

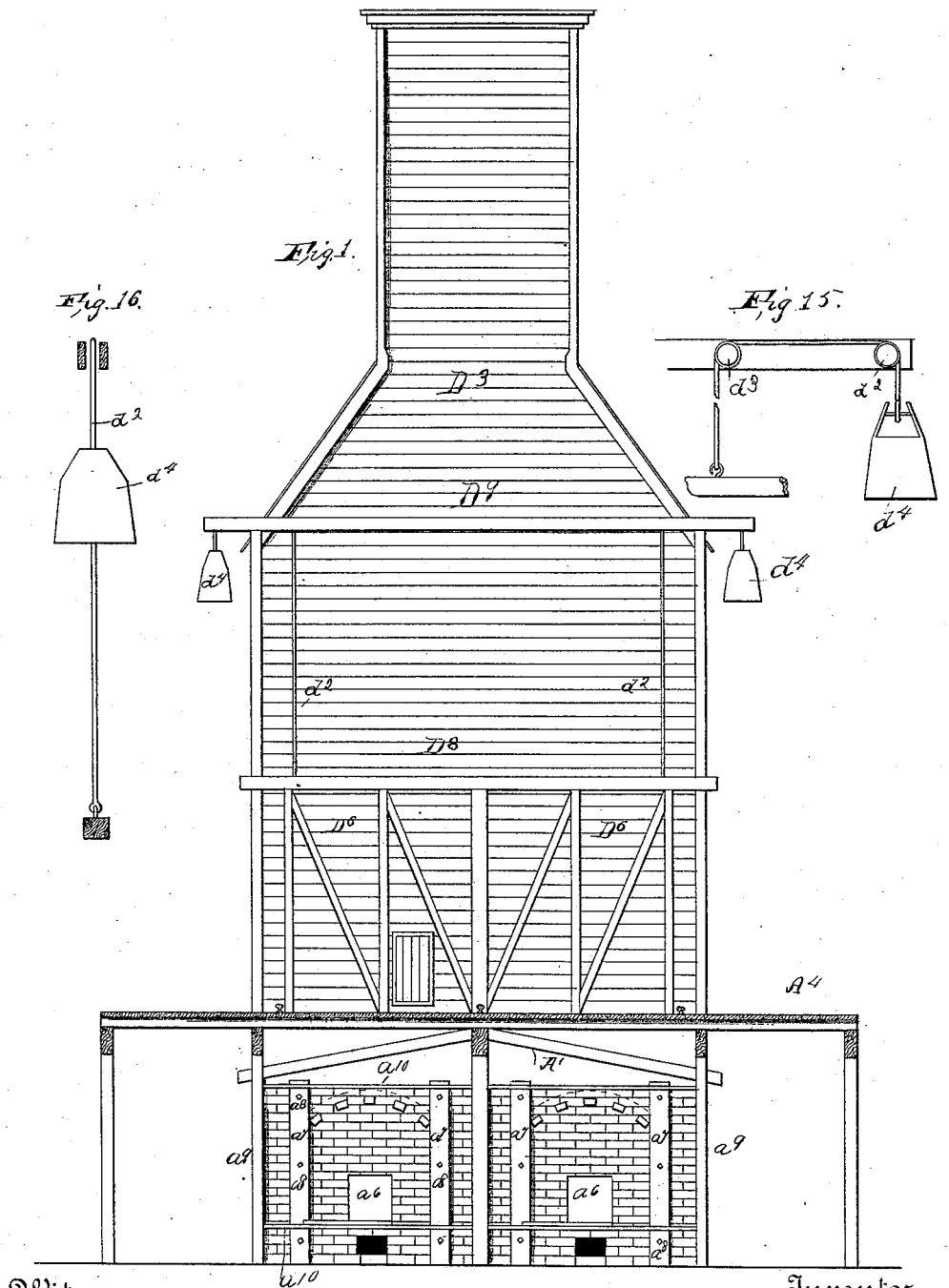
(No Model.)

4 Sheets—Sheet 1.

G. W. SHARER.
LUMBER DRIER.

No. 347,387.

Patented Aug. 17, 1886.



