Aug. 10, 1926. 1,595,928

T. H. RHOADS

DRIER

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Fig. 1.

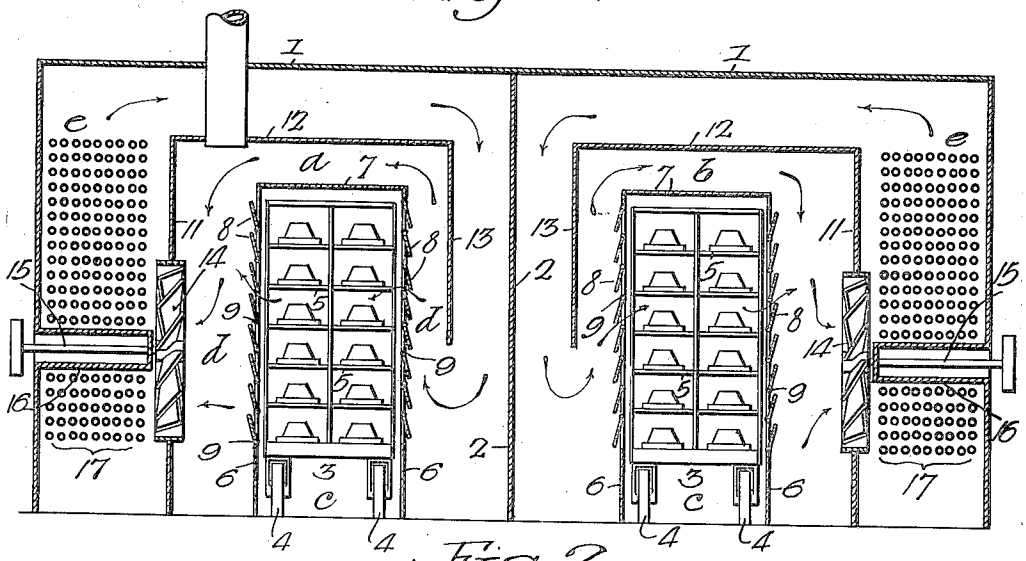


Fig. 2.

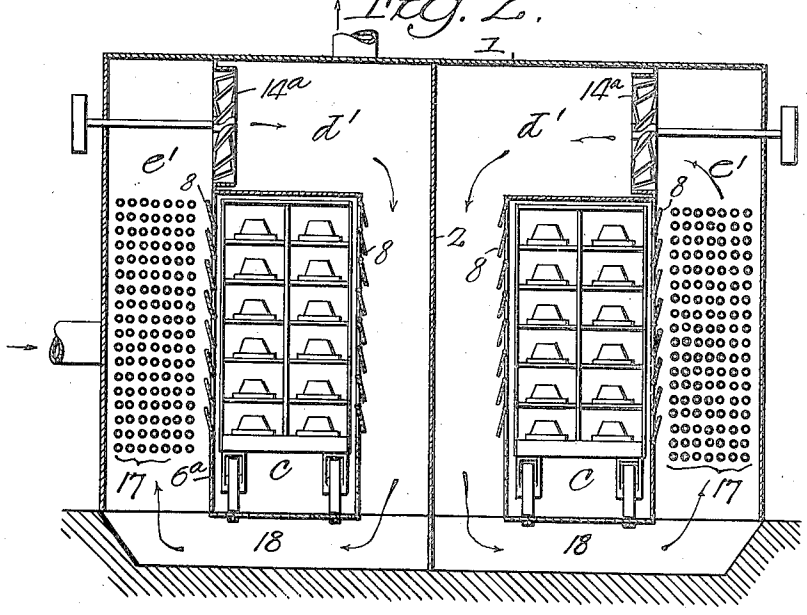
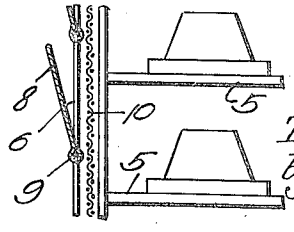


Fig. 6.



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Fig. 3.

