

July 19, 1927.

H. M. ROBERTSON

1,636,073

KILN TRUCK

Original Filed June 20, 1925 2 Sheets-Sheet 1

FIG. 1.

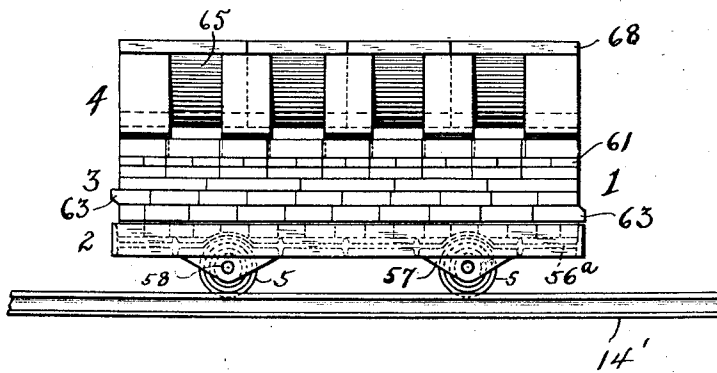
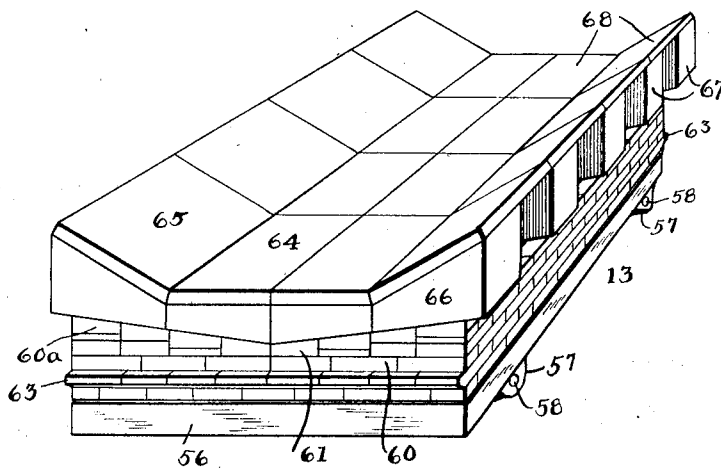


FIG. 2.



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FIG. 3.

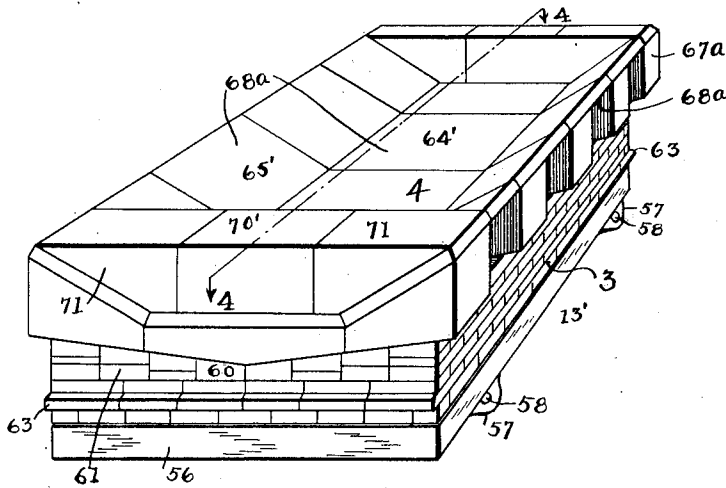


FIG. 4.

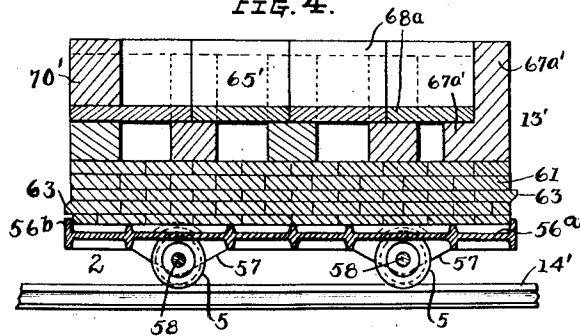
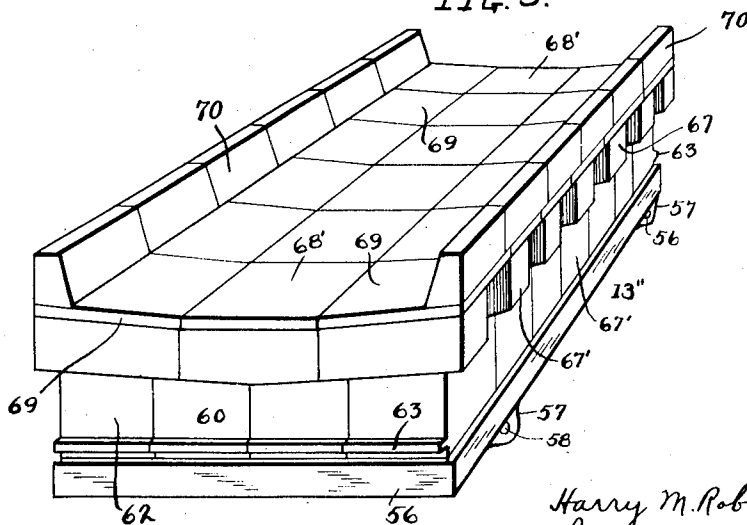