Witnesses
J. F. Holden,
W. A. Smith

Inventor
George W. Sharer
By his Attorney
Hallowell Hallowell

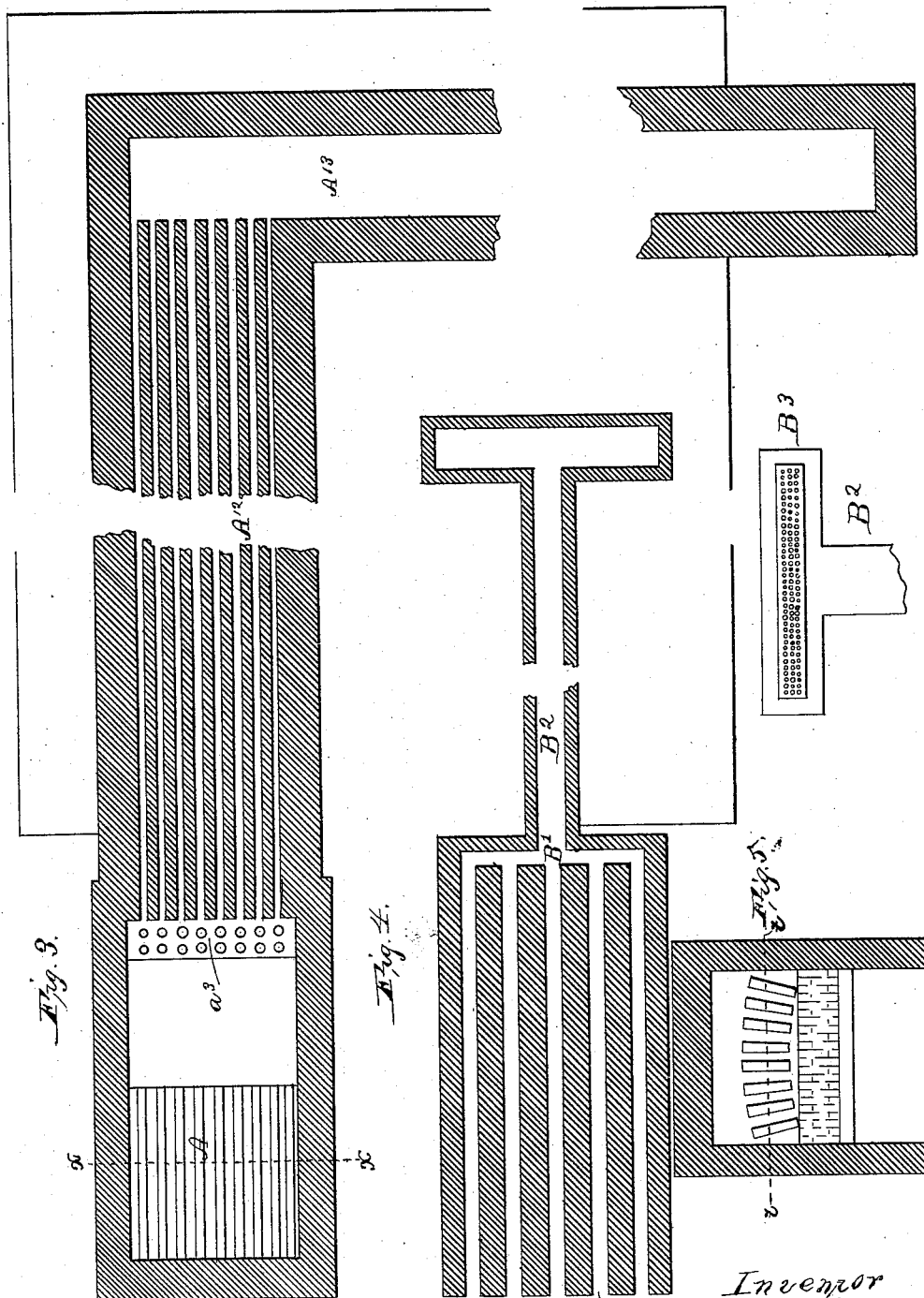
