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S. A. MITCHELL

CAR FOR TUNNEL KILNS

Original Filed April 13, 1920

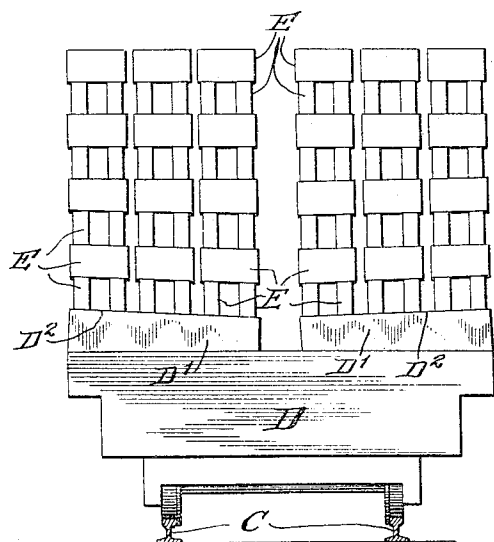
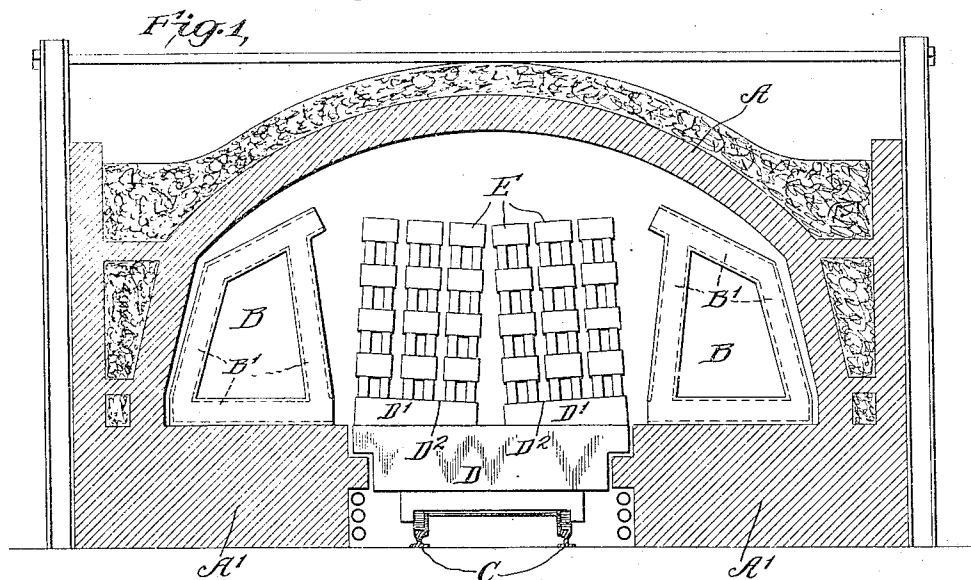
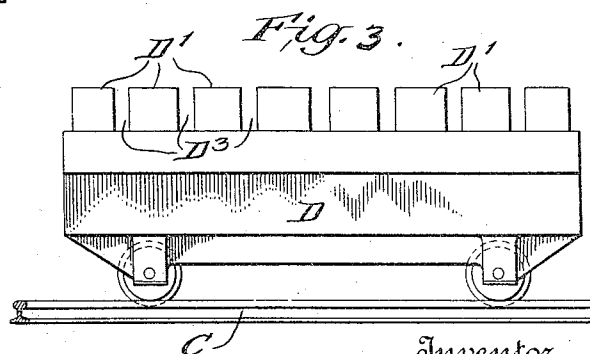
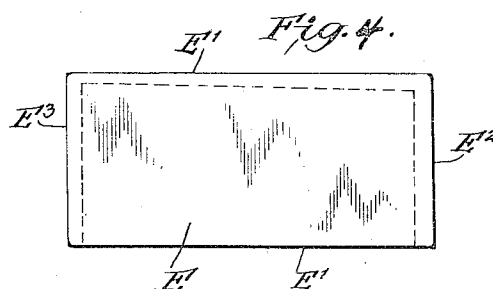


Fig. 2,



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UNITED STATES PATENT OFFICE.

STEPHEN A. MITCHELL, OF NEW CASTLE, PENNSYLVANIA, ASSIGNOR TO AMERICAN DRESSLER TUNNEL KILNS, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CAR FOR TUNNEL KILNS.

Application filed April 13, 1920, Serial No. 373,504. Renewed May 17, 1923.

To all whom it may concern:

Be it known that I, STEPHEN A. MITCHELL, citizen of the United States, and resident of New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Cars for Tunnel Kilns, of which the following is a specification.

