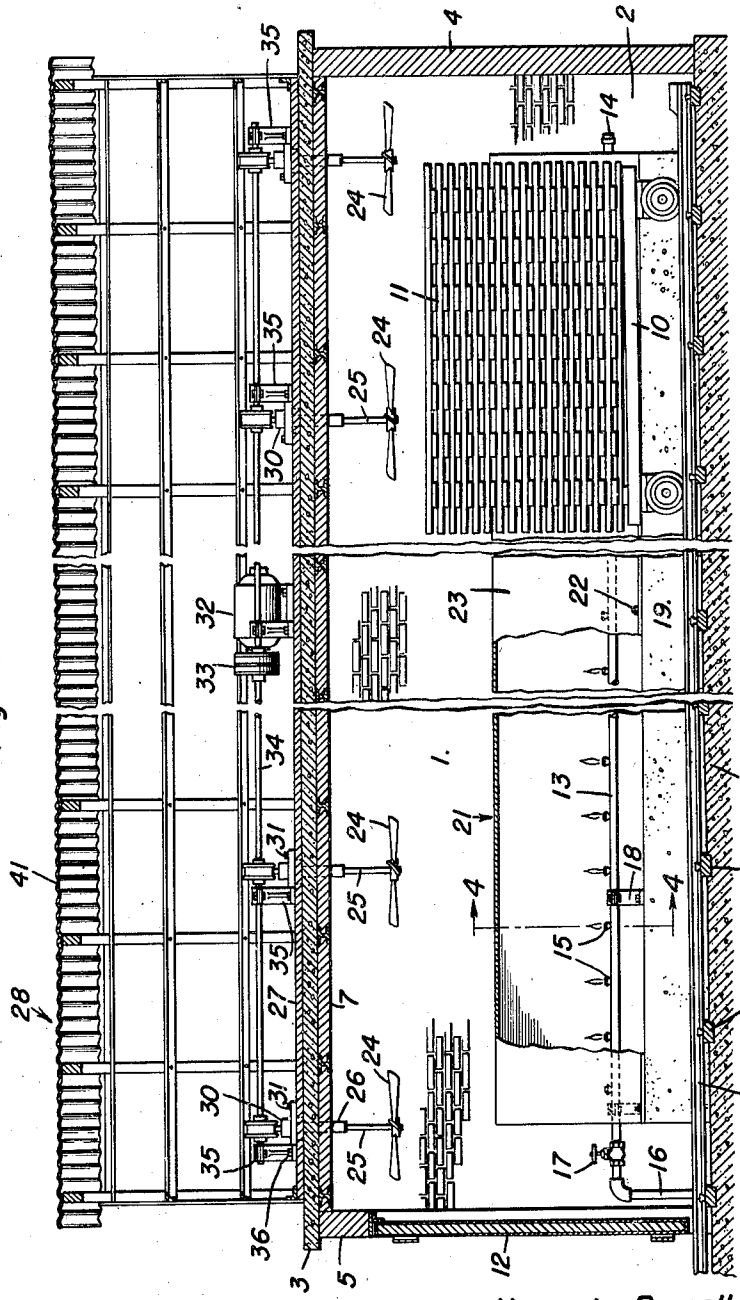
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KILN FOR DRYING LUMBER

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Fig. 1.



