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PROCESS FOR DRYING LUMBER

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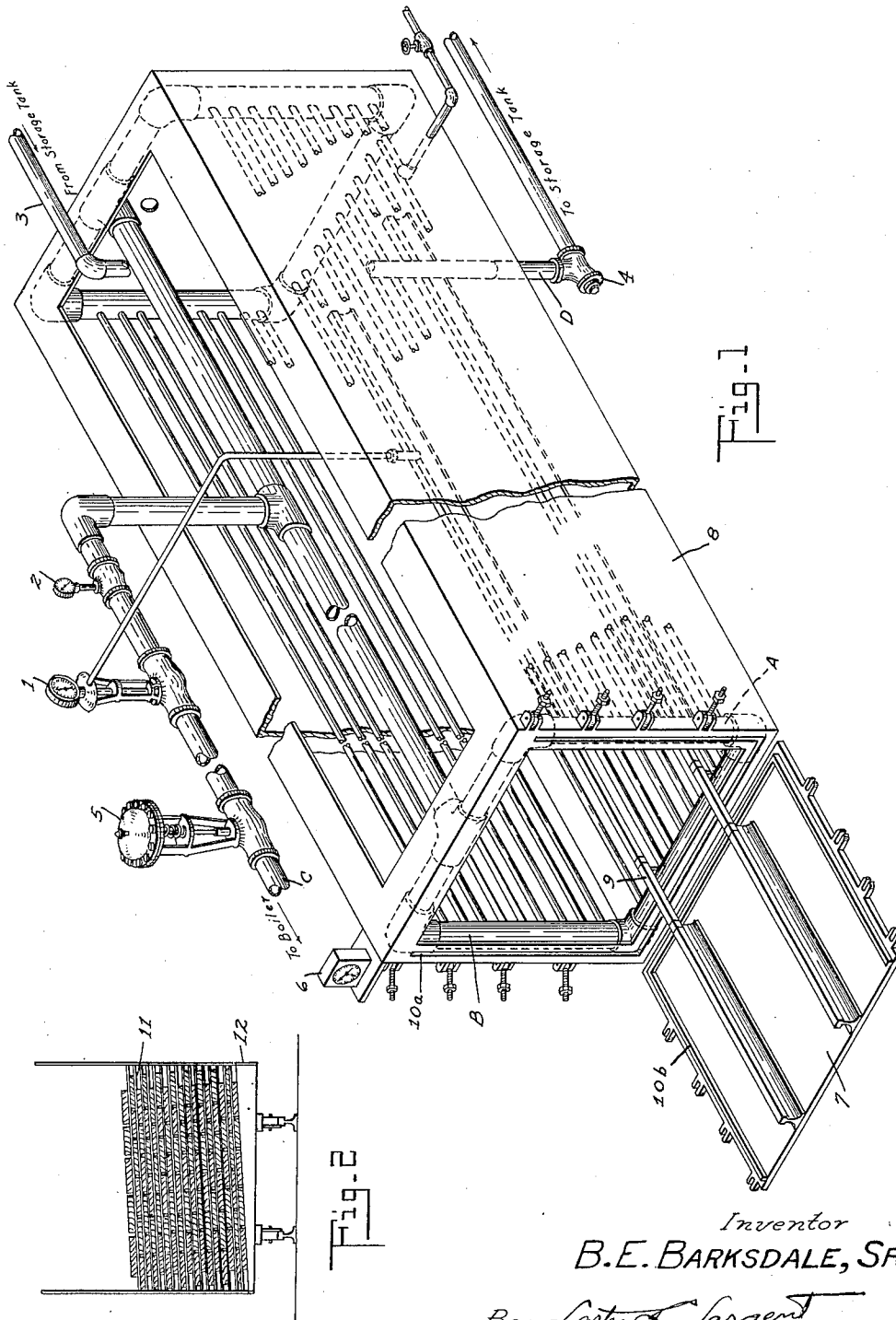


Fig. 1

Fig. 2

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PROCESS FOR DRYING LUMBER

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2 Claims. (Cl. 34—9.5)

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The object of my invention is to provide a novel process for drying green lumber more quickly than has been possible heretofore. It is also my object to attain this result by a process which will not cause fires.

The apparatus disclosed herein is claimed in my prior United States Patent No. 2,464,429 which issued on March 15, 1949.

In carrying out my process I prefer to use the apparatus illustrated in the accompanying drawings in which:

Figure 1 is a perspective view of my invention, a portion of the apparatus being broken away to save space;

Fig. 2 is a section through the truck on which lumber is arranged for placing in the apparatus shown in Fig. 1.

Referring to the accompanying drawings, I provide a steel tank A which is equipped with heating coils B that will produce sufficient radiation of heat at given temperatures and pressures. A pipe C leads from the boiler to the heating coil B. Mounted on the pipe C is a temperature control instrument 1 which is so regulated that a definite control of temperature over a period of time necessary to dry the wood to a given or stated or required moisture content is obtained by setting or regulating this instrument at certain definite temperatures. A gage 2 is provided which indicates the steam pressure in the heating coils. A pipe line 3 is provided through which the drying fluid is pumped into the tank A. An outlet pipe D opens out from the bottom of the tank and has a strainer 4 where fluid is drained from the tank after drying time and is for the purpose of trapping those objects which are foreign to the fluid, as for example, sawdust, shavings, chips, etc.