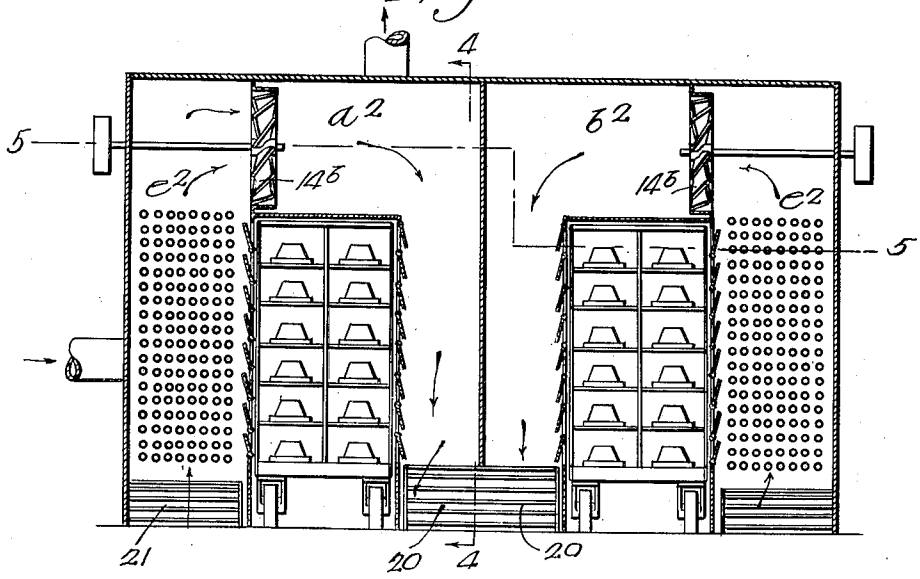
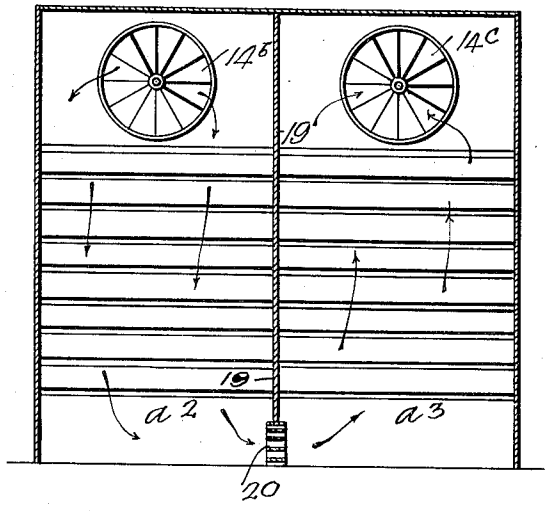


Fig. 4.



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Fig. 5.

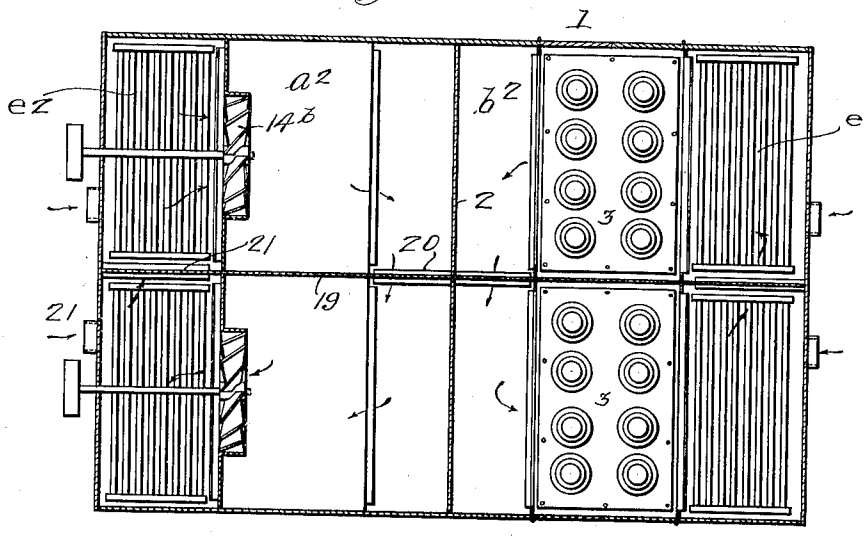
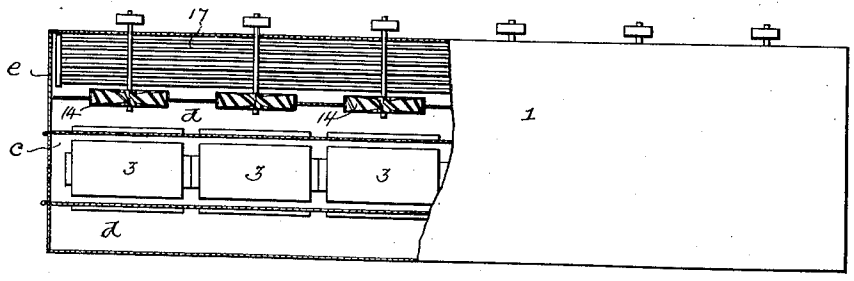


Fig. 7.



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Patented Aug. 10, 1926. 1,595,928

UNITED STATES PATENT OFFICE.

THOMAS H. RHOADS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO PROCTOR & SCHWARTZ, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DRIER.

Application filed December 23, 1924. Serial No. 757,688.

My invention relates to certain improvements in driers, particularly driers for drying ceramic ware and other articles.

The object of the invention is to construct the drier so that while a rapid and constant circulation of air is maintained in the drier, the articles being dried are subjected to a controlled circulation of air to prevent a too rapid drying and cracking.

