

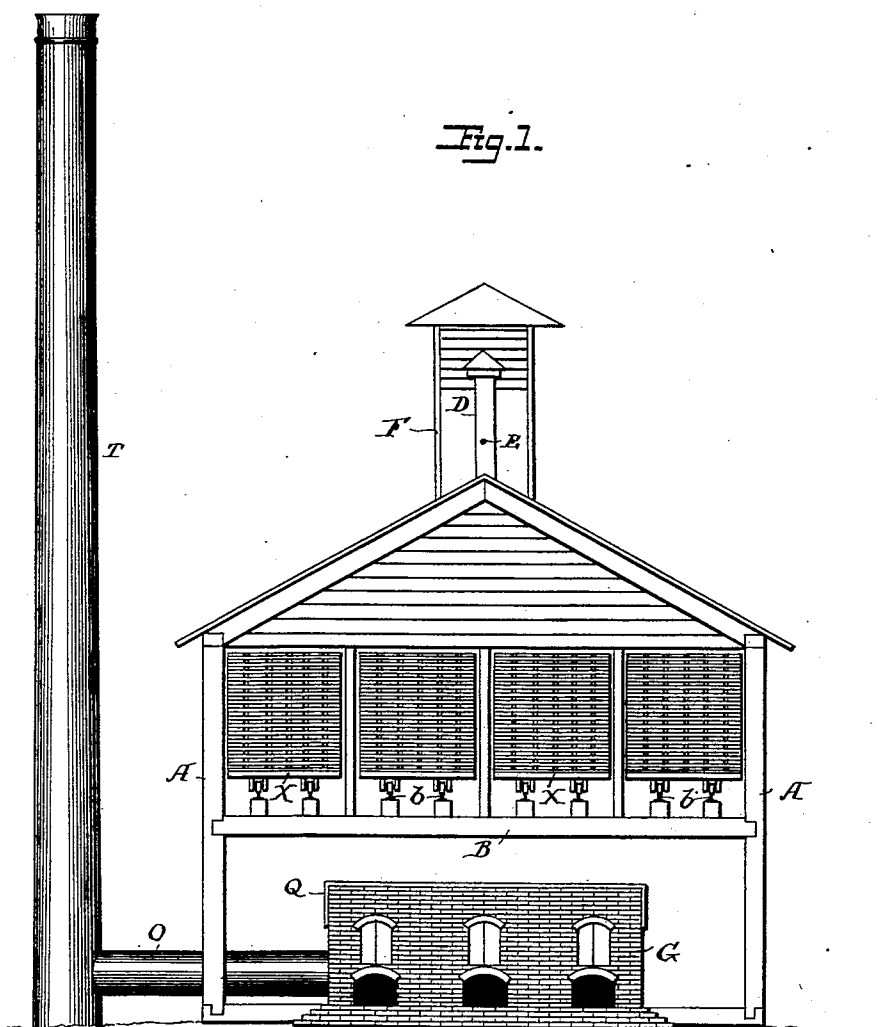
(No Model.)

2 Sheets—Sheet 1.

L. A. PARISHER.
LUMBER DRIER.

No. 564,639.

Patented July 28, 1896.



