

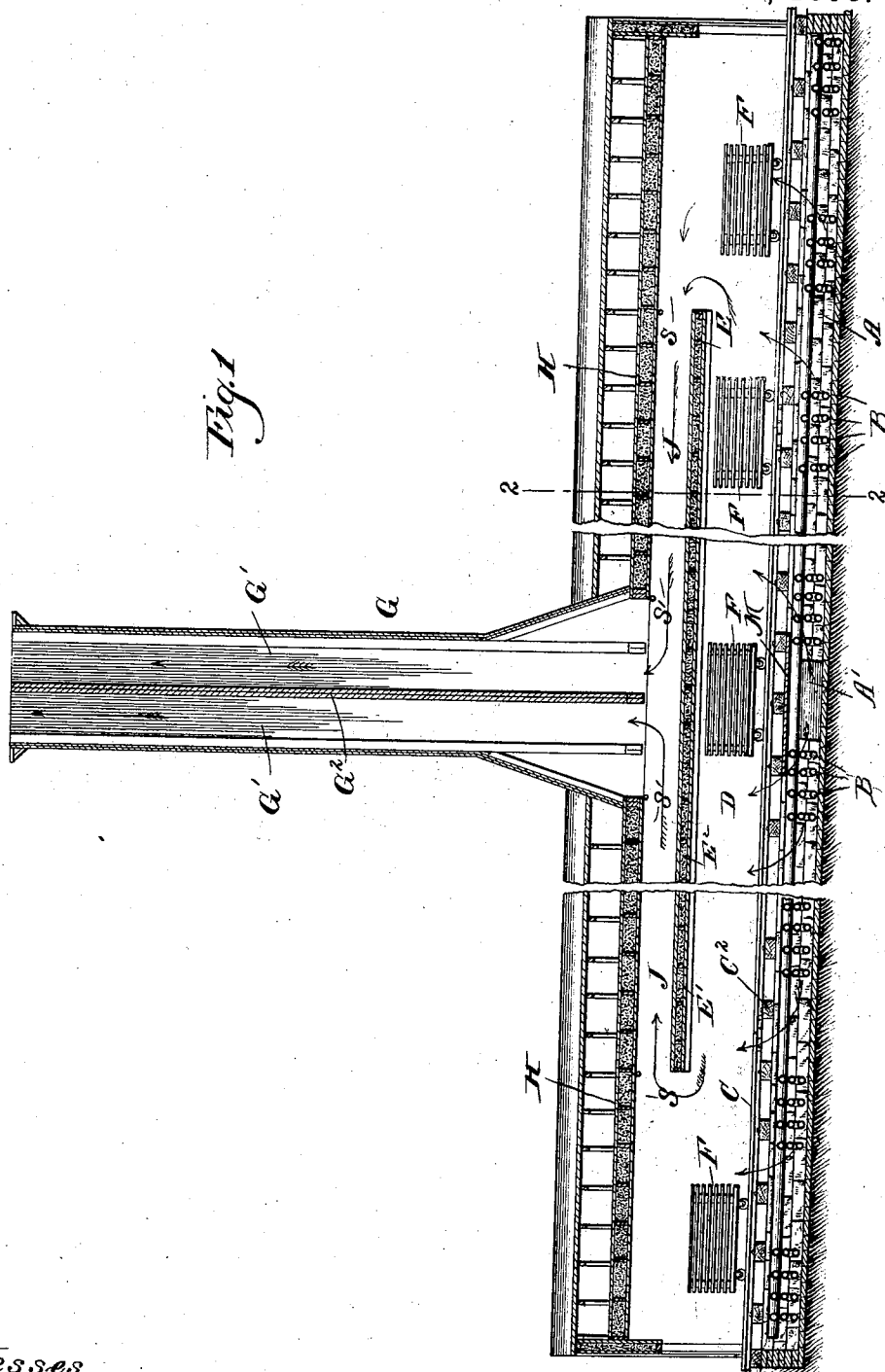
(No Model.)

W. C. BYRNE.
DRIER.

2 Sheets—Sheet 1.

No. 491,075.