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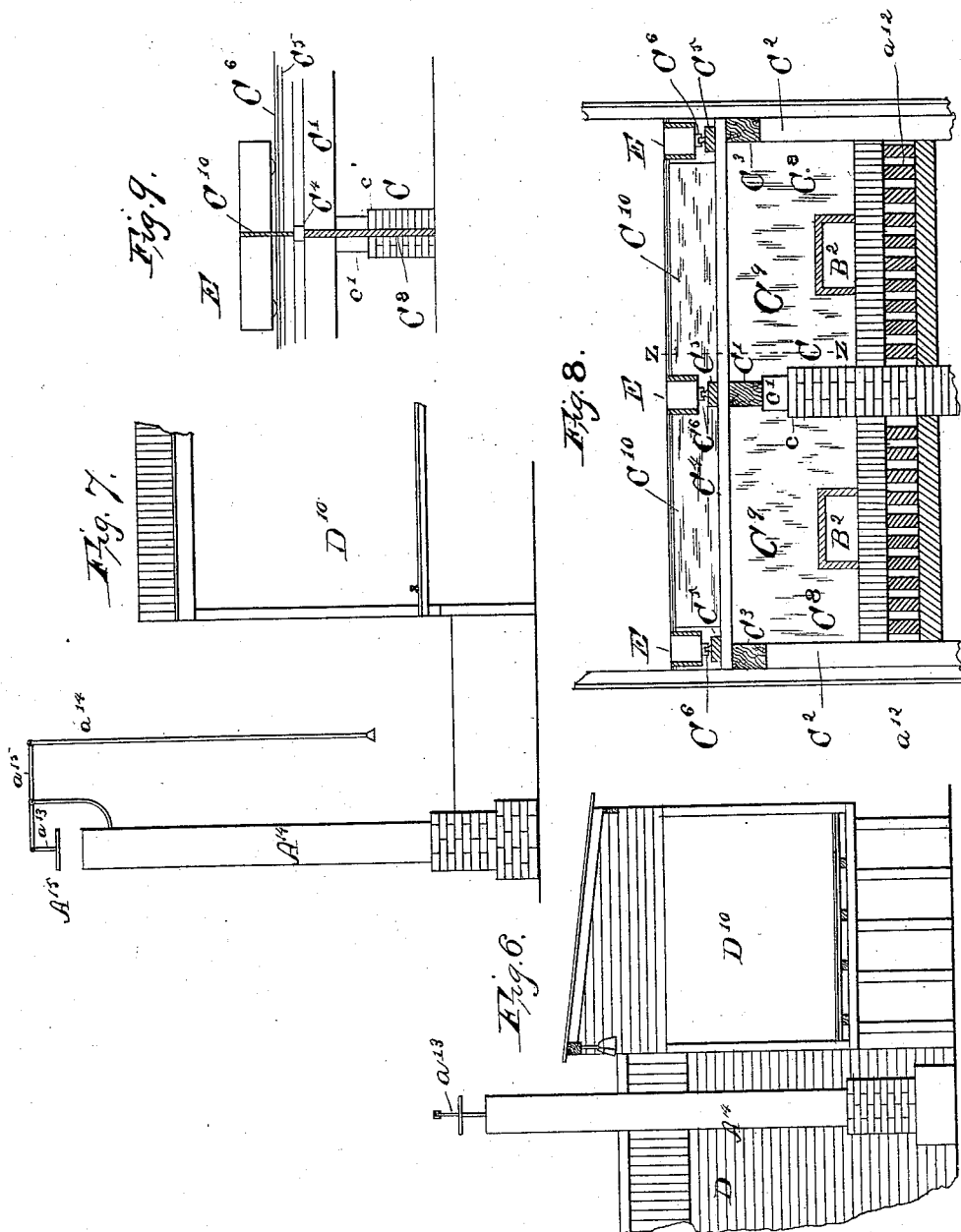
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UNITED STATES PATENT OFFICE.

