Jan. 26, 1960 E. C. HORNI 2,922,381

TRANSFER MECHANISM FOR TUNNEL KILN

Filed Jan. 23, 1957 2 Sheets-Sheet 1

Fig. 1.

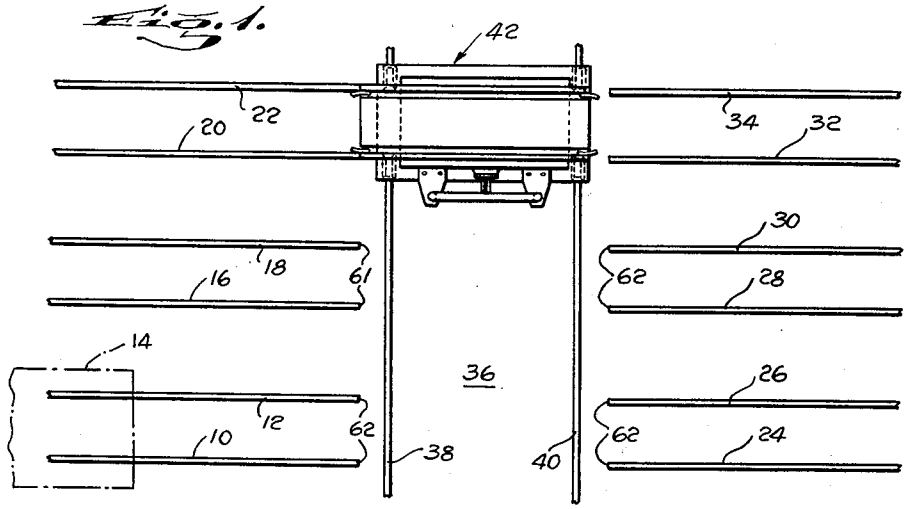
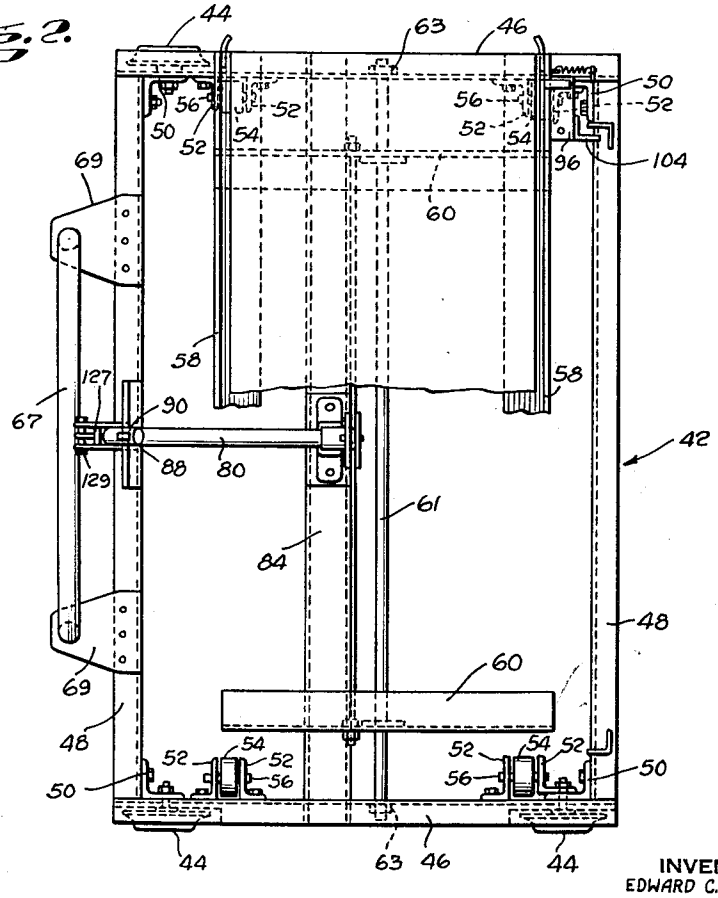


Fig. 2.



INVENTOR
EDWARD C. HORNI

BY Hubbell and Cohen

ATTORNEYS

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Fig. 3.