Patented Feb. 7, 1893.



Witnesses.
John L. Tunison.
Jean Elliott

Inventor.
Wm C Byrne
By Burton & Burton
Attys.

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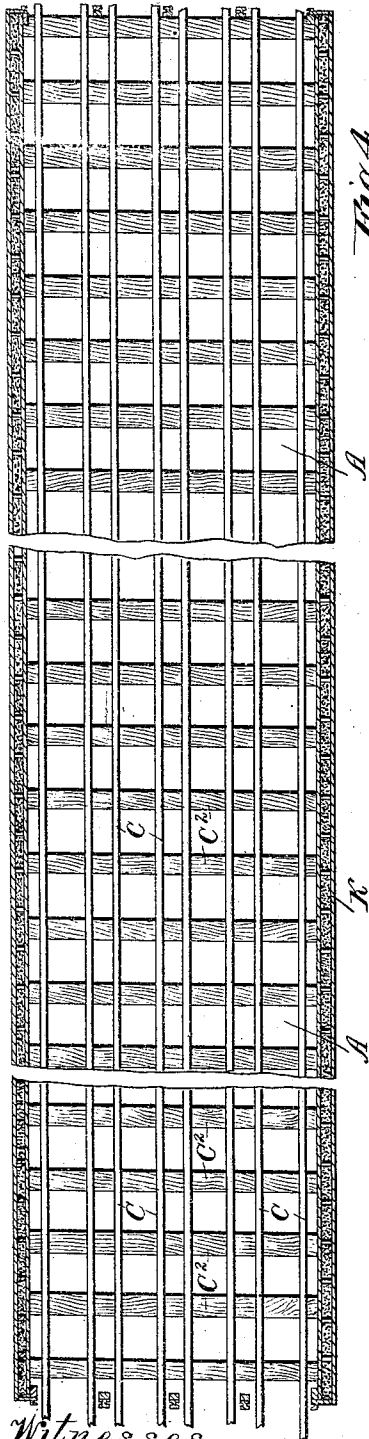


