Sept. 20, 1927. 1,642,938

G. D. MORRIS

KILN CAR

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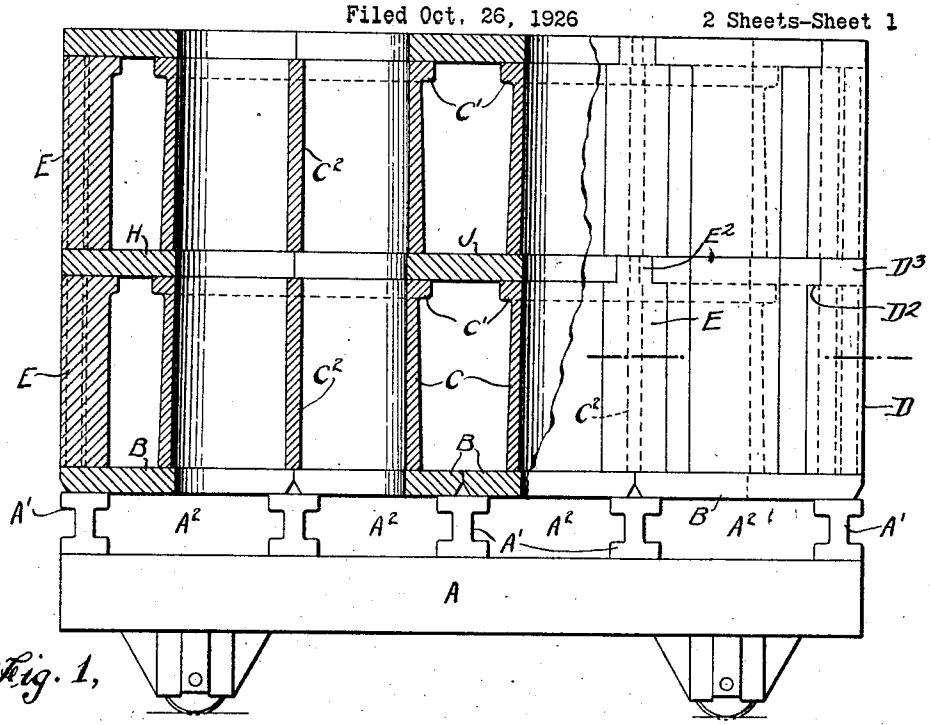
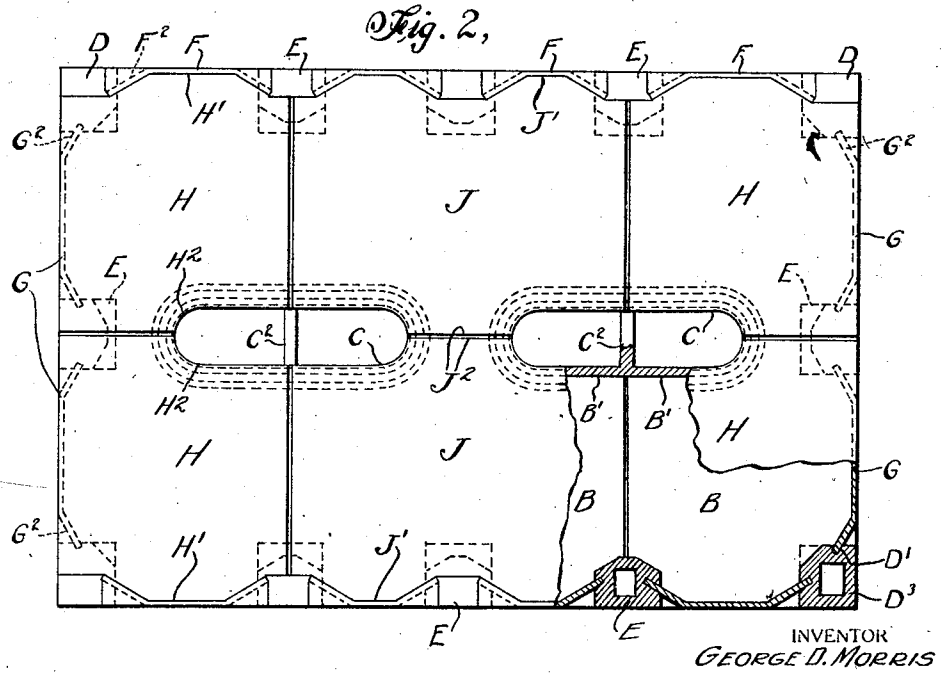