Witnesses
Prof. G. Hinkel
Alle N. Dobson

Inventor
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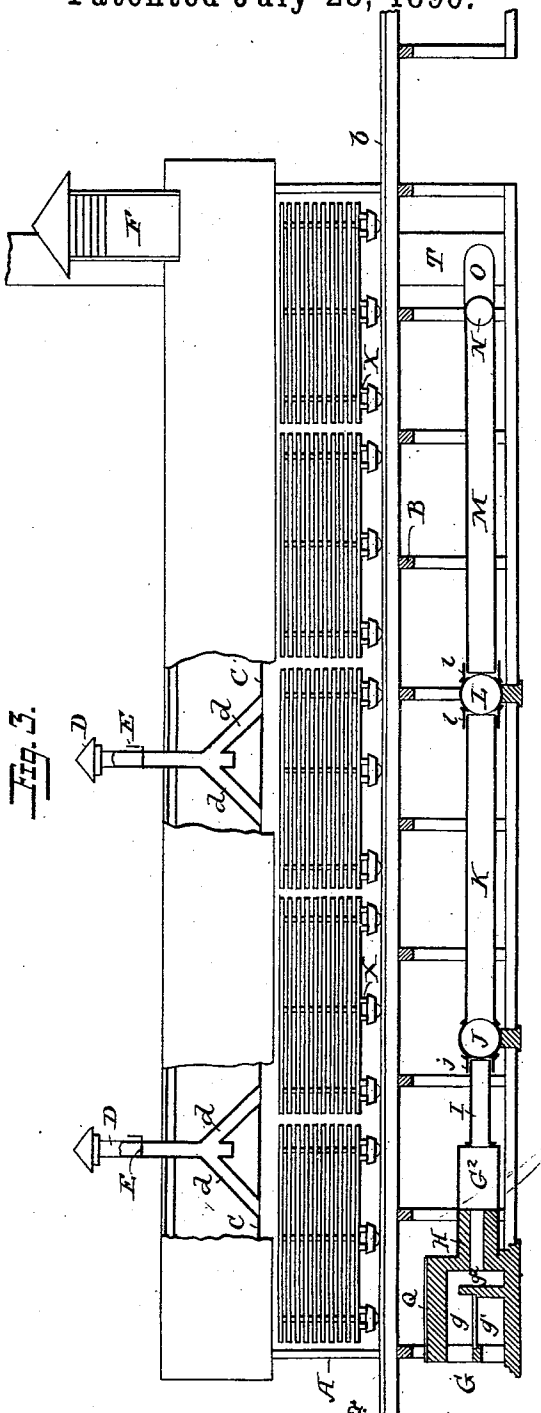
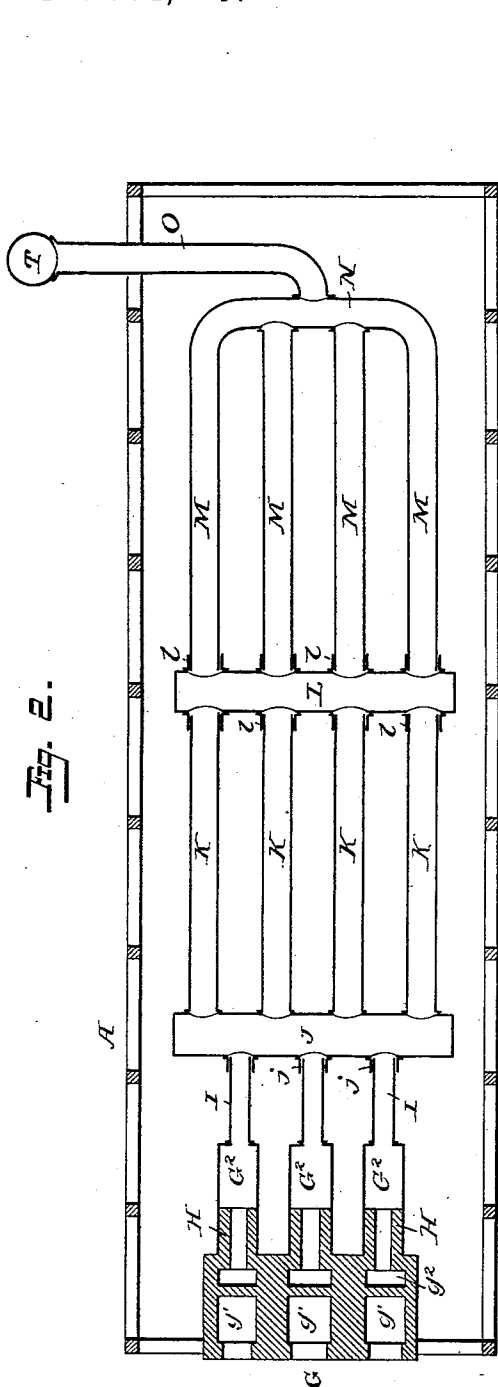
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UNITED STATES PATENT OFFICE.

