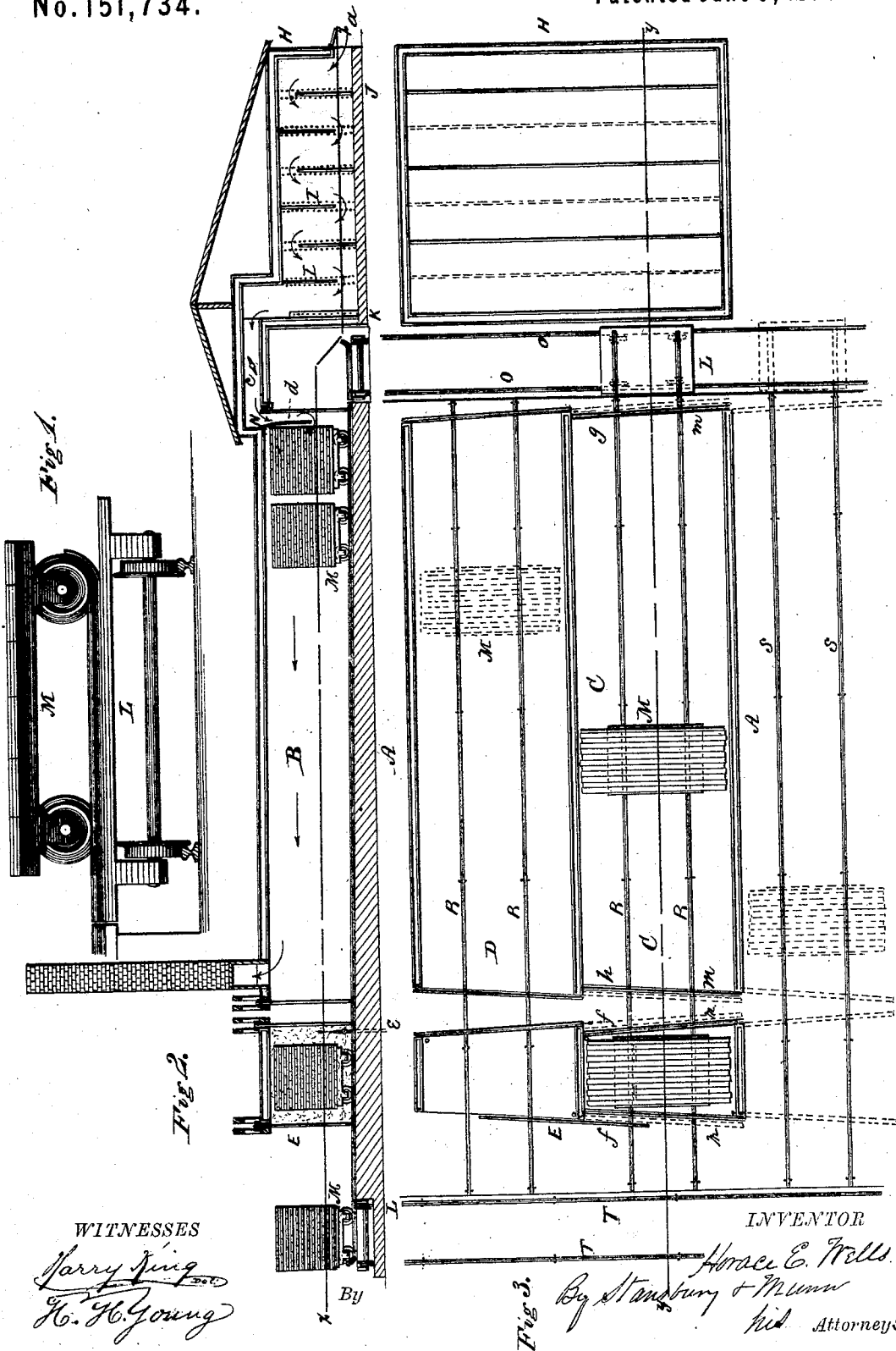


H. E. WELLS.
Lumber Drying-Kilns.

Patented June 9, 1874.