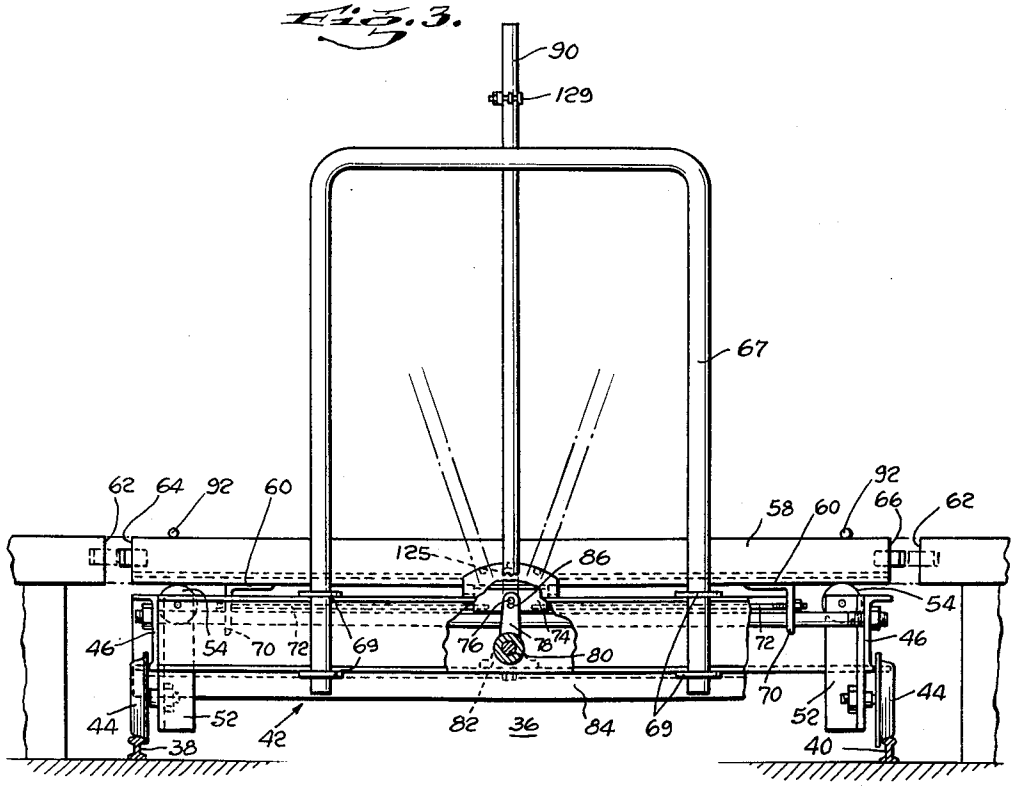


Fig. 4.

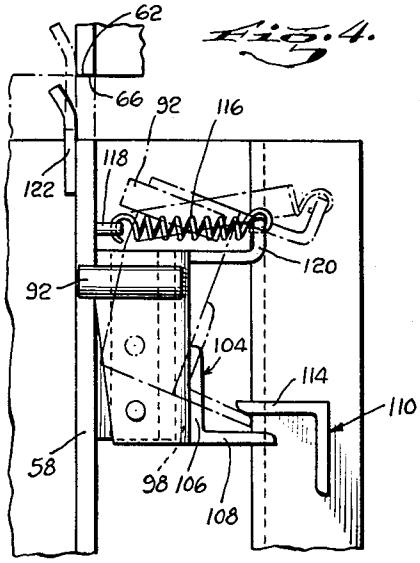
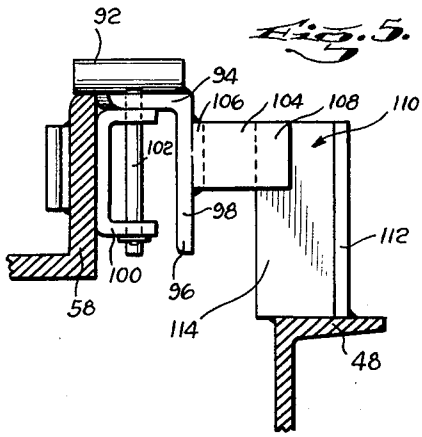


Fig. 5.



INVENTOR
EDWARD C. HORNI
BY Hubbell and Cohen
ATTORNEYS

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2,922,381

TRANSFER MECHANISM FOR TUNNEL KILN

Edward C. Horni, Pittsburgh, Pa., assignor to Swindell-Dressler Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Application January 23, 1957, Serial No. 635,693

17 Claims. (Cl. 104—48)

This invention relates to transfer mechanisms and particularly to transfer mechanisms for use in conjunction with tunnel kilns.

In tunnel kilns, the ware is moved through a longitudinal kiln on a car which runs along track rails extending through the kiln along the bottom thereof. The car is moved through the kiln at a relatively slow rate whereby to give the ware therein an opportunity to be properly fired as the car moves through the kiln. After the car leaves the kiln it becomes necessary to transfer it to another track, either a return track running alongside and parallel to the track extending through the kiln, or to storage tracks which may be parallel to the kiln tracks and disposed laterally therefrom.

