(No Model.)

C. R. VAN OSDEL.

LUMBER DRIER.

No. 418,773. Patented Jan. 7, 1890.

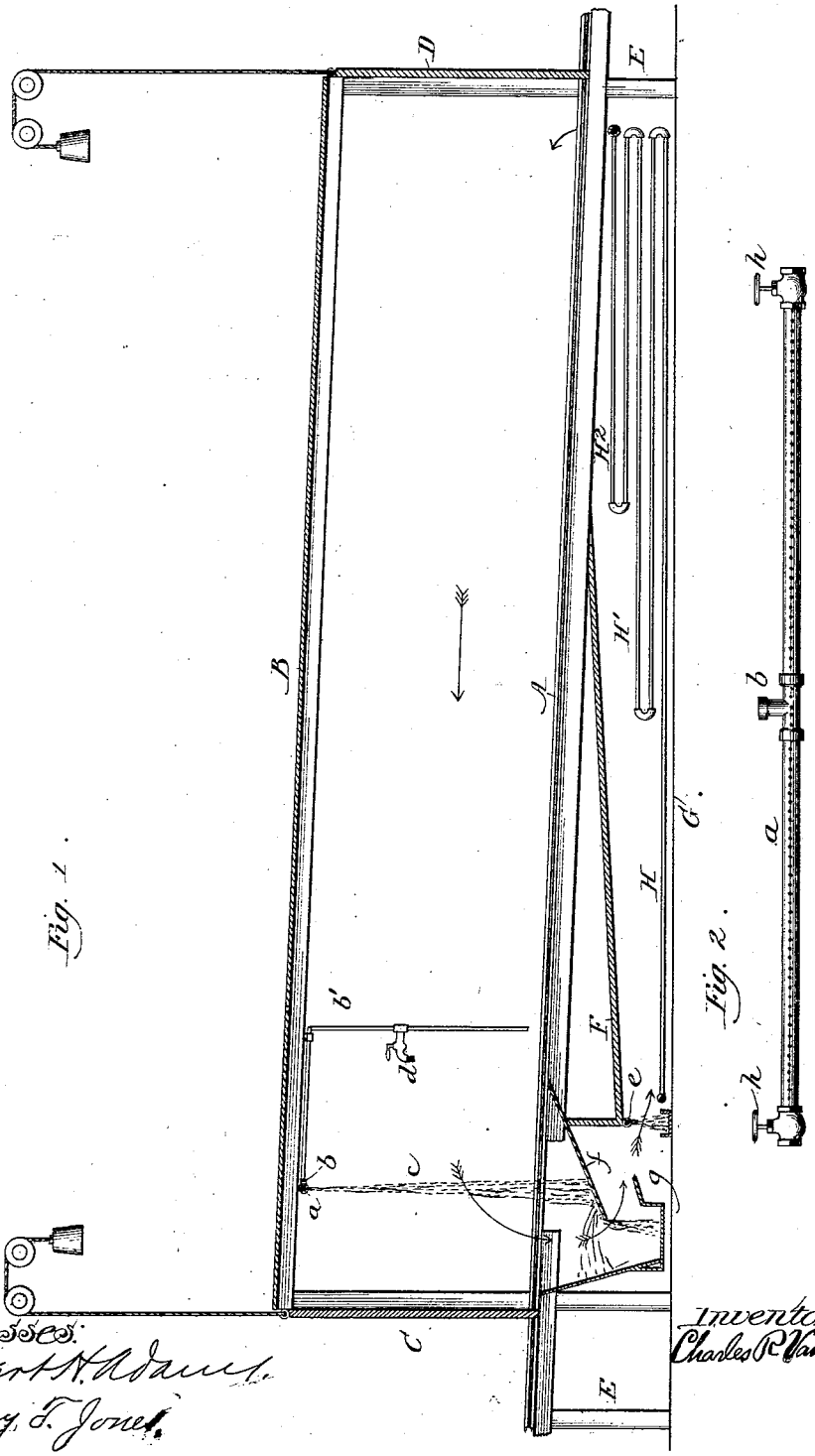

Fig. 1.

Fig. 2.

Witnesses:
Albert H. Adams.
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UNITED STATES PATENT OFFICE.

CHARLES R. VAN OSDEL, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND GEORGE W. STRAIGHT, OF SAME PLACE.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 418,773, dated January 7, 1890.

Application filed December 13, 1888. Serial No. 293,499. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. VAN OSDEL, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Lumber-Driers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a lumber-drier, and Fig. 2 is an under view of the sprinkler part.

My improvements relate to that class of lumber-driers wherein substantially the same volume of air is circulated around and through the drier without being discharged therefrom; and the objects of such improvements are to more quickly and thoroughly extract the moisture from the circulating air, to dispense with a separate condensing chamber or section, and to improve the construction and arrangement of the heating-pipes.

In the drawings, A represents the truck or car rail mounted upon suitable supporting-timbers.

B is the roof or top of the drier.

C D are counterbalanced end doors.

E are suitable walls or supports for forming the heating-chamber.

F is an inclined floor.

