ABSTRACT: Track construction for a dry kiln and the like including a pair of spaced-apart axially aligned stationary rails disposed on opposite sides of an access opening in the kiln. A movable rail is mounted on one of the stationary rails for swinging between one position fitted between the stationary rails, and another position overlying the one stationary rail. Such construction enables selective positioning of the movable rail to accommodate either movement of a lumber cart into and out of the kiln, or movement of a door into and out of a position closing and sealing the access opening.
This invention pertains to track construction for a dry kiln and the like.

In a typical dry kiln, a track comprising a pair of rails for supporting a lumber cart extends into a heat chamber in the kiln's housing. In some cases, the track extends through a single access opening on one side of the chamber, and dead-ends therein. In other cases, the track extends completely through the chamber, through access openings provided on opposite sides thereof.

A problem in the past has been the difficulty of producing a satisfactory seal against heat loss in the region where rails in a track enter a heat chamber. The usual door which is employed to close off an opening to a chamber is notched at the bottom to accommodate the rails. With such construction, a considerable loss of heat occurs through the spaces between the rails and notches in the door. In addition, with the rails that are employed typically being made of a metal such as steel, they act as conductors and carry additional heat away from the inside of the kiln.

A further problem which has been encountered in the past with construction of the type generally indicated is rail corrosion due to condensation which occurs on rails immediately outside a chamber.

A general object of the present invention, therefore, is to provide a novel track construction for a dry kiln and the like which overcomes the above-mentioned problems in a practical and satisfactory manner.

More specifically, an object of the invention is to provide such track construction which accommodates proper sealing of an access opening for a heat chamber in a kiln to minimize heat loss from the chamber.

According to a preferred embodiment of the invention, the proposed track construction comprises a pair of spaced-apart axially aligned stationary rails disposed on opposite sides of an access opening in a kiln. A movable rail is mounted through linkage means on one of the stationary rails for swinging between two flanged guides disposed on the stationary rails, and another position overlying the one stationary rail.

With the movable rail in its first-mentioned position, a substantially continuous rail support surface is provided which accommodates movement of a lumber cart into and out of the kiln. With the movable rail in its other position, a large gap is provided between the stationary rails which accommodates movement of a door into and out of a position closing and sealing the access opening. In addition, with the movable part in its second-mentioned position—i.e., overlying one of the stationary rails—it may act as a stop for a cart.

The advantages and other objects and advantages attained by the invention will become more fully apparent as the description which follows is read in conjunction with the accompanying drawings, wherein:

**FIG. 1** is a fragmentary perspective view illustrating a portion of a dry kiln employing track construction made in accordance with the invention;

**FIG. 2** is a fragmentary side elevation, on a larger scale than **FIG. 1**, showing details of the proposed track construction, and illustrating certain adjustments which may be made in the position of a movable rail therein;

**FIG. 3** is a side elevation on about the same scale as FIGS. 2, further illustrating adjustments producible in the movable rail;

**FIG. 4** is a view taken generally along the line 4–4 in **FIG. 3**; and

**FIG. 5** is a fragmentary perspective detail, similar to a portion of **FIG. 1**, illustrating a somewhat different track arrangement from that shown in **FIG. 1**.

Turning now to the drawings, and referring first to **FIG. 1**, indicated generally at 10 is an end portion of a dry kiln employing track construction made in accordance with the present invention. Kiln 10 includes a conventional elongated housing 12 having elongated upright front and back walls 14, 16, which join at their opposite sets of ends with upright end walls, such as end wall 18. A top 20 joins with the front, back and end walls, and closes off the top of the kiln.

In kiln 10, backwall 16 is substantially continuous (i.e., without openings). The front wall, however, is provided with a plurality of laterally spaced rectangular openings, such as opening 22, which provide access to a plurality of spaced-apart heating chambers, such as chamber 24, formed in the housing. The inside of a heating chamber is lined with a suitable conventional insulating material, and each chamber is separated from an adjacent chamber by a wall, such as wall 26. The chambers are heated by conventional heating equipment.

Formed in the base of each chamber in the kiln are laterally spaced elongated substantially parallel channels, such as channels 28, 29 in chamber 24, which extend from the front toward the rear of the chamber. Notches, such as those shown at 30, 31, are provided in front wall 14 which expose the front ends of the channels in the chambers. Extending along and closely adjacent the outside of wall 14 is an elongated channel 32. Channel 32 is disposed at substantially right angles to the channels described in the heating chambers.