In either event, it is necessary to transfer the kiln car to the other sets of tracks and this transfer is effected by means of a transfer mechanism. It is necessary to keep in mind when devising transfer mechanisms to cooperate with tunnel kilns of the type described, that the wares are extremely fragile and relatively slight jarring may be sufficient to shatter or displace at least a portion of the wares on the car. Accordingly, the transfer mechanism must be designed to obviate the possibility of jarring the kiln car during the transfer thereof from one set of tracks to another.

When the track arrangement is such that there is only a set of tracks running through the kiln and a return set of tracks running parallel to the kiln but exterior thereof, the problem is of a unique or special nature which may be solved by special apparatus not generally usable for more complex track arrangements. An example of a highly desirable transfer mechanism for the simple two track arrangement of the type described in this paragraph is illustrated in the application of Charles Dean Tinker, Serial No. 246,661, filed September 14, 1951, now abandoned. Reference to this application will illustrate the care with which the transfer mechanism has been designed to reduce or eliminate jarring of the car during the transfer thereof from the tunnel kiln tracks to the return tracks.

When, however, the track arrangement is more complex than the simple two-track configuration described above, the Tinker arrangement cannot be readily employed since it has been specifically designed to transfer a tunnel kiln car from one pair of tracks extending through the kiln to another and only one other pair of tracks running alongside the kiln. Accordingly, a completely different type of car transfer mechanism must be employed. Nevertheless, the car transfer mechanism to be employed in conjunction with a more complex track array must still operate in such a manner as to obviate the possibility of substantial jarring of the car during the transfer thereof.

It is accordingly one object of the present invention to provide a new and improved transfer mechanism.

Another object of the present invention is the provision of a new and improved transfer mechanism to operate in conjunction with tunnel kilns.

Still a further object of the present invention is the provision of a new and improved transfer mechanism for operation with tunnel kilns, which mechanism operates in such a manner that there is substantially no danger of jarring of the ware on a tunnel kiln car during the transfer thereof from one set of tracks to another.

Still another object of the present invention is the provision of a new and improved transfer mechanism for operation with tunnel kilns, which transfer mechanism is effective for transferring the kiln cars to and from at least three sets of track rails.

The above and other objects, characteristics and features of the present invention will be more fully understood from the following description taken in conjunction with the accompanying illustrative drawings.

In the drawings:

Fig. 1 is a plan view of the exit end of a tunnel kiln together with associated track rails;

Fig. 2 is a plan view of the transfer mechanism embodying the present invention, with parts thereof broken away to more clearly illustrate some of the features of the invention;

Fig. 3 is an end elevational view of the transfer mechanism shown in Fig. 2;

Fig. 4 is an enlarged plan view of one portion of the transfer mechanism illustrating the operation of the stop means associated therewith; and

Fig. 5 is a side elevational view of that portion of the transfer mechanism shown in detail in Fig. 4.

Referring now to the drawings in detail and particularly to Fig. 1 thereof, the bottom left hand track rails **10** and **12** extend longitudinally through a tunnel kiln **14** of any desired design. Extending parallel to the track rails **10** and **12** are a first pair of return track rails **16** and **18** and a second pair of track rails **20** and **22**. Opposite and spaced from each of the three sets of track rails described are corresponding track rails **24** and **26** making up one set of track rails, **28** and **30** making up another set of track rails, and **32** and **34** making up still another set of track rails. It will be noted that the three sets of track rails on the right hand side, that is the track rails made up of tracks **24–34** are spaced from the track rails on the letf hand side of Fig. 1 by a pit **36**. Disposed in the pit at a level lower than that of the track rails **10**, **12** and **16** to **34** are a pair of parallel transfer rails **38** and **40** (see Fig. 3). A transfer mechanism **42** including four wheels **44** has the four wheels **44** disposed on the track rails **38** and **40** to permit movement of the transfer mechanism laterally of the track rails extending through or parallel to the tunnel kiln **14**. In this manner the transfer mechanism **42** can be brought into registry with each set of track rails.

Referring now to Figs. 2 and 3, the transfer mechanism **42** includes two side members **46** which may preferably be in the form of channels. These side members **46** are connected in any suitable manner to end members **48** which also may be channel members. Preferably, the junctures between the side members **46** and the end members **48** are reinforced as by corner angle members **50**. Secured to the side members **46** are four sets of brackets **52**. The manner of securement of the brackets **52** may be effected in any manner desired for the convenience of the fabricator. For instance, the brackets may be welded or riveted or, as shown in Fig. 2, bolted to the side members **46**. Each set of brackets defines therebetween a space in which a roller **54** may be disposed. The rollers **54** are mounted on the brackets **52** as by axles **56**. It will be observed that the rollers operatively connected to one side member **46** are in line with and opposed to the rollers **54** operatively connected to the other side member **46**. Disposed on each pair of opposed rollers **54**

is a carriage rail 58 which is permitted to move in a longitudinal direction transversely of the movement of the transfer mechanism 42 because of the positioning thereof on the rollers 54. Preferably, the carriage rails 58 are fixed to one another as by transverse bracing angle members 60 which are secured to carriage rails 58 in any desired manner. The carriage rails 58 are disposed in the same plane as the track rails 10, 12 and 16—34. The movable rail assembly is held in alignment and guided by means of a longitudinal bar 61, which also serves as a frame brace. This bar extends parallel to end members 48 and centrally thereof. It is secured to side members 46 in any suitable manner as by nuts 63 and passes through adjustable guide plates bolted to transverse angles 60.