Fig. 1,

Fig. 2,



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Fig. 3,

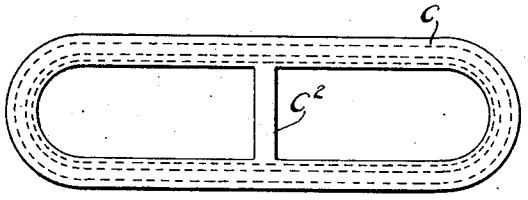


Fig. 4,

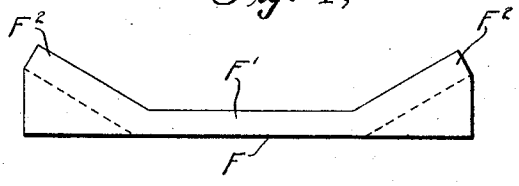


Fig. 5,

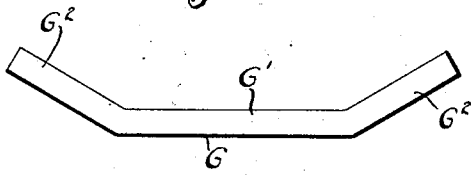


Fig. 6,

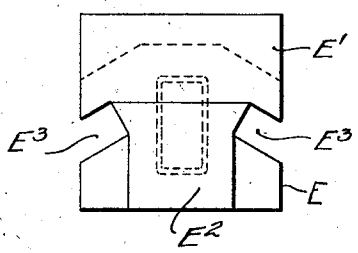


Fig. 8,

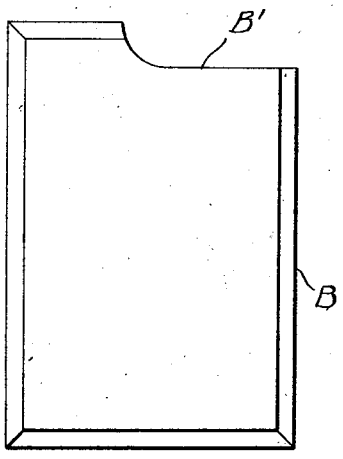
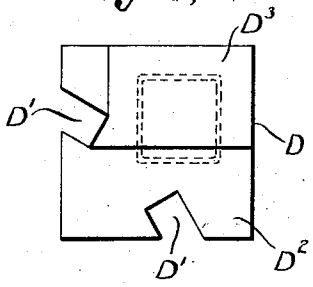


Fig. 7,



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UNITED STATES PATENT OFFICE.

GEORGE D. MORRIS, OF NEW CASTLE, PENNSYLVANIA, ASSIGNOR TO AMERICAN DRESSLER TUNNEL KILNS, INC., OF CLEVELAND, OHIO, A CORPORATION OF NEW YORK.

KILN CAR.

Application filed October 26, 1926. Serial No. 144,203.

The general object of my present invention is to provide an improved construction of the superstructure of tunnel kiln cars. More specifically, the object of my present invention is to provide an improved method of converting a deck car of the type in general use in muffle kilns into a type of car which can be used in direct fire kilns by constructing the car superstructure in an improved manner.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, its advantages and specific objects attained with its use, reference should be had to the accompanying drawings and descriptive matter in which I have illustrated and described preferred embodiments of my invention.

Of the drawings:

Fig. 1 is a side view of the car superstructure partly in section;

Fig. 2 is a plan view of my invention partly in section;

Fig. 3 is a plan view of one of the central flue tiles;

Fig. 4 is a plan view of one of the side wall tiles;

Fig. 5 is a plan view of one of the end wall tiles;

Fig. 6 is a plan view of one of the side posts;

Fig. 7 is a plan view of one of the corner posts; and

Fig. 8 is a plan view of one of the bottom slabs.

In the drawings, A represents the body of a car suitable for moving ware through a tunnel kiln. The car is arranged with a superstructure adapted to support ware in position for heat treatment in a direct fired tunnel kiln. As shown, this superstructure consists of a lower platform composed of a plurality of slabs supported on piers, an upper platform composed of a plurality of slabs supported on a plurality of corner and side posts and side and end wall tiles having their side portions fitting in slots in the corner and side posts to close the spaces between the posts. Hollow central tiles are provided to form up-draft flues through which the hot gases in the kiln chamber may pass upwardly from transverse passages between the piers so that the ware may receive substantially the same heat treatment on all sides.

In the particular construction illustrated, the car is provided with a series of transversely extending pierlike members A′ which are separated from one another by horizontal channels A^2, the latter being open at their outer ends. Supported on the transverse members A′ are a plurality of flat fire clay slabs B of general rectangular form and having one corner cut away at B′ as shown in Fig. 8. The slabs B are laid horizontally on the piers A′ with their adjacent edge portions contacting and their cut away portions B′ symmetrically arranged to form an opening in the general form of an ellipse. In the construction shown, the platform is formed by eight of said slabs, each extending to the center line of the car and all of which are arranged to form two spaced elliptical openings, the major axes of which extend along the longitudinal center line of the car. Two large hollow tiles C are mounted on the platform slabs with the inner wall of each tile in alignment with the edges of the corresponding elliptical platform opening. The tiles C taper slightly upwardly to an enlarged upper flanged edge portion C′. Each tile C is provided with a central transverse wall C^2 extending vertically and serving as a reinforcement for the tile walls.