Further describing kiln 10, a door is provided for opening and closing off each of the chamber access openings provided in front wall 14. Such a door, for opening and closing off opening 22, is illustrated partially at 34 in **FIG. 1**. Door 34 is conventional, and comprises an upright planar structure mounted for shifting from side to side between one position (shown in dash-dot outline at 34A) closing off opening 22, to another position (its solid outline position), exposing the opening. Fastened adjacent opposite sides of the top of door 34 are brackets, such as bracket 36, which carry rollers, such as roller 38. The rollers in the brackets ride on an elongated bar 40 which extends along the outside of the front wall of housing 12, above the various access openings. Bar 40 is mounted on wall 14 through brackets such as those shown at 42.

The base of door 34 extends down into channel 32, to a point below the bases of notches 30, 31, and slightly above the base of channel 32 (see **FIG. 3**). Suitably fastened to the bottom edge of the door is an elongated angle iron 44 having a flange 44c (see **FIG. 3**), which extends downwardly to the base of channel 32.

Referring now to **FIGS. 1–4** together, suitably anchored in channels 28, 29 are elongated rails 46, 48, respectively. Considering rail 46, it has a cross-sectional outline, when viewed along its longitudinal axis (as in **FIG. 4**), substantially the same as that of a conventional railroad rail. The end of rail 46 which is adjacent the front of chamber 24 (the left end thereof in **FIGS. 2 and 3**) terminates with a planar inclined face 46a which slopes upwardly and to the right in **FIGS. 2 and 3**. The other end of rail 46 (not shown), terminates inside and adjacent the rear of chamber 24.

Rail 48 is substantially the same in construction as rail 46. Thus, rail 48 includes an inclined face 48a (see **FIG. 1**) adjacent the front end of channel 29. Face 48a corresponds to face 46a. The inner end of rail 48 terminates inside and adjacent the rear of chamber 24.

Spaced from and aligned axially with rails 46, 48 are elongated rails 50, 52, respectively. Rails 50, 52 are suitably anchored in channels 54, 56, respectively, which are formed in the ground outside the front of compartment 24. Channels 54, 56 are axially aligned with channels 28, 29, respectively. Rails 50, 52 have substantially the same cross-sectional outlines and dimensions as rails 46, 48. The ends of rails 50, 52 which face rails 46, 48 terminate with inclined planar faces 50a, 52a, respectively. Faces 50a, 52a slope upwardly and away from the front of kiln 10. Rails 50, 52 terminate short of channel 32. Rails 46, 48, 50, 52 are referred to herein as stationary rails.

Indicated generally at 58, 60 are movable rails as contemplated by the invention. Rails 58, 60 are alike in construction, and have cross-sectional outlines and dimensions which are substantially the same as those of the stationary rails just described. Opposite ends of rail 58 terminate with inclined planar faces 58a, 58b. Opposite ends of rail 60 terminate with inclined planar faces 60a, 60b.
The mounting provided for rail 58 comprises a pair of laterally spaced elongated links 62. One set of ends of links 62 are pivotally connected to the central web of rail 46 through a pin 64. Collars 66 (see FIG. 4) encompass pin 64 where it projects from opposite sides of the web of rail 46, and these collars space the links properly relative to the sides of the rail. The links are captured on the ends of pin 64 by cotter pins (not shown). The other set of ends of links 62 are pivotally connected to the central web of rail 58 through a pin 68. Collars 70 (see FIG. 4) corresponding to collars 66 encompass pin 68 and are interposed between the links and rail 58. As can be seen clearly in FIG. 4, links 62 are spaced apart a distance which is greater than the widths of the heads of rails 46, 58.

Rail 60 is mounted in a similar manner on rail 48. Thus, interposed between rails 60, 48 are elongated laterally spaced links 72 which correspond to links 62. The opposite ends of links 72 are pivotally connected to the central webs of these two rails in substantially the same manner as that described above for links 62.

As will be more fully explained later, rail 58 is adapted to be moved between one position where it is interposed between rails 46, 50 (such a position for rail 58 being shown in solid outline therefore in FIG. 2), and another position (shown in solid outline in FIGS. 1 and 3) overlying rail 46 and leaving a gap between rails 46, 50. Similarly, rail 60 is adapted to be moved between corresponding positions relative to rails 48, 52.

According to the invention, means is provided for inhibiting or restraining lateral movement of a movable rail with the same in a position interposed between a pair of stationary rails. Referring to FIGS. 2, 3, and 4, the lateral restraining means for rail 58 comprises two pairs of elongated laterally spaced fingers 74, 76. Fingers 74 are suitably anchored to opposite sides of the central web of rail 46. Fingers 76 are suitably anchored to opposite sides of the central web of rail 50. The lateral restraining means provided for rail 60 is substantially the same as that provided for rail 58. Thus, it includes two pairs of laterally spaced fingers 78, 80 (see FIG. 1) corresponding to fingers 74, 76, respectively.