In accordance with the present invention, the carriage rails 58 are a slight distance shorter than the distance between the opposed ends 62 of the track rails 10, 12 and 16—34. Moreover, in accordance with the present invention, the carriage rails 58 are movable to and from a central or neutral position in which the respective ends 64 and 66 of the carriage rails 58 are spaced from the ends 62 of the track rails, and to and from a position in which the ends 64 of the carriage rails 58 are in abutting relationship with the ends 62 of the track rails on one side of pit 36, and to and from a position in which the ends 66 of the carriage rails 58 are in abutting relationship with the ends 62 of the track rails on the other side of pit 36. By providing for the longtiudinal movement of the carriage rails 58 to and from the three positions described above, it will be seen that the carriage rails can be moved to and from positions in which a kiln car can be moved onto and off of said carriage rails without substantial jarring thereof, there being no gap between the carriage rails and the track rails at the time of transfer. Moreover, when the carriage rails 58 are in their central position in which the ends 64 and 66 thereof are spaced from the ends 62 of the track rails, the transfer carriage 42 may be moved laterally of the track rails along transfer rails 38 and 40 without the edges of the carriage rails engaging the edges of the track rails. Of course, if the latter were to occur, there would be substantial jarring of the carriage, which jarring might well break the wares on a kiln car disposed on the carriage 42. To effect movement of the transfer carriage along transfer rails 38 and 40, a suitable handle is provided. As shown in the drawings, the handle is a U-shaped member 67 secured to end member 48 as by brackets 69.

In order to effect the shifting movement of the carriage rails 58 to and from the three positions described above, a pair of thrust rods 72 are fixedly connected to the depending portions 70 of each of the angle brackets 60 and are operatively connected to each other by a clevis type connector 74 disposed centrally of the brackets 60 and in between the carriage rails 58. The connector 74 is provided with a pin 76 which extends outwardly from the surface thereof transversely of the thrust rods 72. A crank 78 is fixedly mounted on a rotatable shaft 80 which in turn is mounted in a bearing 82 fixed to a base plate 84 on the carriage 42. The crank 78 is provided with a vertical slot 86 which receives pin 76 thereby forming the operating connection between thrust rods 72 and crank 78. The other end of the rotatable shaft 80 is mounted in a bearing 88 in the side member 48 of carriage 42. Fixed to the shaft 80 adjacent the bearing 88 is a lever 90 which extends upwardly a considerable distance above the rails 58.

As shown in Fig. 3 in solid lines, lever 90 is in its center position which disposes crank 78 in its center position whereby to dispose carriage rails 58 in their center positions wherein the edges thereof are spaced from the edges 62 of confronting track rails. If it is desired to effect a movement of the carriage rails 58 to the left, lever 90 is pushed to the left whereby to rotate crank 78 to the left. Rotary movement of crank 78 to the left imparts longitudinal movement to thrust rod 72 in a leftwise direction. This movement is imparted by means of the pin and slot connection between the crank 78 and the connector 74, the pin and slot connection permitting the relative movement to be readily translated into linear movement. With the thrust rods 72 being moved in a leftward direction, leftward movement is imparted to the carriage rails 58 through the brackets 60 whereby to move the carriage rails so that the edges 64 thereof move into abutting relationship with the edges 62 of the left hand pair of rails. With the carriage rails in abutting relationship with the track rails, substantially jar-free transfer of a kiln car onto or off of the transfer carriage can be effected.

By a similar manner, when lever 90 is shifted to its rightmost position shown in dotted lines in Fig. 3, edges 66 of carriage rails 58 may be brought into abutting relationship with the edges 62 of right hand adjacent track rails. When a transfer is completed and it is desired to move the transfer carriage to another position, the lever 90 may be returned to its center position whereby to provide clearance between the edges of the carriage rails 58 and the edges 62 of the track rails. With this clearance provided, the transfer carriage 42 may be moved along the transfer tracks 38 and 40 to some other position without any contact with or jarring from the track rails.