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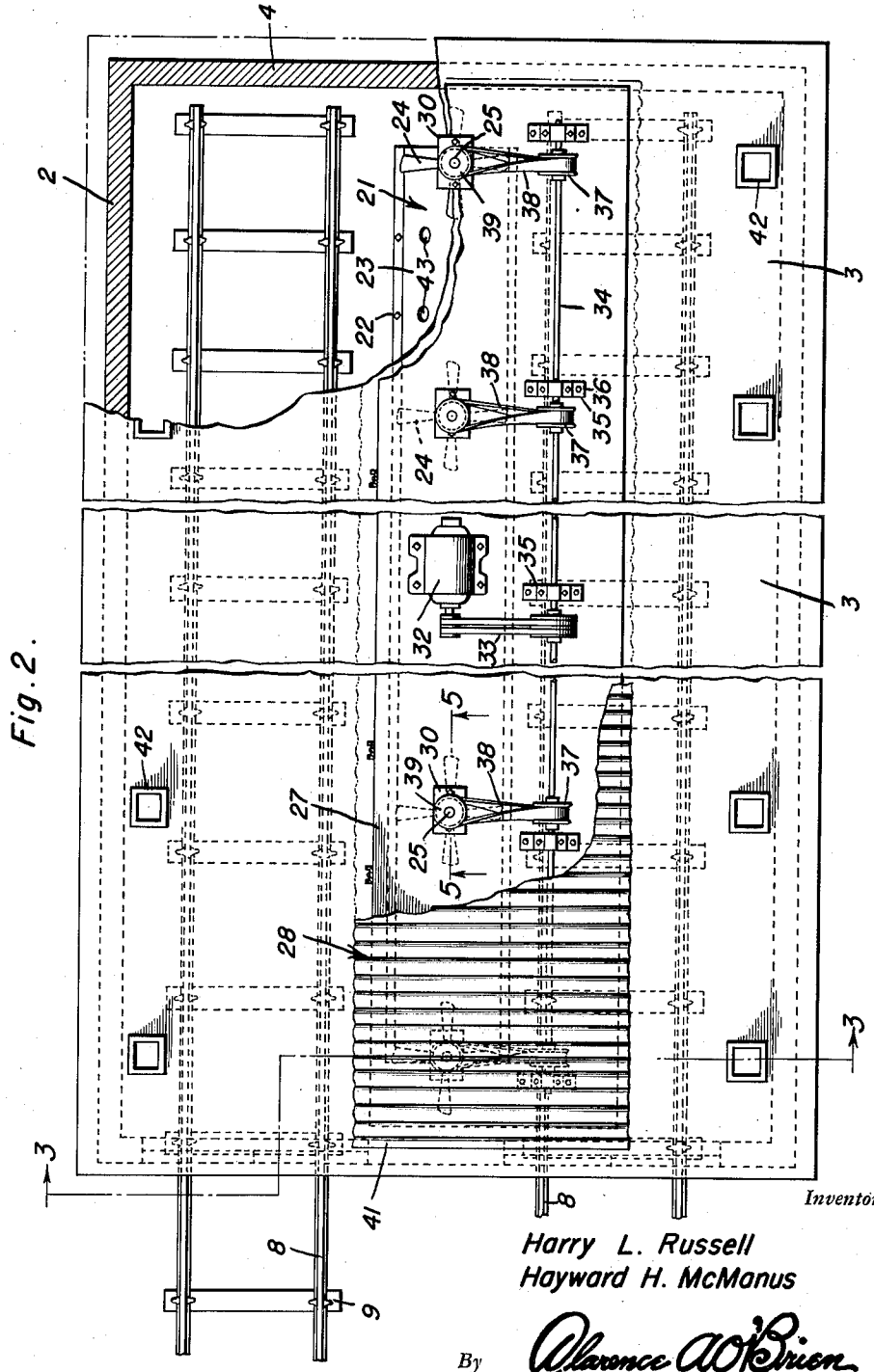


Fig. 2.

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Fig. 3.

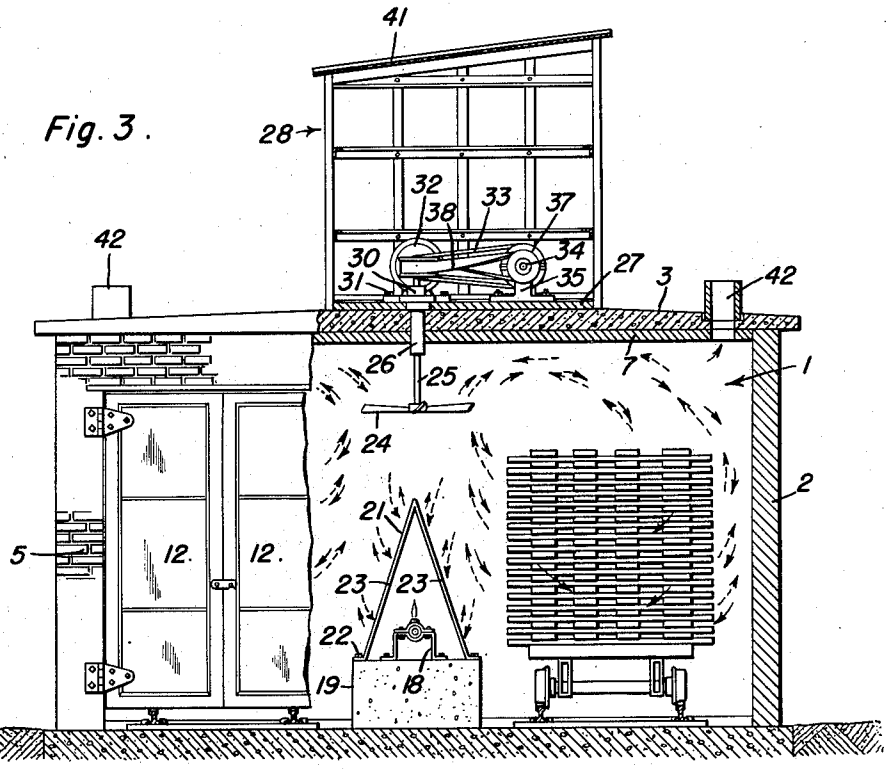


Fig. 4.