No. 151,734.



H. E. WELLS.
Lumber Drying-Kilns.

No. 151,734.

Patented June 9, 1874.

Fig 4.

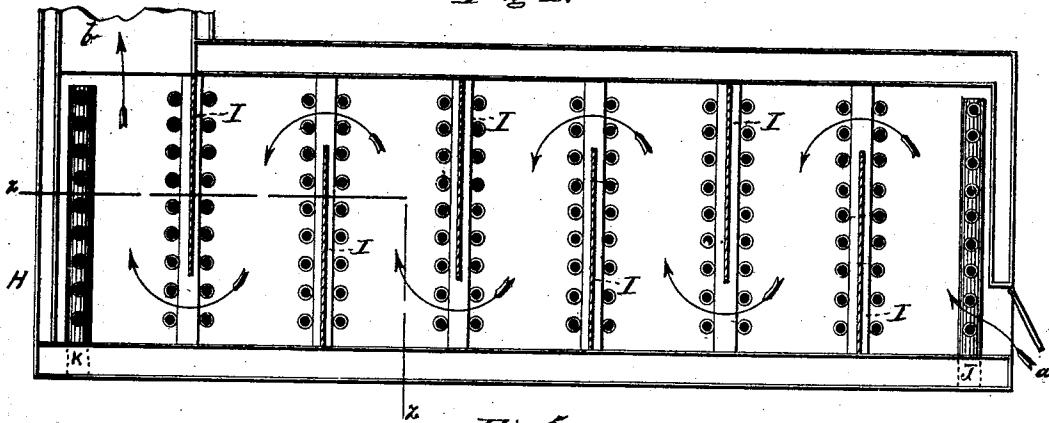


Fig 5.

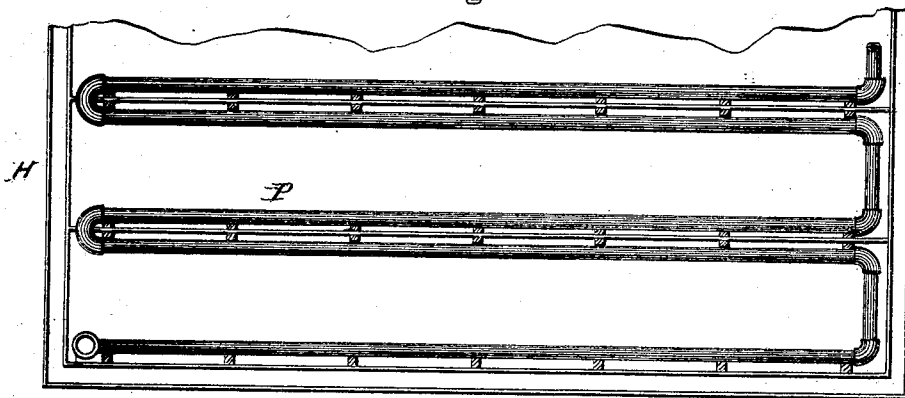
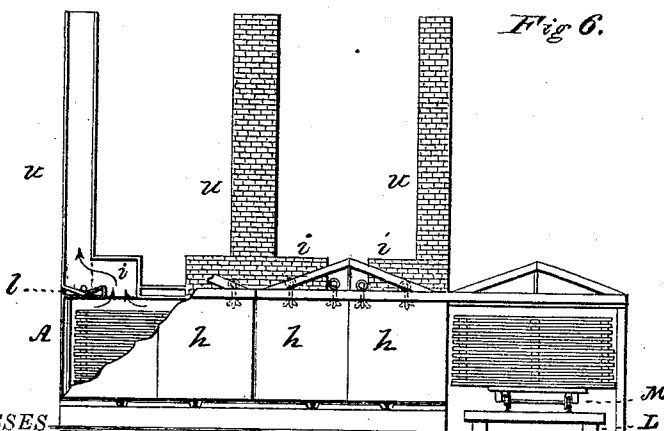


Fig 6.