In the design of this transfer mechanism, consideration has been given to the provision of a means for definitely positioning the kiln car on the transfer carriage with protection against the car being moved off said carriage at a time when movable carriage rails 58 are not in abutting relation with any of the stationary rails. As is presently preferred, this last mentioned provision includes stop means which are automatically movable out of stopping relationship with the carriage rails 58 when the carriage rails are moved into abutting relationship with adjacent track rails whereby to permit unobstructed movement of the skiln car onto and off of the carriage.

The stop means which is presently preferred for use in the present invention is shown in detail in Figs. 4 and 5. This stop means includes a stop 92 in the form of a bar which is fixed to the horizontal portion 94 of an angle bracket 96 having a depending part 98. The angle bracket 96 is pivotally mounted on a channel member 100 which is fixed to a transfer rail 58 as by welding, although other means for securing may be employed. As shown in Figs. 4 and 5, the means for pivotally mounting the angle bracket 96 on the channel 100 is a pin 102 welded through a hole in the horizontal portion of angle 96 and projected through the holes in horizontal portions of channel bracket 100. Fixedly secured to the vertical portion 98 of the bracket 96 is an angle member 104 having one portion 106 in surface-to-surface engagement with the vertical part 98 of bracket 96 and the other part 108 thereof extending outwardly away from the track rail 58. It will become clear hereinafter that part 108 of bracket 96 serves as a movable abutment. It will be apparent that all the elements numbered 92 through 108 move with the rails 58. Fixed to the right hand end member 48 (see Fig. 2) is another angle member 110 having a portion 112 extending longitudinally of the end member 48 and a portion 114 extending transversely of the end member 48 and into the line of movement of the portion 108 of the bracket 104. As will be seen hereinafter portion 114 of member 112 serves as a fixed abutment. It is clear from the foregoing that the angle bracket 110 is fixed relative to the rails 58 when the latter are shifted by means of lever 90.

Accordingly, and referring specifically to Fig. 4 when the lever 90 is moved so as to shift the rails 58 from the solid position shown in Fig. 4 to the dotted position shown in Fig. 4, the portion 108 of the bracket 104 engages the portion 114 of the bracket 110. As movement of the rail 58 continues, this engagement causes a turning

of the angle bracket 96 about the pin 102, which turning moves stop 92 out of stopping relationship with the carriage rail 58. When the stop 92 is out of engagement with the carriage rail 58, the end 66 of the carriage rail 58 is in abutting relationship with the end 62 of the confronting track rail. Accordingly, a kiln car may be moved onto or off of the transfer carriage 42 without obstruction from the stop 92 and without jarring which would occur if the edges 66 of the carriage rails 58 were spaced from the edges 62 of the adjacent track rails. When the lever 90 is operated in the opposite direction to retract the carriage rails 58 from the adjacent track rails, the portions 108 and 114 of the cooperating brackets 104 and 110 move out of engagement and angle bracket 96 is accordingly returned to its original condition by means of a helical spring 116 which is operatively fixed at one end to the track rail 58 as at 118 and is operatively fixed at its other end to the angle bracket 96 as at 120.

A like stop means is provided at the opposite end of at least one of the track rails 58 and operates in precisely the same manner but for movement of the track rail in the opposite direction. With such an arrangement it is to be noted that only the stop means adjacent the end of the carriage rails which are moved into abutting relationship with the adjacent ends of the track rails is moved out of stopping relationship. The other stop means remains in stopping relationship to thereby prevent any undesired movement of a kiln car past the point where the unmoved stop is located.

To further enhance the desirability of the present arrangement and to prevent accidental displacement of transfer mechanism 42 from its alignment with the adjacent track rails it is serving, the following provision is made. This provision consists of spring clamps 122 which are secured to the carriage rails 58 at their respective ends and which frictionally engage the adjacent ends of confronting track rails when the carriage rails are brought into abutting relationship therewith. The frictional effect of clamps 122 against the sides of stationary rails serves to some extent to prevent the movement of transfer rails 58 when a car is moved from a pair of stationary track rails to the transfer mechanism. Moreover, by bending the spring clamps as at 123, the clamps further serve to help register the carriage rails with the adjacent track rails.

A positive means for preventing inadvertent or accidental movement of the carriage rails 58 is a detent means 125 which may cooperate with the lever 90 to releasably hold lever 90 and shaft 80 in the position to which they were last moved and thereby positively prevent inadvertent movement of the carriage rails 58. The detent means may be operated by a handle 127 pivotally mounted on lever 90 by a pin 129.

