

P. A. MEEHAN.
 DUPLEX TUNNEL KILN.

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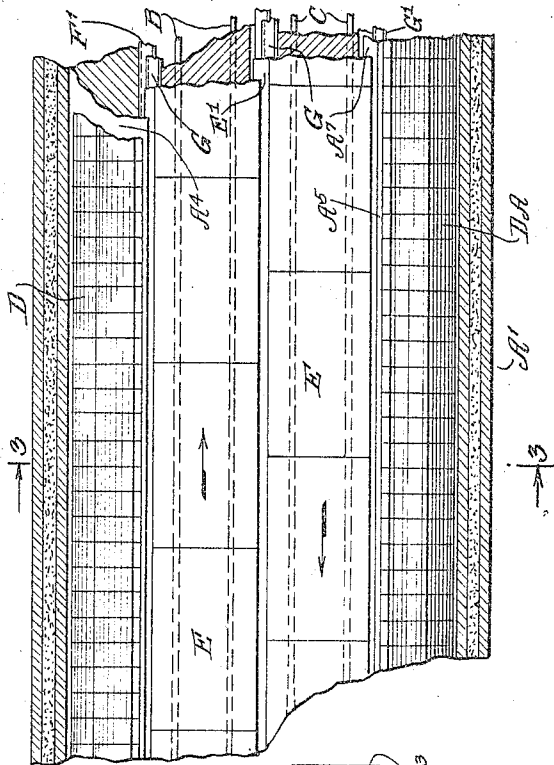


Fig. 1.

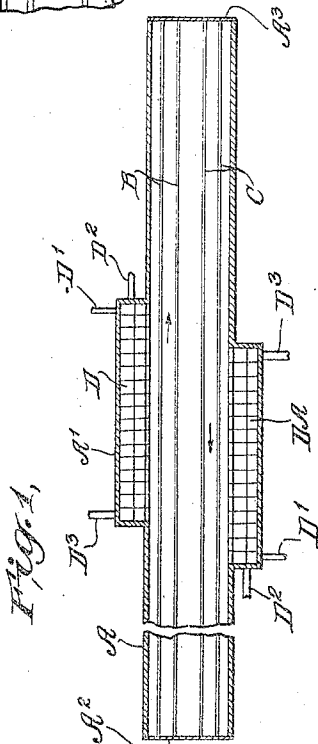


Fig. 2.

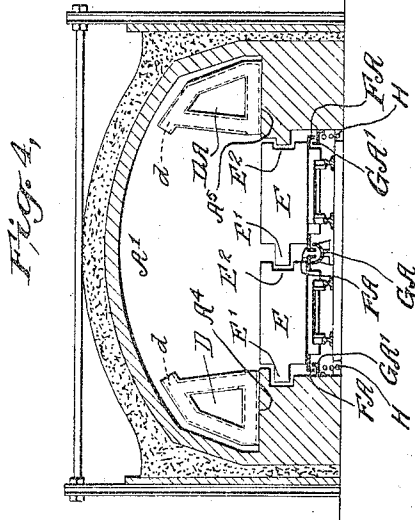


Fig. 3.

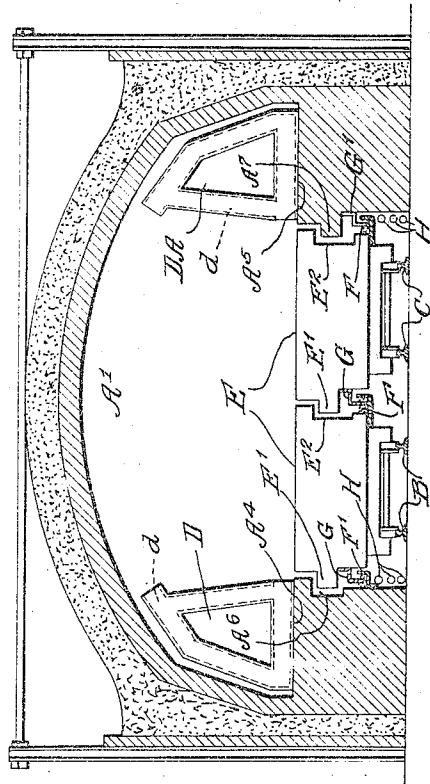


Fig. 4.

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UNITED STATES PATENT OFFICE.

PAUL A. MEEHAN, OF CLEVELAND, OHIO, ASSIGNOR TO AMERICAN DRESSLER TUNNEL KILNS, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DUPLIX TUNNEL KILN.

Application filed March 4, 1920, Serial No. 363,260, Renewed May 20, 1922. Serial No. 562,533.

To all whom it may concern:

Be it known that I, PAUL A. MEEHAN, citizen of the United States, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Duplex Tunnel Kilns, of which the following is a specification.

The general object of my present invention is to provide an improved form of tunnel kiln of the duplex type.

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 of 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 the invention.

Of the drawings:

Fig. 1 is a diagrammatic plan,

Fig. 2 is a partial sectional plan.

Fig. 3 is a transverse section on the line 3-3 of Fig. 2; and

Fig. 4 is a transverse section taken similarly to Fig. 3, illustrating a modified construction.