Referring again particularly to FIG. 1, and completing a description what is shown therein, indicated generally at 82 is a conventional lumber cart including a frame 84 supporting a stack of lumber indicated generally at 86. Cart 82 is shown in a position inside of chamber 24. The cart is supported on rails 46, 48 with its wheels 52 out or to the rear of the chamber.

Explaining now how the apparatus described so far herein may be used, with the movable rails in positions interposed between their respective associated stationary rails, substantially continuously support surfaces—over the tops of rails 46, 58, 50 and of rails 48, 60, 52—are provided for accommodating movement of a cart, such as cart 82, into and out of chamber 24 through opening 22. In FIG. 1, rails 58, 60 are shown in such positions generally in dash-dot outline at 58A, 60A, respectively. In FIG. 2, rail 58 is shown in such a position in solid outline in the figure. With the movable rails in such positions, and as can be seen clearly for rail 58 in FIG. 2, the opposite ends thereof fit in matching complementary relation relating to the confronting ends of the associated stationary rails. Thus, and referring particularly to rail 58, its inclined end face 58A, 58B fit in matching relationship against faces 50A, 46A, respectively. In addition, the projecting ends of the pairs of fingers mounted on the stationary rails engage opposite sides of the central webs in the movable rails and inhibit lateral movement of the latter.

The cart 82 may be placed in such a position (i.e., interposed between the stationary rails) only with door 34 exposing opening 22. It will be apparent that with the movable rails in these positions, door 34 cannot be shifted across opening 22.

To enable closing of the opening 22 with a cart, such as cart 82, moved into chamber 24, rails 58, 60 are moved to another set of positions overlying rails 46, 48, respectively. In FIG. 1, rails 58, 60 are shown in solid lines in these positions. In FIG. 2, rail 58 is shown in such a position at 58E in dash-triple-dot outline. In FIG. 3, rail 58 is shown in this position in solid outline.

Considering how a movable rail, such as rail 58, may be shifted between the two positions described, and referring particularly to FIG. 2, the rail may be lifted by hand from its position interposed between rails 46, 50 (such position as that shown in dashed outline at 58B. Such movement is accompanied by swinging of links 62 to positions such as that shown for one of the links in dashed outline at 62B in the figure. Rail 58 may then be swung about pin 68 toward a position such as that shown in dash-dot outline at 58C. With further adjustment of the rail and links, swing is continued toward positions such as those shown therefor respectively in dash-double-dot outline in FIG. 2 at 58D, 62D. Rail 58 may then be lowered to position 58E overlying rail 46, with links 62 then occupying positions such as that shown for a link at 62E.

With rails 58, 46 interconnected as described, such an adjustment is relatively easy to make, with rail 58 substantially confined to movement in a vertical plane to a proper position overlying rail 46. It will be noted that rail 58, when in a position overlying and resting on rail 46, is in a different attitude from that which it has when interposed between rails 46, 50. In particular, rail 58 is inverted when overlying rail 46 relative to the disposition it has when seated between rails 46, 50, door 22.

To return rail 58 to its solid outline position in FIG. 2, an operation substantially the reverse of that just described is made. The links and pivot pins interconnecting rails 46, 58 assure proper resetting of rail 58 in the space between rails 46, 50.

Substantially the same types of adjustments just described with respect to rail 58 may be made in rail 60 with respect to stationary rails 48, 52.

Thus, when it is desired to move a lumber cart into or out of compartment 24, door 34 is shifted to expose opening 22 and rails 58, 60 are adjusted to positions properly seated between their respective associated stationary rails. It will be noted that rails 58, 60 cannot be placed in these positions until the door has been moved laterally away from opening 22. This is because, as can be seen clearly in FIG. 3, the base of the door, and flange 44a of angle iron 44, extend well below the bases of channels 28, 29, and close to the base of channel 32. With the movable rails in such positions, a cart can readily be moved into or out of the chamber.

With a cart moved into the chamber, rails 58, 60 may be adjusted to positions overlying rails 46, 48 inside the chamber (see FIG. 1). With such an adjustment, it will be apparent that gaps then exist between rails 46, 50 and between rails 48, 52 which leave channel 32 unobstructed in front of opening 22. Door 34 may then be shifted readily to position 34A closing opening 22. With the door so shifted, its base and flange 44a of angle iron 44 form a seal against heat loss adjacent the base of opening 22. No gaps or notches need be provided in the door to accommodate rails, since movable rails 58, 60 are shifted out of the way. Further, rails do not extend from inside the chamber outside of the chamber with the door closed. Thus, the problem of rails conducting heat away from the chamber is taken care of.

A further feature is that rails 58, 60, when overlying rails 46, 48 act as stops for a cart, inhibiting accidental movement of a cart out of the chamber.