In the accompanying drawing:

Fig. 1 is a transverse sectional view through a double drier, illustrating my invention;

Fig. 2 is a transverse sectional view of another form of double drier in which the fans are located in a different position, and in which the air in circulation travels completely around the truck on which the articles to be dried are placed;

Fig. 3 is a transverse sectional view of a double drier, in which the air is circulated—first through one compartment and then through another and is recirculated in the first compartment;

Fig. 4 is a sectional view on the line 4—4, Fig. 3;

Fig. 5 is a sectional plan view on the line 5—5, Fig. 3;

Fig. 6 is an enlarged view illustrating a detail of the invention, and Fig. 7 is a plan view partly in section illustrating a tunnel drier embodying my invention.

The drier illustrated in the drawings is what is known as a "truck drier", in which the articles are mounted on trucks that are traversed through the drier. The drier casing 1 (shown in Fig. 1) is divided by a central, vertical partition 2 into two separate drying chambers *a* and *b*. The drying chambers are similar in construction, therefore, only one will be described.

The truck 3 is of the ordinary type and has wheels 4 and trays 5, on which the ceramic ware, or other articles, are mounted. A tunnel *c*, through which the trucks are moved, is formed by a casing having side members 6 and a top 7. The side members are open opposite the carrying portion of the trucks. Closing these openings is a series of pivoted doors 8, which are pivoted at 9, Fig. 6. On the side of the casing is preferably a wire screen 10, which tends to diffuse the air in circulation. The doors 8 can be moved to any position desired to allow more or less air to circulate across a truck and in contact with the articles being dried. Surrounding the tunnel *c* is a circulating chamber *d*, which is formed by a vertical partition 11 that separates the circulating chamber from the heating chamber *e* and a horizontal partition 12 that extends above the tunnel and a short vertical partition 13 on the opposite side of the drier from the heating chamber.

In the partition 11 is an opening, in which is located the circulating fan 14 that is mounted on a shaft 15, which is located in a casing 16, in the present instance, which has a bearing at its inner end in order to keep the shaft and its bearings as cool as possible.

In the heating chamber *e* are heating pipes 17, which heat the air in circulation. The fan is rotated rapidly, consequently, there is a rapid circulation of air through the heating chamber *e* and the circulating chamber *d*. This rapid circulation of air through the heating and circulating chambers is desirable in order to heat the casing of the tunnel and to change the air in circulation. The circulation of the air, however, is too rapid to allow the currents of air to come in direct contact with the articles on the trucks.

By regulating the position of the doors, a portion of this air is allowed to travel across the tunnel from one side to the other and in contact with the articles being dried.

In practice, it has been found that this method of drying articles prevents cracking or warping of the articles. By adjusting the doors, the amount of heated air passing in contact with the articles can be regulated to a nicety.

It will be understood that these driers can be of any length desired and that the air in circulation in the different compartments can be regulated to dry the articles properly as they pass through the drier.

In Fig. 2, a modification is illustrated in which the fan 14^a is located in the upper part of the circulating chamber *d'* and the wall 6^a of the tunnel forms one of the walls of the heating chamber *e'*. In this casing, the air in circulation passes under the floor of the tunnel and through a passage 18.

Another modification is illustrated in Figs. 3, 4 and 5, in which the drier is made in two

sections a^2 and a^3. The air in circulation passes around the tunnel in the section a^2 and then through openings 20 in the partition 19 and into the adjoining section a^3, and up through this section and through the suction fan 14^c. The air then passes down through the heating chamber of the section a^3, through openings 21 in the partition 19, up through the heating chamber e^2 and through the fan 14^b.

The partition enclosing the tunnel is provided with doors, similar to the doors illustrated in Figs. 1 and 2, and is preferably provided with screens of any suitable mesh.

It will be understood that the drier may be of the single type, in which the truck carrying the articles is moved into position in the drier and remains in this position until the drying is completed. It may also be of the continuous type, see Fig. 7, in which a series of chambers are used and the trucks are moved from one chamber to another. This is a general type of tunnel drier.

I claim:

1. The combination in a drier, of a casing enclosing a tunnel; means for supporting the articles to be dried in the tunnel; a circulating chamber; means for circulating heated air in the chamber; and means for deflecting a certain portion of the air through the tunnel and in contact with the articles to be dried.

2. The combination in a drier; of a casing enclosing a circulating chamber; means for circulating heated air in said chamber; an inner casing enclosing a tunnel, said second casing having openings therein; and doors at the openings for regulating the extent thereof, the said openings allowing a certain proportion of the air in circulation to pass through the tunnel.

3. The combination in a drier, of an outer casing; an inner casing enclosing a tunnel; a truck located in the tunnel and carrying articles to be dried, the inner casing having a series of openings; doors controlling the extent of opening; an intermediate partition forming a circulating chamber; a fan in one of the walls of said partition; and means for heating the air in the passage outside of the circulating chamber so that the air in circulation will become highly heated and will pass through the outer chamber and then through the inner circulating chamber to the fan, a portion of the air in circulation passing through the tunnel and in contact with the articles to be dried.

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