LEMUEL A. PARISHER, OF SHREVEPORT, LOUISIANA.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 564,639, dated July 28, 1896.

Application filed March 12, 1892. Serial No. 424,702. (No model.)

To all whom it may concern:

Be it known that I, LEMUEL A. PARISHER, a citizen of the United States, residing in Shreveport, Caddo parish, State of Louisiana, have invented certain new and useful Improvements in Lumber-Driers, of which the following is a specification.

My invention relates to lumber-driers; and it consists in the improved features of construction and arrangement of parts embraced in a lumber-drier and which will be more fully described hereinafter.

In the accompanying drawings, in which like reference-symbols refer to like parts throughout the several views, Figure 1 is an end elevation of a lumber-drier embodying my invention. Fig. 2 is a plan view of the furnaces and flues; and Fig. 3 is a longitudinal vertical section through one of the furnaces and flues, parts being broken away to show the ventilators.

In drying lumber it is well known that gases are evolved and the wooden parts of the building become saturated with turpentine, resin, and other fluids which condense from the gases, thus rendering the structure very inflammable, and a great many fires have occurred and a great deal of valuable timber has been destroyed mainly through leak in the furnaces and flues used in the driers. Brickwork is generally used in the construction of the flues, chiefly on account of its cheapness, and it frequently cracks open about the furnaces, and sometimes at the corners or joints of the flues, and the flames or hot gases emitted from these openings are apt to set fire either directly to the building or the lumber or to the inflammable vapors which accumulate in the building.

One of the objects of my invention is to construct a heating apparatus with a view to preventing any communication between the interior of the furnaces and flues and the inflammable matter in or constituting the drier, thus precluding to a great extent the possibilities of losses by fire.

In the drawings, A indicates a building which may be made of wood, and B a framework extending across the building above the furnaces, upon which tracks *b* are laid to support the trucks X, which carry the lumber into and out of the drier. The upper portion

above the lumber may be covered with a sheathing C, in order that the heated air or products of combustion will be confined or prevented from rising above the lumber.

In drying lumber I find that putting the green lumber in the front portion of the drier, where the heat is the greatest, the steam and damp air from the green lumber are carried forward toward the outlet, and the dryer lumber which has been in the drier for some time tends to absorb these gases and vapors, and they will be held in the lumber and cooked therein, as it were, and this has a tendency to make the lumber glassy and hard to work. In order to prevent this, I provide at the forward end of the drier one or more ventilators D, and these are shown as being connected by the forked pipe *d* to the interior of the drying-room through the ceiling C, and they are also provided with suitable valves E, by means of which they may be opened and closed. In some instances I also provide a ventilator F, which is arranged in the roof at the rear end of the drier.

In order to produce the requisite heat, I arrange a number of furnaces G in the forward end of the drier, the drawings indicating three such furnaces arranged side by side, the front wall of the furnaces being outside of the building, so that fuel may be readily inserted and ashes withdrawn without entering the building. These furnaces are of ordinary construction, being provided with the fire-spaces *g*, and ash-pit *g'*, and back walls *g''*.

At the rear of the furnaces is a drum G², into which the products of combustion enter, and this drum is made of sheet metal, preferably steel of about three-sixteenths of an inch thickness. Extending into these drums for a space of four or five feet from the rear of the furnace is built an arch of fire-brick H, for the double purpose of protecting the drum from the intense heat and to make a close telescopic joint between the brickwork of the furnaces and the drum. Extending from the rear of each drum is a pipe I, which connects with a cross-drum J, to which all the pipes leading from the several furnaces connect. To provide for expansion and contraction in the pipes, sleeves *j* are tightly riveted or otherwise joined to the drum J, and into this

sleeve the ends of the pipe I fit telescopically, making a sliding joint.