FIG. 5.



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KILN TRUCK.

Original application filed June 20, 1925, Serial No. 38,589. Divided and this application filed September 21, 1925. Serial No. 57,758.

This invention relates to a truck, holder or conveying device of use in kilns, particularly kilns of the continuous type.

This application is a division of my application Serial No. 38589, filed June 20, 1925 which has become Patent 1,621,222.

One object of the invention is to provide an improved truck, holder or conveying device for material to be heated or treated in a chamber, such as a continuous kiln.

Another object of the invention is to construct an improved holder for materials formed entirely from refractory materials, whereby it is capable of being repeatedly used in kilns and for other requirements where high temperature conditions exist without danger of deterioration or damage either by reason of high temperatures or exposure to atmospheric conditions.

Another object of the invention is to provide an improved truck or holder of this type that is readily and economically made.

Other objects of the invention will be apparent to those skilled in the art to which my invention relates from the following description taken in connection with the accompanying drawings, wherein

Fig. 1 is a side view of a truck or holder embodying my invention.

Fig. 2 is a perspective view of a truck (wheels for the truck being omitted) having a holder for the material.

Fig. 3 is a perspective view of a truck (the wheels therefor being omitted) having a holder of slightly different form from that shown in Figs. 1 and 2.

Fig. 4 is a longitudinal sectional view of the truck and holder shown in Fig. 3.

Fig. 5 is a perspective view of a truck (the wheels therefor being omitted) having a holder different in construction from that shown in Figs. 1, 2 and 3.

In the drawings, 1 indicates as an entirety a truck for the material or bodies to be treated, for example limestone, whereby the material or bodies may be moved in and through heated and cooled zones (either or both). The truck comprises a casting 2, a base portion 3 and a holder 4. The casting 2 consists of a frame having strengthen-

ing ribs 56^a and a flange 56^b extending along its sides and ends and pairs of depending plates 57 forming bearings for axles 58. The axles 58 carry supporting wheels 5, the peripheries of which are shaped to engage suitable tracks 14', which extend from a point outside a kiln into and therethrough, so that the truck may be moved through the kiln in loaded condition. The base portion 3 is supported on the frame 2. The base portion is formed of refractory blocks, such as bricks 61 (as shown in Figs. 1, 2, 3 and 4) or tile 62 (as shown in Fig. 5). The bricks or blocks 61 rest on the frame 2 and fit within the flange 56^b thereof. The upper surface of the base portion 3 is shaped to form inclined bases 60^a, 60^b, extending from the longitudinal side edges of the base portion downwardly to a longitudinal line extending centrally thereof. The purpose of this construction will later appear. At the opposite end walls of the base portion 3 are provided with transversely extending ribs. When the trucks are being moved through the kiln or other chamber, the ribs 63 overlap each other and thus close the space between the truck ends to prevent the heat in and passing through the kiln radiating downwardly and affecting the axles, the bearings therefor and wheels. As shown, the ribs 63 on the front and rear end walls of each truck are off-set one relative to the other so that the ribs on adjoining trucks will overlap each other for this purpose.

The truck holder 4 comprises a bottom 64, side walls 65 and supporting members 66 all of which are constructed from blocks 67 and slabs 68 each formed from suitable fire clay capable of resisting the high temperatures required in the kiln in burning the limestone or other material and exposure to lower temperatures therein and the air at normal temperature without danger of breakage; thereby permitting the trucks to be moved through the kiln and then into the open and subjected to normal atmospheric conditions. The blocks 67 preferably extend transversely of the base portion 3, being arranged in rows, each row spaced from the other row or rows, to permit the heat to cir-