WITNESSES

Harry King
H. H. Young

By

Stansbury & Munroe

INVENTOR

Horace E. Wells

Attorneys

UNITED STATES PATENT OFFICE.

HORACE E. WELLS, OF VAN WERT, OHIO.

IMPROVEMENT IN LUMBER-DRYING KILNS.

Specification forming part of Letters Patent No. **151,734**, dated June 9, 1874; application filed May 13, 1874.

To all whom it may concern:

Be it known that I, HORACE E. WELLS, of Van Wert, in the county of Van Wert and State of Ohio, have invented certain new and useful Improvements in Lumber Dry-Kilns; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the cars arranged for switching; Fig. 2, a longitudinal vertical section of the kiln on the line *y y* of Fig. 3; Fig. 3, a longitudinal horizontal section of the same on the line *x x* of Fig. 2; Fig. 4, a vertical section of the heating-room, enlarged, on the line *y y*, Fig. 3; Fig. 5, a horizontal section of a portion of the heating-room on the line *z z* of Fig. 4; and Fig. 6 is a vertical elevation of the end of the kiln at the ventilating-chimneys with a portion broken away.

The object of my invention is to save time and labor in introducing and removing the lumber from the kiln, and at the same time to thoroughly dry it. It consists in arranging the rooms on nearly the same plane, with the drying-room in the middle, the steaming-room at one end, and the heating-room at or near the other; also, in the vertical arrangement of tiers of steam-pipes with a series of alternating projecting partitions in the heating-room, and so connecting the heating with the drying room that the heated air shall pass through the latter longitudinally and in a direction opposite to that in which the loaded cars are moved; also, in the use of railways through and about the steam and drying rooms, so arranged in connection with switch and lumber cars that the lumber may be steamed and dried on the same car without handling; also, in providing the steam and drying rooms with diagonal ways, and sliding doors suspended thereon, and in the employment of certain other devices in and about the kiln, as hereinafter described. The heating, drying, and steaming rooms may be constructed of any desired size, and in about the relative proportions shown in Figs. 2 and 3.

A represents the kiln, and B the drying-room, which may be divided into two or more chambers, C D, separated by a partition, as shown in Fig. 3. It is connected at one end

to the heating-room H by an open passage, N, as shown in Fig. 2, or it may be by other or more direct passages, as hereinafter explained. When the drying-room is made to consist of several chambers there is a passage-way for each. The passage-ways, whether one or more, are provided with a damper, *c*, as shown in said Fig. 2, to check or cut off the current of heated air when desired, or to turn it all into one chamber. At the opposite end of the drying-room are the ventilating-chimneys U, provided with an elbow, *i*, and suitable receptacle, *l*, as shown in Fig. 6, to prevent the return of any moisture that may be condensed in the chimneys. When the drying-room is divided into several chambers each is provided with a chimney, as shown. At either end are diagonal ways *m*, upon which are suspended doors *h* and *g*, as shown in Figs. 2, 3, and 6, so as to slide diagonally.

E is the steaming-room at one end of, and on the same plane with, the drying-room. It may be divided into the same number of chambers, separated by a partition, as there are in the drying-room, and of corresponding width. It is also provided with diagonal ways, on which are suspended sliding doors *f*. This manner of arranging the doors allows the lower ends to be swung out a little, in case of any jamming, caused by their swelling, and causes them to run diagonally and more easily and freely. The steam is introduced through a small pipe, *e*, as shown in Fig. 2. The diagonal ways *m* are at the proper height to permit the loaded lumber-cars to pass under them, and are on the same horizontal plane. Those for inclosing the steaming-room are a little diagonal to one another, as well as to those on the end of the drying-room, as shown in Fig. 3. Their position causes the doors to run diagonally, and thus to be moved conveniently, and, when in position for closing the steaming-room, to be easily clamped or wedged tight. H is the heating-room, located at or near the end of the drying-room opposite to that of the steaming-room, as shown in Figs. 2 and 3, instead of under it, as is usually done, so as to permit the drying and steaming rooms to be low down for convenience in running cars through them, as hereinafter explained. Steam-pipes P are arranged within it in verti-