From the drum J extend rearwardly a number of flues K, four being shown in the present instance, to another cross-drum L, and from this cross-drum another series of flues M extend to the opposite end of the building and unite at N, from whence the products of combustion pass through a single flue O to a chimney T. The flues K and the pipes I are preferably arranged alternately along the opposite sides of the drum J, so that the products of combustion entering the drum from the pipes J strike the opposite side of the drum and are deflected toward the right and left and distribute themselves through the various flues. Thus if one furnace is burning more rapidly than the other, or if the fire in any one happens to be out while the others are burning, the products of combustion from the remaining furnaces will fill the drum J, and passing through all the flues K will thoroughly and evenly heat the building. The drum L also assists in evenly distributing the heated products of combustion, and they are carried along through the flues N to the rear of the drier, and thence out through the smoke-stack.

The flues I and K are necessarily of considerable length, and are made of metal. Consequently they expand and contract to a considerable degree with the varying temperature, and to accommodate themselves to this change of length without undue strain upon any of the parts I provide sleeve-joints on either side of the drum L, into which the flues K, M, and N pass, thus making substantially one tight expansion-joint throughout the whole structure. The flues K and M are preferably somewhat larger in diameter than the pipes I.

The arches over the furnaces become highly heated and often seams or cracks form in them communicating with the upper surface of the brickwork and forming dangerous outlets for the flames from the interior of the furnaces, and in order to prevent these flames passing through the seams I place over the entire top of the furnace a covering-plate Q, consisting of a sheet of iron or steel, and extend the same down on the sides of the furnace to a considerable distance, as clearly shown in Fig. 1. With this construction of furnace or flues it will be seen that the products of combustion are confined in the lower portion of the drier, and are prevented from leaking or passing into the upper portions containing the combustible matter, and as the joints from the furnaces to the chimney are made tight by telescopic sleeves the contraction and expansion of the metal are amply provided for in a manner that does not interfere with the free passage of the products of combustion.

The green lumber as it is first inserted into the drier is exposed to the greatest heat, being more nearly over the furnaces than their

immediately connecting pipes and flues, and, as before intimated, I have found that the air from the lumber is impregnated with considerable quantities of vapors, such as turpentine, resin, and moisture in the form of vapor, and these vapors are carried to the top of the drier and if not disposed of are carried along over the more dried lumber, and more or less is absorbed thereby. To prevent this, I provide the ventilating-flues at the top of the drier, which may be opened to allow the turpentine, resin, and moist vapor to pass directly out of the drier during the first part of the operation at least, and when the air becomes less vitiated or impregnated with these gases the dampers may be closed and all the air driven through the drier longitudinally and out of the ventilator F at the extreme rear end of the drier. Thus I find that instead of the dry lumber being impregnated with the resin and turpentine, which render it hard and glassy, the lumber is free from such material and soft and in the best condition for use. Furthermore, by this arrangement I find that the process of drying can be hastened, in that continuous currents of pure dry heated air are continually passing through the lumber all the time the deleterious gases first thrown out from the lumber are allowed to escape, so as not to interfere with or impregnate the lumber more thoroughly dried.

The free currents of air even at a lower temperature I have found from experiment will dry lumber faster than the more stagnant higher-heated air containing the injurious gases. The distributing cross-drums act as reservoirs for holding the heat and enable the products of combustion to transfer all their caloric to the drums and flues before they finally pass into the chimney.

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

A lumber-drier comprising a suitable housing having elevated tracks which receive the loaded trucks, a plurality of furnaces located at the forward end of the housing, a hollow arch leading rearwardly from each furnace, a transverse drum located beyond the arches, and pipes connecting the arches with the drum, an additional transverse drum located a suitable distance to the rear of the first, pipes connecting the two drums which alternate with the pipes first named, and a third drum connecting with the middle drum by means of suitable pipes, and a single outlet connection leading to a chimney and common to all of the last-named pipes, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEMUEL A. PARISHER.

Witnesses:

BEN S. WHITE,
P. L. MARTIN.