Also mounted in the intake steam pipe C is a pressure steam-controlled valve 5 which can be regulated so as to control the pressure on the steam coils B and prevent rupture or bursting of same due to excess pressure. The timing apparatus 6 is provided to govern the time of operation involved and is equipped with an element which indicates when the termination of the required drying period has been reached.

The tank has hinged door 7 equipped with staybolts 7a that allow the door to be lowered or opened so that trucks may pass in or out of the tank. Doors 7 may be provided on either end of the tank or on both ends to permit a continuous operation in supplying and removing lumber. Rails 9 are provided on the door and on the body of the tank to permit passage of trucks from the

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rails on the door to the corresponding rails within the tank. The door 7 is equipped with a steel tongue 10 which seats in a corresponding groove 10a in the end of the tank containing a gasket to prevent the leaking of fluid from the tank.

The bottom of the truck on which the green lumber is placed is provided with sloping crossmembers 12, so that the lumber being dried may be placed in a sloping position which allows the fluid to rapidly drain from the upper surface of the material being dried. The material is also spaced, as at 11, from the edge of the truck to allow a complete circulation of the drying fluid around the girth of each individual piece of material being dried.

The green lumber to be dried is placed on trucks in the manner shown in Fig. 2 and the truck of lumber is then rolled into the tank A, either by hand or mechanically. The material is then anchored in the tank in such a manner as to prevent floating.

The tank is then filled with a mineral fluid, preferably of a high paraffin content such as Texas S. A. E. oil, 6 to 8 weight or viscosity. At the time of introduction of the drying fluid and the wood or other material to be dried, the relative temperature of the drying fluid and the material to be dried must not exceed 20 degrees Fahrenheit. This prevents the drying fluid from entering or penetrating the material to be dried. After introduction of drying fluid into the tank, the material to be dried is to be covered completely, the same being submerged in the drying fluid. Then steam control valve 5 is opened to permit the flow of steam not in excess of 60 pounds pressure which flows through thermostatic control valve No. 1 into the steam coils until the temperature of the fluid has reached 250 degrees Fahrenheit. Control valve No. 1 maintains the correct temperature. This is necessary to prevent the checking, warping or twisting of the material being dried. At the time the drying solution reaches the required temperature, timing apparatus No. 6 is set for a period of time to be determined by the size and nature of the product being dried. Pressure on the coils is constantly checked by gage No. 2.

The required time for proper processing having elapsed, drying fluid is rapidly drained from the tank, the heat being maintained on the steam coils to prevent any change in temperature of the fluid or wood so that fluid will not enter or penetrate the material being dried. It is important to maintain a substantially uniform temperature during the drying period for the drying of dif-

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ferent sizes and species of wood, and also to maintain this temperature while the drying fluid is being drained from the tank.

A slight film of oil may be left on the top of the lumber but this is quickly removed when it is dressed in a planing mill.

Material is then ready for removal and manufacturing.

The drying liquid can be used again and again, as it is not absorbed by the wood, provided my process is followed. In case it is desired to use the drying liquid again shortly after it is removed from the drying tank, then it is run through a cooling tower, which can be attached to said tank.

What I claim is:

1. A process for drying lumber comprising stacking lumber in a tank in such an arrangement that substantially the entire area of each piece is exposed, immersing said lumber in a drying liquid of high paraffin content, the temperature differential between said liquid and said lumber being not greater than 20° F. whereby penetration of the lumber by the liquid is prevented, raising the temperature of the liquid to approximately 250° F. and upon reaching temperature equilibrium between said lumber and said liquid maintaining this temperature for a sufficient period of time to vaporize and drive off substantially all of the moisture contained on the particular species of lumber being dried, the temperature at which said liquid vaporizes being substantially above 250° F. thereby precluding vaporization of said liquid during the drying process, rapidly draining said liquid from said tank while maintaining said temperature whereby creation of a partial vacuum in said lumber is prevented, thus precluding absorption

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of said liquid and removing said lumber from said tank.

2. A process for drying lumber comprising arranging lumber in a tank in such a manner that substantially the entire area of each piece is exposed, immersing said lumber in a drying liquid, the temperature differential between said liquid and said lumber being not greater than 20° F. whereby penetration of the lumber by the liquid is prevented, raising the temperature of the liquid to approximately 250° F. and upon reaching temperature equilibrium between said lumber and said liquid, the temperature at which said liquid vaporizes being substantially above 250° F. thereby precluding vaporization of said liquid during the drying process, maintaining this temperature for a sufficient period of time to dry said lumber, rapidly draining said liquid from said tank while maintaining said temperature whereby creation of a partial vacuum in said lumber is prevented, thus precluding absorption of said liquid and removing said lumber from said tank.

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