Fig. 4

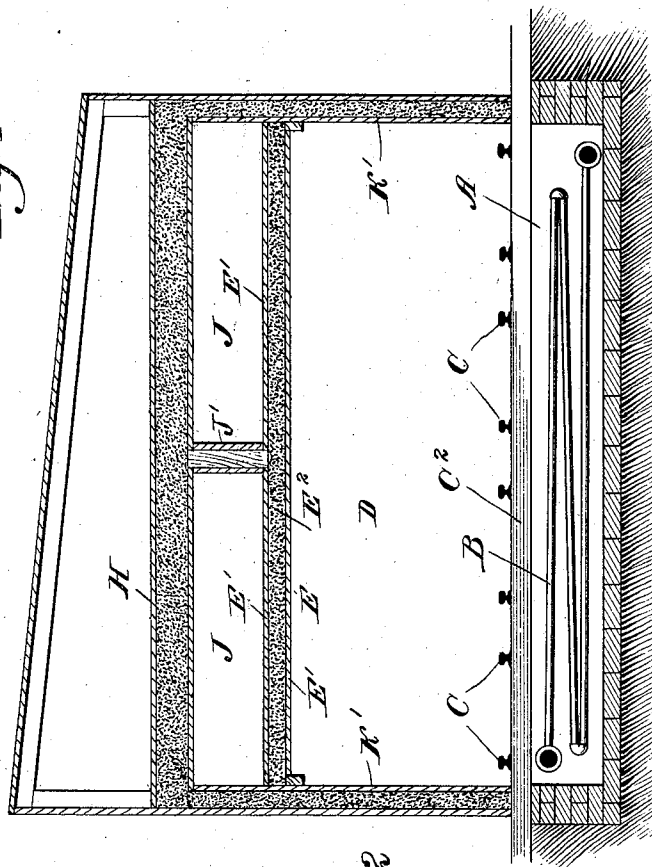


Fig. 2

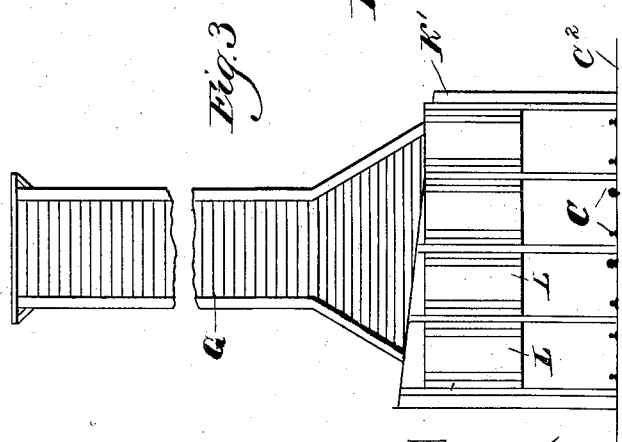


Fig. 3

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UNITED STATES PATENT OFFICE.

WILLIAM C. BYRNE, OF CHICAGO, ILLINOIS.

DRIER.

SPECIFICATION forming part of Letters Patent No. 491,075, dated February 7, 1893.

Application filed March 19, 1892. Serial No. 425,568. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. BYRNE, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Driers, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to drying houses, or apparatus for drying brick, lumber or any other material, and belongs to that class of driers in which the material to be dried is loaded upon a truck or car which passes through the drying house slowly on tracks provided for that purpose, the intended method of use being that a continuous succession of loaded trucks are passed through the drier, so that its drying capacity is utilized to the utmost and without interruption, the air passing continuously into and out of the house consists in details of construction which are set out in the claims.

In the drawings, Figure 1 is a longitudinal vertical section through a drier or drying house embodying my invention. Fig. 2 is a transverse section through the same at the line 2-2 on Fig. 1. Fig. 3 is an end elevation on a reduced scale. Fig. 4 is a ground plan.

The house illustrated in the drawings comprises a space A, which I call the "heating room," which is occupied by any desired or necessary number of steam heating pipes B B &c., all substantially or approximately in horizontal plane, or in a plane slightly sloping to correspond to the slight slope of the track on which the cars run, as hereinafter indicated. Midway in the length of this heating room it has the cold air supply opening or openings A' A' through its side walls to admit a supply of exterior fresh air. This heating room is not separated from the room which I will now describe, except by the imaginary plane in which are located the tracks C C C, on which the cars run, the rails for said tracks being supported on the cross ties C², the space between the ties being left open, so that they do not constitute a partition or ceiling to separate the heating room A from the drying room D, by which term I designate the space above the tracks, through which the cars pass in their longitudinal travel.

E is a ceiling or baffle-plate which extends substantially horizontally at such distance above the tracks as will permit the loaded cars F F to pass under it. This baffle plate does not occupy the entire length of the drying room, but extends equal distances both ways from the middle point and to within a comparatively short distance of both ends, as illustrated.

G is a chimney for the exit of the air current. It is located midway in the length of the drying house, and is, therefore, substantially in the same vertical plane as the cold air supply openings A' A', and midway in the length of the baffle plate E. This chimney is preferably divided into two flues G' G' by a partition G², as illustrated. The baffle plate E is located at a comparatively short distance below the ceiling H, whereby there is formed above the baffle plate and below the ceiling, the horizontal flue or flues J J, leading from the extreme portions of the drying room back toward the center, where they communicate with the chimney.

J' represents a stiffening or supporting structure for the baffle plate E, which may be dispensed with when the width of the drier is not such as to require it for strength.

Usual precautions against loss of heat by radiation and against absorbing moisture are employed,—such as making the baffle plate E with upper and lower walls E' E' and an intervening space E² packed with sawdust, and similarly constructing the ceiling H, and end and side walls K K and K' K'. The end walls K are constructed with door-ways, which are provided with vertically sliding doors L L L. Any suitable means may be provided to operate these doors, and said means are therefore not herein illustrated.