In the drawings, referring first to the construction shown in Figs. 1, 2, and 3, A represents an elongated kiln chamber provided with track rails B for a train of goods carrying cars E, inserted one car at a time at the end A² of the kiln chamber and withdrawn from the kiln chamber at the opposite end A¹ of the latter. The kiln chamber is also provided with a second set of track rails C for a train of goods carrying cars E, which enter the kiln chamber at the end A¹ and leave at the end A². An intermediate portion of the kiln is heated by means, which in the form shown, comprises a combustion chamber or muffle D at one side of the kiln chamber, and a similar combustion chamber or muffle DA at the opposite side of the kiln chamber. The kiln chamber is laterally enlarged at A' to accommodate the combustion chambers. Each combustion chamber is provided at one end with a fuel gas inlet D' and an inlet D² for air to support the combustion of the fuel gas, and is provided at the opposite end with an outlet D³ for products of combustion. The combustion chamber D rests upon a masonry bench, or ledge A⁴, the upper surface of which is at the level of

the top of the refractory bodies of the cars E. The combustion chamber is formed with open ended ventilating passages d in its walls, whereby convection currents of the kiln atmosphere may flow upward through these passages and be thereby heated, returning to the level of the tops of car bodies through and over the goods on the cars E. In this respect, the kiln shown is like the ordinary Dressler tunnel kiln. Between the end A² of the kiln and the portion of the kiln at which the combustion chambers are located, the goods on the cars E, running on the track rails B, are gradually heated up by heat abstracted from the goods on the cars running on the track rails C and the last mentioned goods are correspondingly cooled. At the other end of the kiln, the goods running on the track rails B transmit heat to goods running on the track rails C, the last mentioned goods being thereby gradually heated up, while the goods on the cars running on the track rails B in this portion of the kiln, are cooled.

Each of the cars E is provided at one side with a trough member F, running longitudinally of the car and containing a sealing medium as sand. At the opposite side, each car is provided with a flange member G, so arranged that the flange members G of the cars running on track rails C unite to form a continuous sealing flange, dipping into the sand contained in the continuous trough formed by the members F of the cars running on the track rails B. I thus obtain a seal which extends the full length of the kiln and which prevents any downflow through the spaces between the two trains of cars E, of the hot kiln atmosphere from the portion of the kiln chamber above the cars to the space containing the under portions of the cars and the tracks on which they run.

I have drawn a flange member G' adjacent the bench A⁴ to dip into the trough formed by the members F carried by the cars on the track rails C, and a sand holding trough F', carried by the bench A⁴, into which the flange members G of the cars running on the track rails B may dip. In general, however, the provision of the flange member G' and trough member F' is unnecessary, as the downflow between each of the benches A⁴ and A⁵ and the adjacent train of cars may be reduced by the flanges or shoulders and co-operating grooves E', E²,

A⁴, and A⁷, on the car bodies and benches to an unobjectionable minimum. The projecting ribs E¹ and grooves E² at the adjacent side of the cars C, also tend to minimize the downflow of the hot kiln atmosphere from above the car level, through the space between the cars along the center line of the kiln, but those skilled in the art will understand that lateral displacement of the cars E, on the rails, which may be expected to occur in practice, will occasionally result in gaps twice as wide between a car in one train, and a car in the other train and the adjacent bench A⁴ or A⁵, with equal allowances for clearance to prevent side swiping between the cars of the two trains, and between the cars of each train and the adjacent bench. H, represents cooling pipes for the tracks and under structures of the cars which will ordinarily be employed regardless of whether the flange member F' and G' are or are not used.

In the modification shown in Fig. 4, each car E is provided at each side with a downturned seal-forming flange FA. The flange FA at the side adjacent the kiln center of each car dips into a fixed sand holding trough member GA, mounted on the floor of the kiln chamber between the track rails B and the track rails C. Each member of the benches A⁴ and A⁵ may be provided with a sand holding trough member GA' into which the adjacent seal-forming flanges FA extend. While the arrangement shown in Fig. 4 differs from that shown in Figs. 1, 2 and 3 in that the corresponding sand seal is not formed wholly by car-carried parts; both constructions are alike in that the vertical flow of the kiln atmosphere through the clearance space between the cars of one train and the cars of the other train is prevented in part by shaping the sides of the cars to make the path of flow through this space a tortuous one, and in part by the positive action of a sand seal.

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 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. The combination in a duplex kiln comprising an elongated kiln chamber provided with two lines of tracks, of two oppositely moving trains of cars in the kiln for carrying goods therethrough, one train running on each line of track and each car having a goods carrying platform with the platforms of the cars of one train separated from the platforms of the cars on the other track by a narrow clearance space, means supplying heat to the portion of the kiln chamber above said clearance space, trough parts carried by the cars of one train and flange parts carried by the cars of the other train dipping into said trough parts and co-operating therewith, to provide a seal against a circulation of the kiln atmosphere through said space.

2. The combination in a duplex kiln comprising an elongated kiln chamber provided with two lines of tracks, of two oppositely moving trains of cars in the kiln for carrying goods therethrough, one train running on each line of track and each car having a goods carrying platform, the platforms of the cars of one train being separated from the platforms of the cars on the other track by a narrow clearance space and the side edges of the cars being shaped to create a tortuous path for vertical flow through said clearance space, means supplying heat to the portion of the kiln chamber above said clearance space, and parts carried by the cars of each train which co-operate to provide a seal against a circulation of the kiln atmosphere through said space.

Signed at New Castle, in the county of Lawrence and State of Penna., this 23 day of February, A. D. 1920.

PAUL A. MEEHAN.