In operation, as a kiln car running along tracks 10 and 12 leaves kiln 14, it is brought to a halt adjacent the ends of said track rails 10 and 12. The transfer mechanism 42 is then wheeled into position so that the carriage rails 58 are substantially in alignment with the track rails 10 and 12. When this is accomplished, lever 90 is operated in a left hand direction as viewed in Fig. 3 to thereby impart longitudinal movement to carriage rails 58 in a left handed direction. The spring clamps or locks 122 engage the edges 62 of the track rails 10 and 12 and effect an automatic final alignment of the carriage rails 58 with the track rails 10 and 12. Movement of the lever continues until the carriage rails are brought into edge abutting relationship with the track rails 10 and 12. As this movement nears completion, the bracket portions 108 and 114 come into engagement and thereby pivot bracket 96 to move the stop 92 adjacent the track rails 10 and 12 out of stopping relationship with the track rail 58. The stop 92 remote from the track rails 10 and 12 remains in stopping relationship. Detent 125 drops into position to prevent inadvertent movement of lever 90 and shaft 80 and spring clamps 122 clamp against the inner surfaces of rails 10 and 12 to thereby fixedly hold the carriage rails in position. With the carriage so conditioned, the kiln car may be moved without any jarring onto the carriage rails 58 and off of the track rails 10 and 12. This movement is preferably continued until the wheels of the kiln car engage the unremoved stop 92. When this is accomplished detent 125 is released as by operation of handle 127, and the lever 90 is moved rightwise to the center position whereby to withdraw the carriage rails 58 from abutting relationship with the track rails 10 and 12. As this movement is effected, spring 116 returns the stop 92 adjacent rails 10 and 12 into stopping relationship with track rail 58 whereby to prevent the accidental movement of the kiln car off the carriage rails 58.

With the kiln car now on the transfer carriage 42 and the carriage rails 58 moved to their central or neutral position, the carriage may now be wheeled along the transfer rails 38 and 40 until it is brought into substantial alignment with any other of the pairs of track rails; for example, into alignment with the track rails 32 and 34. At this point the detent means is again operated so that lever 90 may be moved in a rightwise direction to shift the carriage rails 58 in a rightwise direction. The spring clamps 122 engage the edges 62 of the track rails 32 and 34 to complete the alignment of these rails with the carriage rails and to thereafter clamp track rails 32 and 34. The movement of the carriage rails 58 continues until the edges 66 of the carriage rails 58 are in abutting relationship with the edges 62 of the track rails 32 and 34. Towards the end of this rightwise movement of the track rails 58, the stop 92 adjacent the edges 66 of the carriage rails is moved out of stopping relationship due to the pivoting of the bracket 96 by means of the engagement of bracket portions 108 and 114. With the carriage in this condition the kiln car may be rolled off the carriage and onto the track rails 32 and 34 without any jarring.

It will be obvious to anyone skilled in the art that any combination of movements similar to those described in the above paragraphs may be readily effected by the novel transfer mechanism described above. Moreover, the novel transfer mechanism described above may be employed when there are track rails only on one side of the transfer tracks 38 and 40. Furthermore, any number of pairs of track rails may be worked with effectively by the transfer mechanism described above.

While I have herein shown and described the preferred embodiment of the invention, it will be understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of this invention.

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

1. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails in a longitudinal direction to and from a first position and to and from a second position, and stop means associated with one of said carriage rails and movable into and out of stopping relationship therewith in response to movement of said carriage rails to and from said first and second positions, said stop means being in stopping relationship with said one carriage rail when said carriage rails are in said first position and being out of stopping relationship with said one carriage rail when said carriage rails are in said second position.

2. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails to and from a first extreme position, to and

from a second extreme position and to and from an intermediate position, a first stop means associated with one of said carriage rails adjacent said first extreme position and movable into and out of stopping relationship with said one rail in response to movement of said carriage rails to and from said first extreme position, said first stop means being in stopping relationship with said one carriage rail when said carriage rails are in said second extreme position and in said intermediate position and being out of stopping relationship with said one carriage rail when said carriage rails are in said first extreme position, and a second stop means associated with one of said carriage rails adjacent said second extreme position and movable into and out of stopping relationship with said last mentioned one rail in response to movement of said carriage rails to and from said second extreme position, said second stop means being in stopping relationship with said last mentioned one carriage rail when said carriage rails are in said first extreme position and in said intermediate position and being out of stopping relationship with said last mentioned one rail when said carriage rails are in said second extreme position.

3. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails in a longitudinal direction to and from a first position and to and from a second position, and stop means operatively pivotally mounted on one of said carriage rails, said stop means including a stop normally overlying said one carriage rail and movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from said first to said second positions, said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail.

4. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails to and from a first extreme position, to and from a second extreme position and to and from an intermediate position, a first stop means associated with one of said carriage rails adjacent said first extreme position and being operatively pivotally mounted thereon for movement into and out of stopping relationship with said one rail, said first stop means including a stop normally overlying said one carriage rail and movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from said intermediate position to said first extreme position said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail, and a second stop means associated with one of said carriage rails and being operatively pivotally mounted on said last mentioned one carriage rail adjacent said second extreme position, said second stop means including a second stop normally overlying said last mentioned one carriage rail and being pivotally movable out of overlying relationship therewith and a third abutment operatively fixed to said stop, a fourth abutment operatively fixed to said carriage and disposed in the path of movement of said third abutment so that when said carriage rails are moved from said intermediate position to said second extreme position, said third and fourth abutments come into engagement and impart pivotal movement to said second stop means to move said second stop out of overlying relationship with said last mentioned one carriage rail.

5. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably mounted on said carriage for longitudnial movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails in a longitudinal direction to and from a first position and to and from a second position, and stop means operatively pivotally mounted on one of said carriage rails, said stop means including a stop normally overlying said one carriage rail and being pivotally movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from said first to said second positions, said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail, and means normally biasing said stop means in the direction to cause said stop to overlie said one carriage rail.

6. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails to and from a first extreme position, to and from a second extreme position and to and from an intermediate position, a first stop means operatively pivotally mounted on one of said carriage rails adjacent said first extreme position and being pivotally movable into and out of stopping relationship with said one rail, said first stop means including a first stop normally overlying said one carriage rail and being pivotally movable out of overlying relationship therewith, said first stop means further including an abutment which is operatively fixed to said first stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from said intermediate position to said first extreme position said abutments come into engagement and impart pivotal movement to said first stop means to move said first stop out of overlying relationship with said one carriage rail, and means normally biasing said first stop means in the direction to cause said first stop to overlie said one carriage rail, and a second stop means associated with one of said carriage rails and operatively pivotally mounted thereon adjacent said second extreme position, said second stop means including a second stop normally overlying said last mentioned one carriage rail and being pivotally movable out of overlying relationship therewith and a third abutment operatively fixed to said second stop, a fourth abutment operatively fixed to said carriage and disposed in the path of movement of said third abutment so that when said carriage rails are moved from said intermediate position to said second extreme position, said third and fourth abutments come into engagement and impart pivotal movement to said second stop means to move said second stop out of overlying relationship with said last mentioned one carriage rail, and means normally biasing said second stop means in the direction to cause said second stop to overlie said last mentioned one carriage rail.

7. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably

mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, a pivotally movable shaft mounted on said carriage, a lever fixed to said shaft for imparting pivotal movement thereto, a crank fixed to said shaft, means operatively connecting said crank to said transfer rails for imparting longitudinal linear movement to the latter when the former is pivotally operated whereby to move said carriage rails to and from first and second positions, and stop means operatively pivotally mounted on one of said carriage rails, said stop means including a stop normally overlying said one carriage rail and being pivotally movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from said first to said second position, said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail.

8. Mechanism for transferring a car onto and off of a pair of track rails, comprising a pair of transfer rails extending transversely of said track rails, a carriage having a plurality of wheels disposed on said transfer rails for rotatably mounting said carriage thereon, a pair of carriage rails movably disposed on said carriage transversely of said transfer rails, said carriage rails being spaced apart a like distance as said track rails are spaced apart and further being registrable therewith, means for moving said carriage rails in a longitudinal direction into and out of abutting relationship with said track rails when said two pairs of rails are in registry, and stop means operatively pivotally mounted on one of said carriage rails, said stop means including a stop normally overlying said one carriage rail and movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from out of abutting relationship with said track rails into abutting relationship with said track rails said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail.

9. Mechanism for transferring a car onto and off of a pair of track rails, comprising a pair of transfer rails extending transversely of said track rails, a carriage having a plurality of wheels disposed on said transfer rails for rotatably mounting said carriage thereon, a pair of carriage rails movably disposed on said carriage transversely of said transfer rails, said carriage rails being spaced apart a like distance as said track rails are spaced apart and further being registrable therewith, means for moving said carriage rails in a longitudinal direction into and out of abutting relationship with said track rails when said two pairs of rails are in registry, and stop means operatively pivotally mounted on one of said carriage rails, said stop means including a stop normally overlying said one carriage rail and movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from out of abutting relationship with said track rails into abutting relationship with said track rails said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail, and clamp means for releasably holding said carriage rails in abutting relationship with said track rails.

