In my said patent the supporting-bars above and below the steam-pipes were flat, extending from side to side transversely across over the pipes.

The object of my present invention is in part to make the supporting-bars firmer than in my previous construction.

To that end the first part of my invention consists in forming the platens with transverse bars in vertical width greater than the outside diameter of the steam-pipe, the said bars pierced at points in the line of the pipe, and the coils of pipe arranged through the opening in the said bars, and whereby the several runs of pipe are supported by the transverse bars and in their proper relation to each other.

In this class of apparatus as hitherto constructed the frame has been arranged with stationary beams at the top and the platens arranged between the posts beneath the beams, one over another, each platen connected with the next, and a lifting apparatus arranged that would lift from the bottom upward, so that when the lumber was introduced between the respective platens the whole would be raised to force the platens and lumber into compact or closed condition, so that the lumber in drying cannot twist or warp. While this arrangement accomplishes the object in this class of drier, it necessitates a strong heavy construction of platen and apparatus, because of the great weight to be supported.

The object of the second part of my invention is to overcome this difficulty; and it consists in arranging the beams upon a lifting apparatus and suspending the several platens therefrom, and so that the lower platen may rest upon supports below and the platens above, together with their supporting-beams, be lowered as the spaces between the platens are filled, and so that the weight of the lumber itself becomes an element in holding the lumber in the proper flat condition.

Each platen is composed of an outside frame consisting of the two sides *a a* and two ends, *b b*. These sides and ends are made from suitable bar-iron properly attached at the angles. Transversely across from side to side are several bars, *d*, more or less in number, and according to the size of the platens, as seen in Fig. 4. The bars *d* may be flat and stand vertical, in width corresponding to the height of the sides, and so that the two edges of the bars will stand substantially flush with the edge of the side bars, as seen in Fig. 5. The transverse bars *d* have holes made through them corresponding to the outside diameter of the

tubing *e*. The coil of tubing is arranged through the transverse bars, as seen in Fig. 5, and between the sides, as seen in Fig. 4.

The transverse bars are best made of what is commonly called "I-iron"—that is to say, bars which consist of a vertical body with a horizontal flange at top and bottom, and as seen in Fig. 6—the extreme height of the bar being, as before stated, equal to the height of the sides of the platen. At each end of the bar the body is cut away to leave a recess, *r*, (see Fig. 7,) at the ends between the top and bottom flange—that is, so as to make the extreme ends of the flanges project at the top and bottom, as at *s*. The side bars of the platen have notches *t* (see Fig. 8) cut in their upper and lower edge corresponding to the projecting ends *s* of the transverse bars *d*, and so that when set together the projections *s s* will extend through the notches in the sides, as seen in Fig. 9, and project outside the bar. Then, to secure the bars to the sides these projecting ends *s s* are turned down upon the outside of the side bars, as indicated in Fig. 10, which firmly secures the transverse bars in the frame. The tubing passes through the transverse bars between the flanges, as indicated by the holes in Fig. 8. By this construction the tubing is firmly supported, not liable to be bent out of shape. The bars themselves standing edge-wise are in the strongest possible condition to support the lumber, and the construction and arrangement of the pipes and bars serve to make the platen firm and strong.

As set up the platens are arranged one above another, as seen in Figs. 1 and 2, A representing the base or floor, B the beams, which are of strong iron frame-work. These beams are supported on followers C, standing in cylinders D, set upon the base. These cylinders are arranged so that steam or other fluid may be introduced therein, as seen in Fig. 1, to bring pressure beneath the followers, and so that such pressure will raise the followers and beams as occasion may require. E E are several platens arranged in horizontal planes parallel to each other, connected to each other and to the beams by links *f*. These links permit the separation of the platens to a considerable extent, yet holding each to the other and to the upper one, the upper one being supported directly by the beams. They also permit the platens to approach each other to collapse the apparatus, as indicated in Fig. 3.

The several platens are arranged for the admission of steam or drying-fluid thereto, in the usual manner, and so that a circulation will be maintained through the several platens. The system of pipes whereby such communication and circulation are made is seen in Fig. 1, and will be understood without further description, it being that in common use for such driers, and upon which I make no claim.

At intervals certain platens are connected directly to the beams—say, the fourth platen from the top—by rods *h*. These rods extend up through the beam with a nut or head, *i*,

above, but so as to permit the rod to rise through the beam in collapsing, as seen in Fig. 3. Below this support another platen—say, the seventh from the top—is supported from the beam by like rods *l*, extending up through the beams with heads *m*, so that the rods may move upward through the beam in collapsing, as seen in Fig. 3. This connection between the beams and platens takes a considerable strain from the links, which would comethereon were the platens supported only by the links.

To charge the drier, the beams are raised, as seen in Fig. 1, the lumber introduced between the platens, say, beginning at the bottom, and as the first space is filled the apparatus may be lowered to bring the second platen onto the lumber so introduced, then the second space filled, the apparatus lowered, and so on until all the spaces are filled, as seen in Fig. 3, the final filling closing the apparatus; or, if the charge be sufficient to fill but a portion of the spaces, then the lower or other spaces are filled, and the apparatus collapsed until the platens close upon the lumber with the full pressure of the apparatus. To remove the lumber, steam or other pressure is introduced into the cylinders D to raise the followers with the beams, the first movement raising the first platen. The lumber removed from that space, the next platen will be in like manner raised until all the spaces are cleared. By this construction the apparatus is more conveniently charged and discharged, and the weight of the lumber adds to the pressure of the platens upon the lumber and facilitates the drying operation.

It will be understood that I do not herein claim, broadly, a platen for lumber-drier, consisting of a flat coil of tubing having supporting-bars to bear upon the lumber or upon which the lumber may rest, as such a platen constitutes the invention in my before-mentioned patent, this part of my invention being for an improvement in the construction of such a platen.

I claim—

1. In a platen for drying lumber, consisting of a coil of tubing arranged in a frame in a horizontal plane, and so as to rest upon the lumber or the lumber upon it, the said platen composed of the longitudinal sides *a*, constructed with a series of notches, *t*, in their upper and lower edges, combined with transverse bars *d d*, the said bars I shape in transverse section, the body of the said bars at the ends cut away to leave the flanges upon the top and bottom to project, the said projecting ends of the flanges corresponding to the said notches in the side bars and set therein, the projecting portion of said flanges bent down upon the outside of the sides of the frame, substantially as described.

2. An apparatus for drying lumber, consisting of several platens, each platen composed of a coil of tubing in a horizontal plane, the several platens connected together and sup-

ported from the beams above, the said beams resting on a lifting apparatus substantially such as described, and whereby said beams may be raised or lowered and correspondingly
5 open or close the platens, the coils in each of said platens adapted to receive steam or equivalent drying fluid under circulation, substantially as described.

3. An open platen consisting of perforated
10 iron bars set edgewise and secured rigidly to

an exterior frame in parallel positions at a distance apart, and a heating pipe arranged tortuously and supported in the perforations of the said bars, all combined and arranged to operate as and for the purpose set forth.

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