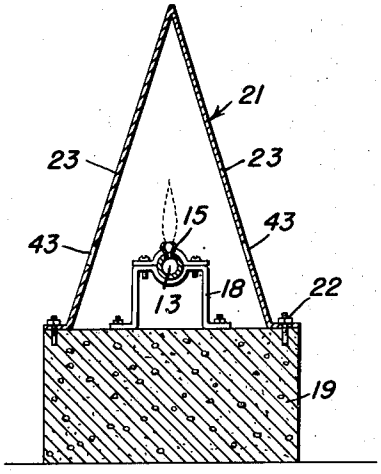
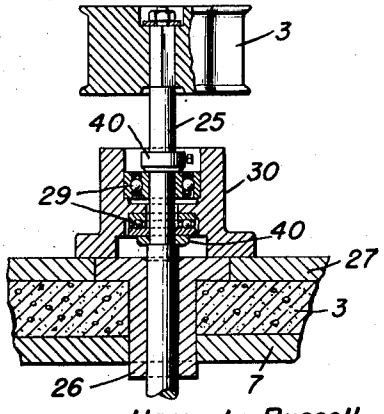


Fig. 5.



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KILN FOR DRYING LUMBER

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Application August 11, 1947, Serial No. 767,938

1 Claim. (Cl. 263—40)

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Our invention relates to improvements in kilns for drying and seasoning green lumber.

The primary object of our invention is to provide a kiln for such purposes equipped with means for circulating heated air around carloads of lumber, and through the same, in a manner to effect uniform drying of all the lumber within the confines of the kiln.

Another object is to provide in such a kiln for circulating heated air as above set forth and in a manner to maintain the air dry.

Another object is to provide a kiln adapted for the above purposes and which is simple in construction and economical to erect and operate.

Other and subordinate objects also comprehended by our invention, together with the precise nature of our improvements and the advantages thereof, will be readily understood when the succeeding description and claim are read with reference to the drawings accompanying and forming part of this specification.

In said drawings:

Figure 1 is a view in longitudinal vertical section, partly broken away, of a kiln constructed in accordance with our invention in a preferred embodiment thereof;

Figure 2 is a view in plan partly broken away and shown in section;

Figure 3 is a view partly in end elevation and partly in transverse section taken on the line 3—3 of Figure 2;

Figure 4 is a detail view in transverse section taken on the line 4—4 of Figure 1 and drawn to a larger scale; and

Figure 5 is a detail view in vertical section taken on the line 5—5 of Figure 2 and drawn to a larger scale.

Referring now to the drawings by numerals, our improved kiln, as shown, comprises a drying chamber 1 of elongated, rectangular shape which may be of any desired length and is formed by side walls 2, a substantially flat roof 3, a rear end wall 4, a front wall 5 and a floor 6. The walls 2, 4, 5 are preferably formed of brick, the roof 3 of cement with a heat-retaining liner 6, and floor 6 also of cement.

Parallel car tracks extend into the drying chamber 1 through the front end thereof upon opposite sides of the longitudinal center of said chamber 1, on sleepers 9 suitably attached to the floor 6. The tracks 8 provide for running the usual flat bed kiln cars 10 in said chamber 1 in strings at opposite sides of said chamber 1 to support loads of lumber 11 stacked thereon in the usual crossed spaced relation to permit air

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to circulate through the loads. Suitable doors 12 in the front wall 5 spaced above the tracks 8 provide for closing the front end of the drying chamber 1.

A manifold fuel pipe 13 extends from substantially the front end of the drying chamber 1 to within a short distance of the rear wall 4, horizontally, at a level slightly above the level of the beds of the kiln cars 10, and in the longitudinal center of said chamber 1 with a closed rear end 14 and upstanding jet burners 15 spaced equidistantly along the same. At the front end of the drying chamber 1, a stand pipe 16 is provided for connecting the manifold pipe 13 to a suitable source of fuel supply, such as oil, not shown. A control valve 17 of any suitable type is provided in the front end of said manifold pipe 13. Brackets 18 spaced along said manifold pipe 13 support the same in the longitudinal center of a concrete, or the like, base 19 extending along the floor 6 in the longitudinal center of the drying chamber 1 and on which said brackets 18 are suitably fixed, as at 20.

An elongated heat-radiating guard 21 of inverted V-shape in cross section and preferably formed of sheet metal straddles said manifold pipe 13 and brackets 18 and extends along the base 19 in the longitudinal center of the drying chamber 1 with its ends spaced sufficiently from the end walls 4, 5 for admitting air into said guard for combustion purposes, it being understood that the guard is open at both ends to admit air thereto. The guard 21 is secured at its free longitudinal edges on said base 19, as at 22. The guard 21 provides downwardly diverging baffle sides 23 extending upwardly in the drying chamber 1 substantially part way to the roof 3 and serving a particular purpose presently seen.

