Aug. 4, 1936. A. E. KRICK 2,050,226

APPARATUS FOR DRYING LUMBER

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Fig. 1

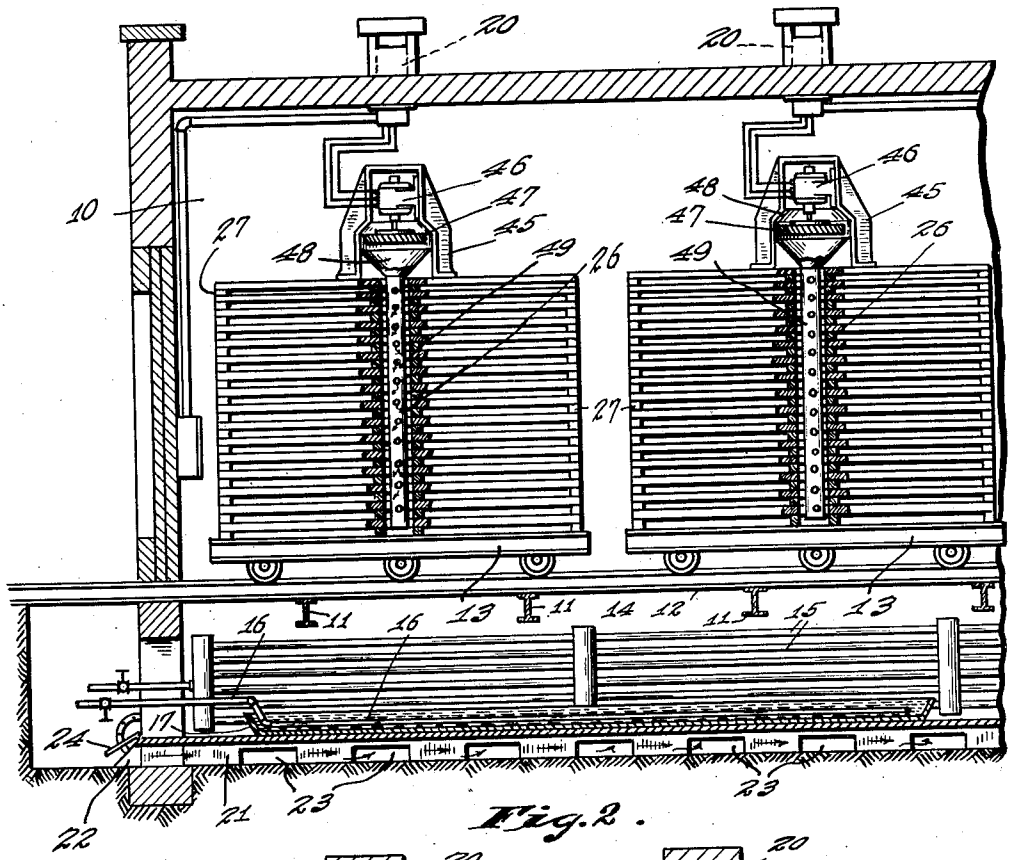
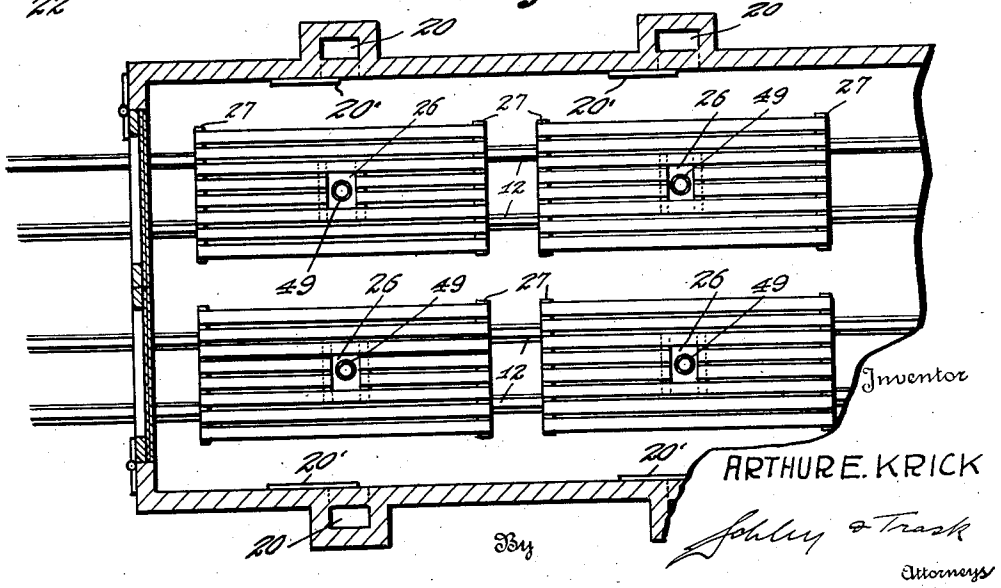


Fig. 2.



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APPARATUS FOR DRYING LUMBER

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5 Claims. (Cl. 34—19)

My invention is concerned with an apparatus to be used in the process of drying lumber. In processes of this type, as now practiced, it is customary to place the lumber to be dried on a truck which is moved into a kiln in which desired conditions of temperature and humidity are maintained until the lumber reaches the desired condition of dryness. With the object of securing uniform drying of the lumber throughout the pile, some attempts have been made to provide for the circulation of conditioned air through the pile of lumber in the kiln. So far as I am aware any prior means used to accomplish this purpose has embodied air-circulating and directing means stationarily mounted and so operated as to produce air-flow through the kiln compartments. In such an arrangement, it is necessary, in order to insure maximum flow of air through the lumber, that the lumber pile substantially fill the kiln; as otherwise, air could and would flow through the kiln around the lumber. Further, even if the pile does fill the kiln, there is no assurance that conditioned air will reach the center of the pile.