cal tiers, as shown in Figs. 4 and 5, so as to give a large quantity of heating-surface, and be accessible at all times for cleaning or repairs, together with a series of partitions, I, extending alternately part way from the top and bottom of the room, as shown in Figs. 2 and 4, to compel the air entering a door, *a*, opening outward, Fig. 4, to take the course shown by the arrows in the same figure, and thus be brought in contact with the pipes. The inlet for the steam is at K, and the outlet at J. When live steam is used, a valve-box is placed at J to hold back the steam, and let the water condensed from the steam escape; but when exhaust steam is used, it escapes freely at J. The air, after being heated by the pipes, passes through the passage N into the drying-room, and is turned down by a cloth curtain, *d*, and is then drawn by the ventilating-chimneys through the drying-room. Through the steaming and drying rooms a railway-track, R, is laid. When these rooms are divided into chambers, a track is laid through each chamber. Outside of these rooms is laid a railway-track, S, on the same level with those in the rooms, and also tracks O and T at right angles to the tracks R and S, but on a lower bed, as shown at Fig. 2, for the switch-car. L is one of the switch-cars with railway-track. They are of such height that when upon tracks O or T, and opposite the tracks R or S, its rails will be in line with them, as shown in Figs. 1 and 2. M is a lumber-car to run upon the switch-car, and also upon the tracks R and S, and any number of cars desired may be used. The lumber to be dried is loaded on the car M, and then moved by means of the switch-car opposite the track R, and run into the steaming-room E, the doors of which are then tightly closed, and the steam let in. When the lumber is sufficiently steamed, the car is run through into the drying-room through the doors *h*. Here the lumber comes in contact with a strong current of heated air passing through the drying-room in the direction opposite to that in which the car is moved. This air rapidly absorbs the moisture from the lumber, and passes out through the ventilating-chimneys *u*, as clearly shown in Fig. 2. When the lumber is sufficiently dried, the car is run through the doors *g* onto another switch-car standing on the track O, and then moved by the switch-car, when desired, and unloaded. The lumber-car is then returned over the track

S to the switch-car on the track T, when it can be again loaded and passed on through the steaming and drying rooms, as before.

In the drawings, an open passage-way is shown between the heating and drying rooms, with doors on the end of the latter for the passage of the cars, and with the opening for the hot air over this passage; but it is obvious that these rooms may be adjoining, with doors on the sides of the drying-room for the cars to pass through, and that then the heated air can be let into the drying-room directly, or in any desired manner.

A dry-kiln may be constructed after this plan, with any number of steaming and drying rooms desired, by placing them side by side, and providing them with railway-tracks, and that the drying-rooms may be kept filled with loaded lumber-cars, to be removed as desired.

When the lumber is dried, the cars may be run onto the track S, and kept there in a room inclosing the track, as shown in Fig. 6, until wanted.

Having thus described my invention, what I claim is—

1. A kiln for drying lumber, consisting of a drying-room, B, with the separate heating-room H at one end, and a steaming-room, E, at the other, constructed as described, and arranged on nearly the same plane, as and for the purpose set forth.

2. In combination with the drying-room B, the heating-room H, constructed near one end of the same, and provided with vertical tiers of steam-pipes P and alternating partitions I, arranged substantially as and for the purpose set forth.

3. In combination with the steaming-room E and drying-room B, provided with railway-tracks, as described, the switching-cars L and switching-tracks O, T, and S, constructed and arranged as and for the purpose set forth.

4. In combination with the drying-room B, provided with sliding doors *g* and *h* for the passage of the cars, the steaming-room E, provided with the diagonal ways M and sliding doors *f*, as and for the purpose set forth.

The above specification of said invention signed and witnessed, at Van Wert, this 20th day of April, A. D. 1874.

HORACE E. WELLS.

Witnesses:

GEO. E. WELLS,
L. S. ALDEN.