culate beneath the bottom 64 and side walls 65; also, the blocks in each row constitute a series or set so that their lower surfaces may engage the incline bases 60^a and their upper surfaces support the slabs 68 in the manner shown. The side walls 68 are inclined inwardly and downwardly, thus serving to increase the carrying capacity of the truck, at the same time leave a relatively large area of the material exposed to the heat and products of combustion, as well as to permit the ready escape of the carbon dioxide and other vapors from the material. The bases 60^a being inclined downwardly and inwardly, they prevent lateral sliding of the blocks 67 on the base portion, and hence insure the assembly of the slabs in position. The slabs 68 forming the side walls 65 are inclined sufficiently to maintain a maximum load without affecting the accessibility of the heat and products of combustion to the material or free escape therefrom of the vapors given off incident to the burning action. It will be seen from Figs. 1 and 2 that the bottom 64 and side walls 65 extend from end to end of the truck body 2 or base portion 3, so that they may substantially abut the corresponding walls of the adjacent trucks. As a result, the loading of the trucks may be carried on continuously and the holders may co-operate one with another to form a continuously moving stream of material which is continually moving into and through the kiln. The holder may be modified so that the outermost slabs thereof will be but slightly inclined, as shown at 69 in Fig. 5, in which form of construction I prefer to provide flange sections 70 extending along the side edges of the slabs 69. As will be understood, the flange sections are formed of the same material as the other sections of the holder; also, that the blocks 67' are shaped to support the slabs 68' and 69 in the position shown. Fig. 5 also shows a further modification which may be used in connection with either form of holder, in that the base portion is constructed of fire-clay blocks instead of bricks.

Where it is desired to provide the holder 4 with end walls I construct it as shown at 13'—see Figs. 3 and 4. In these views, I provide blocks 70', 71, shaped to fit the slabs 68^a forming the bottom 64' and side walls 65'. The blocks 70', 71, may rest on the slabs 68^a, or they may be formed integrally with the end row of blocks 67^a, in which event the blocks have an off-set portion 67^{a'} to form a seat for the adjacent slabs 68^a. By fitting the base portion 3 of the holders within the flange 56^b, the latter will lie beyond the refractory base portion and thus engage each other to effect movement of the trucks through the kiln 1 without contact with the refractory walls. Danger of breakage of these walls is therefore eliminated.

It will be understood that either form of truck or holder may be loaded from a chute or hopper, but the form shown in Figs. 1, 2 and 5 has certain advantages, to wit, (1) the walls of the holder on which the material is supported abut each other so that during movement of the truck through the kiln they co-operate to form a continuous holder and conveying means and thus gives the kiln greater capacity; and (2) the material may be automatically discharged by the continued movement of the truck past a plurality of scraping members.

In my construction of truck or holder, the bricks, slabs and tiles may be readily assembled and replaced.

By constructing the body portion and holding portion of the truck from fire resisting material or materials, it may be positioned in and passed through zones that are maintained at relatively high temperatures and then removed therefrom without danger of being affected by sudden atmospheric changes. It will therefore be seen that the holding portion of the truck may be provided with side walls and also with end walls, if desired so that a relatively large quantity of material may be conveyed through the kiln.

To those skilled in the art to which my invention relates, many changes in construction and widely differing embodiments and applications of my invention will suggest themselves without departing from the spirit and scope thereof. My disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

What I claim is:

1. A truck for use in apparatus having a heated chamber comprising a wheel mounted frame, a base portion on said frame, supporting refractory blocks on said base portion, the engaging faces between said base portion and said blocks being complementary and co-acting to prevent outward movement of said blocks, and refractory walls resting on said blocks and arranged to form a holder for material.

2. A truck for use in apparatus having a heated chamber comprising a wheel mounted frame, a base portion on said frame, sets of supporting refractory blocks, each set comprising a center member and end members, the engaging faces between said base portion and said blocks of each set being complementary and co-acting to prevent outward movement of the blocks, and refractory walls resting on said blocks and arranged to form a holder for material.

3. A truck for use in apparatus having a heated chamber comprising a wheel supported frame, a base portion on said frame formed with bases inclined downwardly from its side edges to a central line extend-

ing longitudinally of said base portion, supporting refractory blocks shaped to fit said inclined bases, and refractory walls resting on said blocks and arranged to form a holder for materials.

4. A truck for use in apparatus having a heated chamber comprising a wheel supported frame and a holder having bottom and side walls formed from a refractory material and end walls formed of refrac-

tory material disposed along the opposite ends of said bottom and side walls.

5. A truck as claimed in claim 3 in which the supporting refractory blocks are arranged in transversely extending spaced rows.

In testimony whereof, I have hereunto affixed my signature.

HARRY M. ROBERTSON.