GEORGE W. SHARER, OF TERRE HAUTE, INDIANA.

LUMBER-DRIER.

SPECIFICATION forming part of Letters Patent No. 347,387, dated August 17, 1886.

Application filed December 28, 1885. Serial No. 186,953. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SHARER, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Driers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to driers for all kinds of articles, but particularly to that class in which lumber is deprived of its moisture.

The object of the invention is to make a drier that will combine cheapness of construction and utility in the arrangement of the part which will expedite the drying and attain the best results.

The invention therefore consists of constructions and combinations, all as will hereinafter be described in the specification, and pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of the drier; Fig. 2, a longitudinal section of the furnace and drier-chamber; Fig. 3, a horizontal section of the furnace, flues, air-vault, and soot-chamber; Fig. 4, a horizontal section of the air-ducts; Fig. 5, a vertical section on line *x x*, Fig. 2; Fig. 6, a side elevation of part of the drier, and showing the interior of the shed; Fig. 7, an end elevation of part of the drier and the flue and chimney; Fig. 8, a section on line *y y*, Fig. 2; Fig. 9, a section on line *z z*, Fig. 8; Fig. 10, a section on line *r r*, Fig. 2, and looking in the direction of the arrow 1; Fig. 11, a section on line *s s*, Fig. 10, the damper *d* closing the ventilating-tube *d*; Fig. 12, a side elevation of one truck; Fig. 13, an end elevation of the truck shown in Fig. 12; Fig. 14, a section of the truck taken through the wheel; Fig. 15, a side elevation of the means for lifting the door, and Fig. 16 an end view of the same.

A represents the furnace, having grate-bars *a*, the bridge-wall *a'* upon which the grate-bars rest, the air-vault *a''*, covered by bars or perforated plate *a'''* and connected with the ash-space *a''''* by duct *a'''''*, and a sliding door, *a''''''*. The furnaces (two of which are shown) are

made of brick or other suitable material and provided with buck-staves *a'*, through which rods *a''* pass to corresponding buck-staves (not shown) on the back of the furnaces. Upon each side of the furnaces are buck-staves *a'''*, connected together by the rods *a''''*. These buck-staves *a'* and *a'''* and rods *a''* and *a''''* bind the furnaces securely together, which furnaces are protected by the roof *A'*.

Leading from the furnace are flues *A''*, lined for part of their way with fire-brick, and extending to the soot-flue *A'''*, having chimney *A''''* outside of the drier. This chimney is provided with a regulating-damper, *A'''''*, having rods *a''''''* and *a'''''''* and lever *a''''''''*.

In the upper wall of the furnace, immediately over the fire-box, are the air-flues *B*, extending from the front of the furnace to the chamber *B'*, having the large outlet-duct *B''*, which rests upon the top wall of flues *A''*, and extends about two-thirds ($\frac{2}{3}$) the length of the drier, and terminating in a cross flue or duct, *B'''*, having its upper side perforated for the proper distribution of the air. The duct *B''* is of less width than the width of all the flues *A''*, so that heat from the latter will be radiated into the drying-chamber, as well as absorbed by the air passing through the ducts.

Piers *C* are arranged at suitable intervals on each side of flues *A''*, and each is provided with a wooden cap, *c*, and a block, *c'*, which rests upon cap *c* and supports the beam *C'*, extending the whole length of the drier. At the sides of the flues are piers *C''*, upon which are placed the beams *C'''*, extending the whole length of the drier. Cross-beams *C''''* are placed across the beams *C'* and *C'''*, and support the longitudinal beams *C'''''*, upon which the tracks *C''''''* are laid. Between the piers *C* and *C''* and cross-beams *C''''* are the metallic partitions *C'''''*, which form the compartments *C''''''*, that receive radiated heat from the flues, and also prevent the heat from one compartment from passing into another. Between the tracks *C''''''* are the partitions *C'''''''*, which are practically a continuation of the partitions *C'''''*, and project upwardly between the tracks to or slightly above the top of the trucks. These partitions *C'''''''* are made of rubber, felt, or other elastic material, so that when the car is moved it will give suf-

sufficiently to permit it to pass and have at the same time contact with the contents of the car to prevent the heated air from duct B² from passing said car or cars.

5 The walls of drier D are made of brick or other suitable material, embrace the furnace-flues A¹² and the parts above them, and capped by the roof D', which is preferably made slanting from the center to the sides and provided with felt partitions d'. These partitions prevent the heated air from the duct B² from passing over the cars. At the front end of the drier is an air-escape duct, D³, for the drying-chamber. This duct is provided with a transverse partition, D⁴, having the ventilating-tubes D⁵, Figs. 2, 10, and 11, each having a damper, d, operated by a rod, d', so that the opening in the tube may be opened or closed to regulate the exit of the heated air passing from the drying-chamber.