At each corner of the rectangular platform composed of the slabs B is provided a post D in the form of a hollow vertical member of general square cross section with the inner projecting corner beveled off as shown in Fig. 2. Each of the inner sides of the post D is provided with a vertical slot D′ inclined at an angle to the adjacent outer side shown herein as substantially at a 30° angle and arranged to receive a wall tile member. The upper portion of each post is enlarged to provide a supporting flange D^2 of square cross-section and a smaller solid rectangular top portion D^3. At spaced intervals between the corner posts D are vertical hollow side posts E of general rectangular cross section. Two sides of each post E are provided with a vertical slot E^3 inclined at an angle of 30 degrees to

the outwardly facing side. At the upper end of each post E is formed a supporting flange portion E′ and a vertically projecting top portion E^2 of smaller cross-section. The spaces between the various adjacent posts D and E are filled by side and end wall tiles F and G. Each side wall tile F consists of a vertical central portion F′ and side portions F^2 outwardly inclined at an angle of 30° to the central portion F′. The side portions are enlarged at their upper ends so that the outer face of the enlarged portion is in substantially the same vertical plane as the outer face of the central portion F′. Each side wall tile F is vertically slidable in the inclined slots of the posts both when the upper platform is in position or removed. Each end wall tile G consists of a vertical central portion G′ and side portions G^2 inclined at a 30° angle to the central portion. The parallel top and bottom of each end tile piece are slightly inclined so that when mounted in position each end tile will be slightly inclined towards the outer side of the car. The side portions F^2 and G^2 are arranged to fit into the inclined slots in the side and corner posts D and E to entirely surround the ware to be heat-treated.

In the particular form of the invention illustrated an upper platform composed of four corner slabs H and two intermediate slabs J is supported on the posts D and E and the hollow tiles C. Each slab H is flat and has one edge portion H′ shaped to fit a side wall tile F, the projecting top portions of the posts D and E and the opposite edge H^2 conforming with the inner face of the hollow central tile C. Each slab H is supported on the posts D and E, an end tile G and the flanged portion C′ of one of the central tiles C. Each slab J has its outer edge J′ cut away to conform to the inner face of the side tiles F and the projecting top portion of the side posts E. Each slab J is supported in position by side posts E and the central tile flanges C′.

The superstructure may consist of any number of similar decks arranged in the manner of the double decked structure shown in Fig. 1 of the drawings. If desirable some of the decks can be enclosed as described and others left partially or entirely open by removing the side or end wall tiles F and G. The wall tiles and posts are ordinarily made of cast fire clay, although other materials capable of withstanding high temperatures could be used.

With the method of construction described, an open deck car such as is ordinarily used in a tunnel kiln of the muffle type can be converted quickly and easily to a type of ware carrying car capable of being used in a tunnel kiln of the direct fired type. In a kiln plant using both types of kilns, an arrangement by which cars can be used in either type of kiln is very advantageous in reducing both the total apparatus and operating costs.

While in accordance with the provisions of the statutes, I have illustrated and described the best form of embodiment of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of the apparatus disclosed without departing from the spirit of my invention as set forth in the appended claims and that in some cases certain features of my invention may be used to advantage without a corresponding use of other features.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a kiln car, the combination of a supporting base having a transverse flue passage therein, with a ware supporting superstructure having a hollow tile serving as a vertical flue passage, said vertical passage being connected with said transverse passage.

2. In a kiln car, the combination of a supporting base with a ware supporting superstructure comprising a lower platform having a flue opening therein, an upper platform having a flue opening therein and refractory means connecting said flue openings.

3. In a kiln car the combination of a supporting base with a ware supporting superstructure comprising a lower platform having a flue opening therein, vertical post members, an upper platform supported by said post members and having a flue opening therein, and a hollow tile member connecting said flue openings.

4. In a kiln car, the combination of a supporting base having a transverse passage therein, with a ware supporting superstructure comprising upper and lower platforms having substantially aligned flue openings therein, a hollow tile member connecting said openings to form a vertical flue passage and said vertical passage opening to said transverse passage.

5. In a kiln car, the combination of a supporting base with a ware supporting superstructure comprising a lower platform, a plurality of posts mounted on said platform, and a plurality of wall tiles between and supported by said posts.

6. In a kiln car, the combination of a supporting base with a ware supporting superstructure comprising a lower platform, a plurality of posts mounted on said platform, said posts having vertical grooves therein, and a plurality of wall tiles between said posts and slidable vertically in said grooves.

7. In a kiln car the combination of a supporting base with a ware supporting su-

perstructure comprising a lower platform, side and corner posts mounted on said platform, an upper platform supported by said posts, said posts being formed with longitudinal grooves in their sides and tiles extending between and having their edges received in the adjacent sides of adjacent posts.

8. In a kiln car, the combination of a supporting base with a ware supporting superstructure comprising a lower platform, side and corner posts mounted on said platform and an upper platform supported by said posts.

9. In a kiln car, the combination of a supporting base having a transverse flue passage therein, with a ware supporting superstructure comprising lower and upper platforms having flue openings therein, a plurality of side and end wall tiles enclosing the space between said platforms and a hollow tile connecting the flue openings in said platforms.

Signed at New Castle, in the county of Lawrence, and State of Pennsylvania, this 20th day of October, A. D. 1926.

GEORGE D. MORRIS.