My present invention consists in improvements in the means employed for transporting bricks and analogous ware through continuous tunnel brick drying or firing kilns, and the object of the invention is to provide a construction which will obviate a difficulty experienced with the transporting means ordinarily employed in such kilns and which arise from the changes in the shape of bricks or other ware during the heating and drying operations.

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, and the advantages possessed by it reference should be had to the accompanying drawings and descriptive matter in which I have illustrated and described a preferred embodiment of my invention.

Of the drawings;

Fig. 1 is a transverse section of a brick firing kiln with a brickloaded car therein, the brick being shown in their normal shapes as they enter,

And Fig. 2 is an elevation of a car loaded with brick of the distorted shapes temporarily acquired in the drying and firing operations.

Fig. 3 is an enlarged view of the brick illustrating in a somewhat exaggerated manner the change in shape which occurs during the early stages of the drying and firing operations.

And Fig. 4 is a side elevation of the car. In the drawings I have illustrated the use of my improved transporting means in connection with a continuous tunnel kiln of the well-known Dressler type, the elongated kiln chamber A being provided with track rails on which run the cars D for transporting the bricks or like material through the kiln. At the sides of the pathway for the goods are combustion chambers B resting on benches A'. The combustion chambers are of the general type illustrated in the patent

of Conrad Dressler #1170428 granted Feb. 1, 1916. Each car D is formed with a refractory body portion which forms a platform or movable kiln floor upon which the bricks are stacked up in columns. Advantageously the platform for the bricks is formed of pier like supports D' extending transversely to the direction of travel of the car and separated from one another by spaces D³ to permit the circulation of the kiln atmosphere through the bottom portion of the mass of bricks. These channels are at the level of the bottom openings into the open ended circulating channels B' formed in the walls of the combustion chambers.

The improved car construction shown differs, essentially, from those heretofore known in the fact that the upper surface of the brick receiving platform formed by the upper edges D² of the piers D', is not a horizontal plane surface, but comprises two plane surfaces each inclined slightly downward from the side edges of the car toward the center. The amount of this inclination should be sufficient to more or less exactly compensate for the tilting or change in inclination of the columns of bricks stacked on the car which results from the normal changes in brick shape occurring in the passage of the bricks through the kiln when radiant heat from the flues at first causes the outer portions to shrink first.

While in a kiln of the special type illustrated the brick mass of each car is heated throughout with substantial uniformity there is ordinarily an initial period in the drying operation and another initial period in the firing operation in which bricks or analogous material dried and fired in tunnel kilns are subjected to more heat at their sides and ends adjacent the side walls of the kiln than at their sides and ends adjacent the longitudinal center line of the car. This results in a temporary excess contraction of the side or end of a brick adjacent the side wall of the kiln as compared with the contraction of the opposite side or end of the brick. The effect of the changes in the shapes of individual bricks thus produced is to tilt each column of bricks toward the side walls of the kiln. It is highly desirable to prevent this tilting action from resulting in an outward inclination of the brick columns, as when the brick columns lean outward there is danger of some of the bricks falling

off the top of the column or of their contact with the combustion chambers or other portions of the kiln structure at the sides of the goods pathway. This danger is avoided in accordance with the present invention by so inclining the upper edges D^1 of the supports D that with the maximum tilting toward the side of the kiln the columns of bricks will be vertical as shown in Fig. 2, or will still lean slightly away from the side of the kiln. With this inclination to the horizontal of the support edges D^1 , the brick columns, when the brick are in their normal condition, will be inclined to the vertical as shown in Fig. 1. The shaping and arrangement of the combustion chambers to provide a goods pathway which is wider at its top than at its bottom supplements the effect of the special arrangement of the brick supporting surfaces in avoiding injurious contact between the bricks and kiln cars. It will be understood that ordinarily the bricks when completely dried and when completely fired return substantially to their original rectangular shapes except, of course, that the dried

and burned bricks are smaller than the undried bricks.

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

1. A car for transporting bricks and analogous ware through a tunnel kiln comprising a body portion and pier-like goods supports thereon extending transversely to the direction of car travel and spaced apart to provide channels open at their outer ends and upper edges, said supports having their upper edges sloping downwardly from the sides of the car toward its center.

2. The combination with a tunnel kiln shaped to provide a goods pathway wider at its top than at its bottom of goods transporting means forming a movable kiln floor which slopes downwardly from its side edges toward its center.

Signed at Saginaw in the county of Saginaw and State of Michigan this 9th day of April A. D. 1920.

STEPHEN A. MITCHELL.