The front and rear ends of the drier are each provided with doors, (marked, respectively, D⁶ and D⁷.) The door D⁶ is provided with bar D⁸, to which is attached at each end a cable, d², which pass over pulleys d³ on a beam, D⁹, and are provided with weights d⁴, for an obvious purpose. The rear door, D⁷, may be operated in the same or any other desired way. Upon the rear end of the drier is a shed, D¹⁰, where the articles are cooled off before being carried away.

The trucks E (shown in detail, Figs. 12, 13, and 14) consist of two longitudinal beams, E', joined together at their ends by cross-piece e, and carrying the rigid axle e' for the wheel e², which is free to revolve on the axle and move longitudinally thereon, so that if there are any inequalities in the track the load above will not be disturbed. These trucks, as shown, are complete in themselves and run upon a single track, but take two or more of them and the load, if lumber be used, to make the car, as shown in Fig. 8. If articles too small to extend across the space between the trucks are to be dried, then planks or other material can be laid across the trucks for their support. When the car has reached the shed and it is desired to use the trucks again, they can be easily transported from one end of the drier to the other, or that having the platform A⁴.

The operation of the device is as follows: After the fires have been started and the driers evenly heated by radiation from the flues A¹² and the hot air admitted thereto, the cars are run into the drier through the front door. The heat radiated from the flues A¹² passes upwardly to the cars and reheats the air admitted through the air-duct, which air has become more or less cooled by absorbing the moisture of the articles dried. In other words, heat is added to the current of air at points to give greater efficiency to the drier. After the material has been thoroughly dried it is passed across the compartment in which the cross-duct is placed, to permit the contents of the

car to become partially cooled before passing the latter into the shed. When lumber is dried in this way no "checks" are made.

What I claim as new is—

1. In a drier, a drying-chamber having longitudinal smoke-flues in the bottom, a track supported above said bottom, and an air-supplying device arranged upon said bottom and below the track, substantially as described.

2. In a drier, the combination of a drying-chamber having longitudinal flues in the bottom, a track supported from said bottom by partitions forming compartments below the track, and an air-supplying device, substantially as described.

3. In a drier, the combination of a drying-chamber, a furnace the flues of which form the bottom of the drying-chamber, a track supported by partitions forming compartments beneath the track, and an air-duct heated by said furnace and discharging the heated air in one of the compartments, substantially as described.

4. In a drier, the combination of a drying-chamber, a furnace the flues of which form the bottom of the drying-chamber, a track supported by partitions forming compartments beneath the track, and an air-duct extending through the furnace and over the flues to one of the compartments, substantially as described.

5. In a drier, the combination of a drying-chamber the floor of which is formed of flues, a track supported by partitions forming compartments, a flexible partition between the tracks, and means for supplying air to the drying-chamber, substantially as described.

6. In a drier, the drying-chamber having the inlet and outlet doors arranged at opposite ends, an air-inlet located between the doors at or near the middle of the chamber, an air-outlet above the inlet-door, and a cooling-space between the inlet-door and the air-inlet, substantially as described.

7. In a drier, a drying-chamber having the inlet and outlet doors, an air-inlet located between the doors, and in one of the compartments, an air-exit above the inlet-door a cooling-space between the air inlet and the outlet door, and heating-compartments, substantially as described.

8. In a drier, a drying-chamber, the inlet and outlet doors arranged at opposite ends, a track above the bottom of the chamber, the space between the track divided into compartments by vertical partitions, an air-supplier located in one of said compartments, an air-exit at or near the inlet-door, and a cooling chamber or space between the air-supplier and the outlet-door, substantially as described.

9. In a drier, a drying-chamber having inlet and outlet doors, an air-escape duct near the inlet-door, an air-supplying duct located

about two-thirds the distance from the front end, and a cooling-space between the air-supply duct and the rear end of the drying-chamber, substantially as described.

- 5 10. In a drier, the air-escape duct having a partition provided with tubes which extend through the partition, and opened and closed by a damper, substantially as described, where-

by the draft through the drier can be regulated.

In testimony whereof I affix my signature in presences of two witnesses.

GEO. W. SHARER.

Witnesses:

GEO. R. BYINGTON,

T. F. HOLDEN.