It is the object of my invention to produce an apparatus by which the flow of air through the lumber being dried is definitely assured, irrespective of whether or not the lumber pile substantially fills the kiln compartment; and also to insure that conditioned air will reach all parts of the lumber pile.

The accompanying drawing illustrates my invention: Fig. 1 is a longitudinal section through a kiln in which the lumber is piled on trucks longitudinally of the kiln; and Fig. 2 is an interior plan of the kiln illustrated in Fig. 1.

The kiln 10 illustrated in the drawing is provided at floor-level with spaced transverse beams 11 that serve as a support for tracks 12 on which the lumber-carrying trucks 13 are mounted. In the drawing, I have shown the air conditioning apparatus as located in a pit 14 below the beams 11, this air-conditioning apparatus including steam coils 15 for heating the air within the kiln and water-evaporating pipes 16 for humidifying the air within the kiln, the pipes 16 being located in trays 17 adapted to contain water.

For the purpose of controlling ventilation of the kiln, the side walls thereof are shown as provided with flues 20 having some means, such as sliding doors 20' by means of which air-flow through them can be controlled. In the pit 14 there are located longitudinally extending ducts 21 which have inlet openings 22 outside the kiln and discharge openings 23 within the kiln. The supply of air to the kiln through the ducts 21 may be controlled by a suitable damper 24 associated with the inlet opening 22 of each duct.

In carrying out my invention, the lumber to be dried is piled on the trucks 13 to provide at or near the center of the pile an open space 26 which extends downward from the top of the pile to, or nearly to, the truck. In addition, the lumber is so arranged as to permit the passage of air through the pile the boards of each layer of lumber being spaced from each other, and the various layers separated as by the use of transverse spacers 27 that may be located near the ends of the boards.

As shown in the drawing, I may provide a separate blower for each truck-load of lumber. Such an arrangement is illustrated in Figs. 1 and 2 where there is shown as placed on each pile of lumber a support 45 for an electric motor 46. Each electric motor 46 is mounted with its shaft vertical and on the lower end of the motor shaft there is provided a turbine-like fan 47. A shroud 48 surrounding the fan 47 communicates with an air conduit 49 that extends downwardly through the space 26 provided at the center of the pile of lumber. As illustrated in Figs. 1 and 2, the conduit 49 has a multiplicity of longitudinally spaced air-passing openings providing communication between its interior and the space 26.

In operation, each of the trucks 13 has a pile of lumber arranged upon it, the lumber being arranged as in Figs. 1 and 2 to provide for air-flow through the pile to and from the central space 26. The conduit 49 is then introduced into the space 26, and the trucks are run into the kiln where the motor support 45, motor 46, and fan 47 are put in place as shown in Fig. 3. With the air in the kiln at the proper conditions of temperature and humidity, the motors 46 are operated in one direction for a period of time, to force air into the space 26 and outwardly through the lumber piles, and are then reversed to cause air-flow through the piles in the opposite direction.

Preferably, the motors 46 are independently connected to the current-source in order that they may be independently controlled. With this arrangement the rate at which the lumber in the various piles is dried may be separately controlled. For example, if one pile is drying too rapidly, the motor and fan associated with it may be stopped while the fans on the other piles are continued in operation.

I have not shown any means for effecting control of the ventilation, humidity, and temperature

in the kiln. Such means may be either manual or may be automatic, as in my copending application Serial No. 399,466, filed October 14, 1929.

I claim as my invention:

1. Apparatus for drying lumber, comprising a kiln, a truck movable into and out of said kiln and adapted to support a pile of lumber arranged to completely surround an open space near its center, a reversible fan supported on said pile of lumber, and an air conduit associated with said fan and extending into said space.

2. Apparatus for drying lumber arranged in a pile with an upwardly opening interior open space, comprising a fan, an air-conduit associated with said fan and extending into said space, and a member upon which said fan is mounted, said member being disposed above said open space to close its upper end.

3. Apparatus for drying lumber arranged in a pile with an upwardly opening interior open space, the lumber being disposed in the pile in spaced relation to provide a multiplicity of generally horizontally extending air-passages, whereby air introduced into said open space will be forced to flow through said horizontal passages in contact with faces of the lumber, said apparatus comprising a blower supported on the lumber pile and an air conduit associated with said blower, said conduit being supported from the lumber-pile and extending downwardly into said open space and having within said open space a series of vertically spaced openings.

4. Apparatus for drying lumber arranged in a pile with an upwardly opening interior open space, the lumber being disposed in the pile in spaced relation to provide a multiplicity of generally horizontally extending air-passages, whereby air introduced into said open space will be forced to flow through said horizontal passages in contact with faces of the lumber, said apparatus comprising a motor-support resting on the lumber-pile above said open space, an electric motor mounted upon said support with its axis vertical, a blower arranged below said motor and adapted to be driven thereby, and an air conduit associated with said blower and extending downwardly into said open space, said conduit being provided with a series of vertically spaced openings.

5. The invention set forth in claim 4 with the addition that said motor is reversible.

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