G is the ground-floor.

H H′ H″ are sections of steam-heating pipes.

a is a sprinkler-pipe.

b b′ is an induction or water-supply pipe.

c is a spray or falling water.

d is a faucet.

e is a secondary sprinkler-pipe.

f is an inclined spatter-board.

g is a trough.

h are valves for opening the ends of the pipe *a*.

The kiln proper is composed of the parts A, B, C, D, E, F, and G, which are of the usual construction and are shown in the usual and well-known manner of constructing such parts for large lumber-driers, and the ordinary entrance and cooling chambers may be provided at the ends, if desired; but the ordinary separate condensing-chamber is dispensed with. The circulation of air is indicated by the arrows, and a reverse circulation is prevented by the dropping of one end of the floor F, as shown. The heating-pipes H are made with an under section nearly the length of the kiln, as shown. The second section H′ is made about one-half the length and the third section about one-third the length of the pipes H, which construction and arrangement of pipes produce a better heating of the air than with the arrangement of pipes heretofore used in such kilns. As the hot steam, which is admitted and discharged in the usual manner, gives the air its full heat at the point of discharge into the kiln, at the opposite end the movement of the air is slower, so as to give more time for heating.

At or near the top of the kiln, and extending transversely across the same, I locate the sprinkler-pipe *a*, which pipe is provided at its under side with a series of fine holes, as shown at Fig. 2, for spraying the water across and through the moving body of air, and by so spraying it this air is more completely brought in contact with the cold water, so as to more completely condense and exhaust therefrom the moisture taken up in drying the lumber or other articles placed within the kiln. The perforations in the pipe *a* will be sufficient if the pipe is kept level and under some water-pressure while in operation; but for a low-water pressure, and to prevent the water running along the under side of the pipe in case of its sagging or getting out of level, the pipe may be provided with short jets or nipples in place of a perforation, which nipples may also be provided with cross-holes, like those of a gas-burner, for the purpose of giving the water an additional spraying. The condensing-water strikes against the inclined plate *f*, and a portion of it is spattered off against the back of the trough *g*, as shown, while a portion drips to the bottom of the trough, thus causing the air in its circulation to pass through three condensing jets or sprays of cold water, which thoroughly condenses and extracts the moisture from the air, so that when it again enters the kiln at the opposite end it is again in condition to

take up moisture from the articles to be dried. An additional jet-pipe *e* may be applied to the floor F at its lower end, which will give a fourth spray, if for any reason the air is not sufficiently dried before reaching this point, and in some conditions of the atmosphere this piping may be used alone.

The supply-pipe *b'* is connected with a tank, hydrant, or other source of water-supply as may be most convenient, and it is provided with a faucet *d*, to which a hose can be attached, and by the use of such hose a stream of water may be directed against the under side of the pipe *a* to clean out the perforations when they or any considerable portion of them have become clogged, and the pipe *a* is also provided with valves at the ends, so as to permit of a stream of water flowing through them whenever the pipe requires cleaning. It will be understood that the vertical section *b'* of the supply-pipe is attached to the side of the kiln, so as to be out of the way. By this construction and arrangement of the cold-water condenser I am able to dispense with the condensing-section within the drier, so as to obtain more room, and in passing the water through the moving body of air I not only condense and take out of it the steam and moisture carried by it, but I also wash out the gums and other matters which have been vaporized, so as to keep the body of air which circulates around within the kiln pure and clean and in a perfect condition for drying.

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

1. The combination, with a drying-kiln, of the elevated cold-water-spray pipe *a*, the inclined spatter-plate *f*, arranged in the base of the kiln beneath the spray-pipe and receiving the water-spray therefrom, and a trough *g*, arranged under the lowest edge of the spatter-plate and receiving the water from the latter, substantially as described.

2. The combination, with a drying-kiln having a railway for the trucks, of the elevated cold-water-spray pipe *a* above the railway, the inclined spatter-plate *f*, located beneath the railway to receive the water from the spray-pipe, and the trough *g*, arranged under the lowest edge of the spatter-plate, and having a rear wall against which the water is thrown from the spatter-plate, substantially as described.

3. The combination, with a drying-kiln, of the elevated cold-water-spray pipe *a*, the inclined spatter-plate *f*, arranged in the base of the kiln to receive the water from the spray-pipe, the trough *g*, located below the lowest edge of the spray-pipe, the secondary cold-water-spray pipe *e*, arranged under the spatter-plate in advance of the trough, and an air-heater, substantially as described.

4. The combination, with a drying-kiln having a railway for the trucks, of the floor F, inclined downward toward the rear of the kiln, the cold-water-spray pipe *e*, arranged at the lowest end of the inclined floor, and the steam-heater arranged below the railway and extending under the inclined floor toward the said spray-pipe, substantially as described.

5. The combination, with a drying-kiln, of the cold-water-spray pipe *a* in the top of the kiln, the cold-water-spray pipe *e* in the base of the kiln, and the inclined spatter-plate arranged between the two spray-pipes and receiving the water from the uppermost spray-pipe, substantially as described.

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Witnesses:
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