FIG. 3 illustrates still another important feature of the invention. It will be recalled that in FIG. 3, rail 58 is shown in solid outline in a position overlying rail 46 (i.e., the position which it might have with a lumber cart stored inside chamber 24). With door 34 opened, and in the event that something causes the wheel of a cart to push sufficiently hard against rail 58 to cause it to shift toward the left in FIG. 3, rail 58, as contemplated herein, yields somewhat and moves toward a different position, but continues to act as a stop for the cart. More specifically, with a wheel in the cart sufficiently hard
against rail 58, the rail shifts through a position shown in dashed outline at 58F toward the position shown in dash-dot outline at 58G in FIG. 3. It will be noted that the attitude of rail 58 in position 58G is substantially the same as that with the rail in its solid outline position. This fact, and because of the construction of the ends of rail 58, and the confinement imposed on the rail’s movement by links 62, make it impossible for rail 58 to seat between rails 46, 50 in a way which would permit a cart wheel to move off of rail 46. Similar action occurs under like circumstances with respect to rail 60.

In the construction described so far herein, the movable rails have been mounted for movement in the same directions. In a modified arrangement, the rails might be mounted for movement in opposite directions. In other words, one movable rail might be mounted for shifting to a position over a rail inside a chamber, and the other one might be mounted for shifting to a position over a rail outside the chamber. This might be useful where it is desirable to have a cart stop provided on the outside as well as on the inside of a chamber.

FIG. 5 illustrates such a modified arrangement. More specifically, in this arrangement movable rail 60 is mounted through links 72 on rail 52 rather than on rail 48. With such the case, rail 60 may be adjusted between a position (shown for it in solid outline) overlying rail 52 outside the kiln, and a position (shown generally at 60B in dash-dot outline) interposed between rails 48, 52. Rail 58 is mounted in the same way as previously described for it.

Thus, the invention provides a novel track construction which takes care of the problems mentioned earlier. The proposed construction is relatively simple, and is easy to install in existing kilns. The stationary rails contemplated may be made to accommodate fitting of the apparatus into different kiln arrangements.

While an embodiment of the invention has been described herein, it is appreciated that variations and modifications may be made without departing from the spirit of the invention.

It is claimed and desired to secure by Letters Patent:

1. Track construction for a dry kiln and the like having an access opening, said track construction in operative condition comprising

   a pair of elongated spaced-apart stationary rails disposed on opposite sides of said opening and substantially axially aligned with each other,

   a movable rail, and

   means mounting said movable rail adjacent said stationary rails for movement between one position interposed between said stationary rails and another position overlying one of said stationary rails, said mounting means including

   an elongated link interposed between said movable rail and said one stationary rail, and

   pivot means operatively connecting one end of said link to said movable rail.

2. The track construction of claim 1, wherein said mounting means further comprises another pivot means operatively connecting the other end of said link to said stationary rail.

3. The track construction of claim 1 which further comprises lateral restraining means mounted on at least one of said stationary rails for inhibiting lateral movement of said movable rail with such in its said one position.

4. The track construction of claim 3, wherein said lateral restraining means comprises a pair of spaced-apart elongated fingers joined to opposite sides of said stationary rail.

5. Track construction for a dry kiln and the like having an access opening, said track construction in operative condition comprising

   a pair of elongated spaced-apart stationary rails disposed on opposite sides of said opening and substantially axially aligned with each other,

   a movable rail, and

   means mounting said movable rail adjacent said stationary rails for movement between one position interposed between said stationary rails and another position overlying one of said stationary rails, said mounting means accommodating adjustment of said movable rail to different attitudes, and said movable rail and at least one of said stationary rails being configured whereby with the movable rail in one attitude it is freely movable into the space between said stationary rails, and with the movable rail in another attitude movement into such space is inhibited.

6. The track construction of claim 5, wherein said mounting means comprises means interposed between and operatively interconnecting said movable rail and said one stationary rail.

7. The track construction of claim 5, wherein the end of one of said stationary rails which faces the other stationary rail is defined by a face whose lower margin is spaced toward the other stationary rail from its upper margin, and said movable rail has an end constructed to fit in matching complementary relation adjacent end of said stationary rail with said movable rail in its said one attitude.

8. The track construction of claim 7, wherein said face is substantially planar.

9. Construction for a dry kiln and the like having an access opening, said track construction in operative condition comprising

   a pair of elongated spaced-apart stationary rails disposed on opposite sides of said opening and substantially axially aligned with each other,

   a movable rail, and

   means interconnecting said movable rail and one of said stationary rails including a pair of side-by-side disposed laterally spaced substantially parallel elongated links, and

   pivot means for each set of adjacent ends of said links operatively connecting such set of ends to one of said two interconnected rails.

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