A plurality of fans 24 are provided in the top of the drying chamber 1 and are spaced longitudinally thereof to rotate about vertical axes vertically aligned with the guard 21. The fans 24 are of a type adapted to blow air downwardly when rotating in one direction and to suck air upwardly when rotating in a reverse direction. Vertical fan shafts 25, upon the lower ends of which said fans 24 are fixed, support the fans 24 substantially midway between the upper edge of the guard 21 and the roof 3. The fan shafts 25 depend through the roof 3 by way of bushings 26 extending through said roof and a floor 27 of a superstructure 28, presently described, and said shafts are rotatably mounted in ball bearings 29 in suitable bearing cages 30 fixed to said floor 27 as at 31.

A motor drive is provided for rotating all of the fans 24 in the same direction comprising a reversible motor 32 of any suitable type, mounted on said floor 27 and connected by a belt and pulley drive 33 to a pulley shaft 34 extending longitudinally of the roof 3 and journaled in bearing brackets 35 arising from said floor 27 and secured thereto, as at 36. Pulleys 37 fast on the pulley shaft 34 are connected by belts 38 to pulleys 39 fast on the upper ends of the fan shafts 25. End thrust collars 40 on the fan shafts 25 prevent end play of said shafts in the ball bearings 29.

The superstructure 28 is of skeleton angle iron form with a suitably pitched roof 41 and is adapted to protect the described motor drive for the fans 24, also the bearing cages 30, from the weather.

A plurality of chimneys 42 are provided in the roof 3 at opposite sides of the drying chamber 1, the purpose of which will presently be explained.

Any suitable means may be provided for lighting the jet burners 15 through the guard 21, for instance, apertures 43 in the baffle sides 23 of said guard.

Referring now to the use and operation of the described kiln. With the kiln cars 10 loaded with lumber 11 as described and run in strings into the drying chamber 1, the doors 12 are closed and the jet burners 15 lighted to heat the air in the drying chamber 1 to a desired temperature by heating the guard 21 principally. After the desired temperature is obtained in the drying chamber 1, the motor 32 is started, by any suitable means, not shown, to cause the fans 24 to be revolved in a direction to blow downwardly. Such operation of said fans 24 blows the heated air downwardly against the downwardly diverging baffle sides 23 of the guard 21 which deflect air currents downwardly toward opposite sides of the drying chamber 1, such deflected currents rising at the sides of said chamber and being sucked across the top of the chamber back into the fans. Thus, currents of heated air are caused to describe circles, substantially, around the stacks of lumber 11, as represented by the full line arrows in Figure 3. By reversing the motor 32, the fans 24 may be reversed to suck heated air upwardly in converging currents from opposite sides of the guard 21 to be blown in opposite directions against the roof 3 and to rebound from said roof downwardly at opposite sides of the drying chamber 1 to then rebound off the side walls downwardly and toward the guard 21, whereby such air currents are caused to describe circles around the stacks of lumber 11 in a reverse direction relative to the air currents first described, and as shown by the broken line arrows in Figure 3. As the circulating air currents pick up moisture from the stacks of lumber 11 and become saturated therewith, such saturated air may

be permitted to escape out of the chimneys 42 under control of any suitable means, not shown, this feature providing for maintaining the air circulated substantially dry, or sufficiently dry for seasoning the lumber.

The foregoing will, it is believed, suffice to impart a clear understanding of our invention without further explanation.

Manifestly, the invention, as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to such modifications as fall within the scope of the appended claim.

Having described the invention, what is claimed as new is:

In a kiln for seasoning lumber, an elongated drying chamber, longitudinally extending parallel tracks at opposite sides of said chamber, cars on said tracks for supporting loads of lumber, a manifold fuel pipe in the longitudinal center of said chamber extending along the same and having burners spaced apart longitudinally thereof, a hollow air deflecting heat radiating member extending along said pipe and over the same and comprising closed downwardly diverging baffle sides and being closed at its bottom with open ends for admitting air into the same to said burners for combustion purposes, and overhead fans in said chamber extending in a line longitudinally of the chamber above said member in vertical alignment therewith and rotating about vertical axes, said fans being adapted to blow air currents downwardly against said sides of said member to be heated and deflected by said sides downwardly toward opposite sides of the chamber for deflection upwardly by the sides of the chamber and by the top of the chamber back to said fans whereby heated currents of air are caused to travel in substantially circular paths around the stacks of lumber.

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