The operation of this device is that the cars being admitted at the more elevated end, which, in the drawings, is the left-hand end, through the doors L L, and moving by gravity along the very slight incline of the track, or moving by other means desired whether assisted or not by gravity, enter at first a moderately heated and moderately dry air, which has first entered through the cold air supply openings A' A', and has moved from the said openings toward the two ends of the chamber, passing over the steam coils and be-

coming dried and heated by them, while at the same time, it has absorbed moisture and been cooled by the loaded cars which it has passed during the same time,—assuming that the entering car, to which this description relates, is not the first car which has entered, but one which has entered while the house is in continuous operation and occupied from end to end. The air, thus encountered by the entering car, is therefore, as stated, only moderately warm and moderately dry. As the car advances under the baffle-plate or ceiling E, toward the middle of the building, the air which it encounters and through which it moves is steadily increasing in dryness and temperature until it passes the middle, and as it moves from the middle toward the farther end, the air is gradually cooler and slightly more moist, but not so much difference in respect to moisture will be observed in this half of the chamber as in the first half, because the contents of the cars have parted with a large percentage of their moisture during their passage through the first half of the chamber; but the material will emerge from the farther end of the drying chamber into the outer air without experiencing any more abrupt change in respect to the conditions of moisture and temperature than when it entered the chamber at the other end, all the changes through which it has passed having been gradual and so not liable to cause the material to warp or crack. This description will apply equally to lumber, brick, pottery or other articles commonly treated in driers of this class. A particular advantage of the construction which causes the air to circulate from the middle to the ends and return toward the middle to emerge at the chimney, and of causing the warmest and driest place to be at or near the middle rather than at either end, is that thereby the entire length of the car is equally and evenly dried, the forward half of the car being exposed to the most drying air for a greater portion of time during its passage through the first half of the chamber, and the rear end of the car having similar advantageous exposure during its passage through the second half of the chamber.

It is not of vital importance that the steam pipes or other means of heating should be located below the plane of the tracks and cross-ties, but it is a convenient arrangement. Practically, as above stated, the heating room and the drying room are one room, referred to by these two terms merely for convenience in description.

It may be desirable to compel the fresh air entering through the air-supply apertures A' to pass horizontally a short distance over and among the heating pipes before giving it an opportunity to rise, and this may be accomplished by flooring over the ties for a short distance at the middle, and such a construc-

tion is represented by the floor or short baffle plate M, seen in the drawings.

Dampers or valves S S may be located at the ends of the horizontal flue J,—that is, at the ends of the baffle plate E,—to regulate the proportion of the air which passes through either half of the length of the drying room, or the speed of the drying current through either half. The same effect may be accomplished by locating dampers S' S' in the said flues at any point of their length, as, for example, just at their point of communication with the chimney.

I claim:—

1. A drying house having suitable entrances and exits at the opposite ends respectively, and the chimney for the egress of the drying current substantially midway between the ends; and the horizontal baffle plate or ceiling extending through the middle portion of the length of the drying chamber and to within a comparatively short distance of both ends: in combination with heating pipes occupying the lower part of the drying chamber throughout the length thereof, and suitable air induction openings at or below the level of the heating pipes midway between the ends of the drier, substantially as and for the purpose set forth.

2. In combination with the drying chamber having its fresh air supply at substantially the middle point of its length at the bottom, and the chimney for the egress of the air currents communicating at substantially the middle point of said length at the top, and a horizontal baffle plate or ceiling extending over the middle portion of the chamber whereby the air is compelled to pass from its ingress both ways toward the ends respectively of the chamber and return from both directions toward the middle for egress through the chimney: substantially as set forth.

3. In a drying house, in combination with the heating and drying room having longitudinal tracks for the passage of cars loaded with the material to be dried; and having fresh air induction apertures at the middle of its length, heating pipes extending throughout the length of the chamber at the bottom, a horizontal flue extending longitudinally above such room and communicating therewith at both ends, and the chimney with which said horizontal flue communicates intermediate its said end communications with the drying room; and dampers in said horizontal flues respectively: substantially as set forth.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 12th day of March, 1892.

WM. C. BYRNE.

Witnesses:

CHAS. S. BURTON,
JEAN ELLIOTT.