10. Mechanism for transferring a car onto and off of a pair of track rails, comprising a pair of transfer rails extending transversely of said track rails, a carriage having a plurality of wheels disposed on said transfer rails for rotatably mounting said carriage thereon, a pair of carriage rails movably disposed on said carriage transversely of said transfer rails, said carriage rails being spaced apart a like distance as said track rails are spaced apart and further being registrable therewith, a pivotally movable shaft mounted on said carriage, a lever fixed to said shaft for imparting pivotal movement thereto, a crank fixed to said shaft, means operatively connecting said crank to said carriage rails for imparting longitudinal linear movement to the latter when the former is pivotally operated whereby to move said carriage rails to and from a position in which the ends of said carriage rails abut against the ends of said track rails and to and from a position in which the ends of said carriage rails are spaced from said ends of said track rails, and stop means operatively pivotally mounted on one of said carriage rails, said stop means including a stop normally overlying said one carriage rail and movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from out of abutting relationship with said track rails into abutting relationship with said track rails said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail.

11. Mechanism for transferring a car into and off of a pair of track rails, comprising a pair of transfer rails extending transversely of said track rails, a carriage having a plurality of wheels disposed on said transfer rails for rotatably mounting said carriage thereon, a pair of carriage rails movably disposed on said carriage transversely of said transfer rails, said carriage rails being spaced apart a like distance as said track rails are spaced apart and further being registrable therewith, a pivotally movable shaft mounted on said carriage, a lever fixed to said shaft for imparting pivotal movement thereto, a crank fixed to said shaft, means operatively connecting said crank to said carriage rails for imparting longitudinal linear movement to the latter when the former is pivotally operated whereby to move said carriage rails to and from a position in which the ends of said carriage rails abut against the ends of said track rails and to and from a position in which the ends of said carriage rails are spaced from said ends of said track rails, and stop means operatively pivotally mounted on one of said carriage rails, said stop means including a stop normally overlying said one carriage rail and movable out of overlying relationship therewith, said stop means further including an abutment which is operatively fixed to said stop, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from out of abutting relationship with said track rails into abutting relationship with said track rails said abutments come into engagement and impart pivotal movement to said stop means to move said stop out of overlying relationship with said one carriage rail, and clamp means for releasably holding said carriage rails in abutting relationship with said track rails.

12. Mechanism for transferring a car to and from a first pair of track rails and to and from a second pair of track rails having its ends spaced from the ends of said first pair of track rails in both a longitudinal and a transverse direction, comprising a pair of transfer rails extending transversely of said first and second pairs of track rails and in between their respective ends, a carriage having a plurality of wheels disposed on said transfer rails for rotatably mounting said carriage thereon, a pair of carriage rails movably disposed on said carriage trans-

versely of said transfer rails, said carriage rails being spaced apart a like distance as said first and second pairs of track rails are spaced apart and further being registrable with each of said pairs of track rails; means for moving said carriage rails to and from a first extreme position in which one pair of ends of said carriage rails are in abutting relation with the ends of said first pair of track rails when said carriage rails are in registry with said first pair of track rails, and to and from a second extreme position in which the other pair of ends of said carriage rails are in abutting relation with the ends of said second pair of track rails when said carriage rails are in registry with said second pair of track rails, and to and from an intermediate position in which both pairs of ends of said carriage rails are spaced from the ends of said first and second sets of track rails; a first stop means operatively pivotally connected to one of said transfer rails adjacent said first set of track rails, said first stop means including a first stop normally overlying said one carriage rail and being pivotally movable out of overlying relationship therewith, said stop means further including an abutment fixed to said stop, and spring means for biasing said stop into overlying relationship with said one carriage rail, another abutment operatively fixed to said carriage and disposed in the path of movement of said first mentioned abutment so that when said carriage rails are moved from said intermediate position to said first extreme position said abutments come into engagement and thereby impart pivotal movement to said first stop means to pivotally move said first stop out of overlying relationship with said one carriage rail against the bias of said spring means, and a second stop means associated with one of said carriage rails and being pivotally mounted thereon adjacent said second set of track rails, said second stop means including a second stop normally overlying said last mentioned carriage rail and being pivotally movable out of overlying relationship therewith, a third abutment operatively fixed to said second stop, and spring means for biasing said second stop into overlying relationship with said last mentioned carriage rail, a fourth abutment fixed to said carriage and disposed in the path of movement of said third abutment so that when said carriage rails are moved from said intermediate position to said second extreme position, said third and fourth abutments come into engagement and thereby impart pivotal movement to said second stop means to move said second stop out of overlying relationship with said last mentioned carriage rail against the bias of said spring means, and clamp means connected to said carriage rails at both ends thereof for releasably holding said carriage rails in abutting relationship with said first and second sets of track rails.

13. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails movably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails in a longitudinal direction to and from a first position and from and to a second position, and stop means operatively connected to one of said carriage rails and movable into and out of stopping relationship therewith, and means for moving said stop means into and out of stopping relationship with said one carriage rail in response to the movement of said carriage rails.

14. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails moveably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, means for moving said carriage rails to and from a first extreme position, to and from a second extreme position and to and from an intermediate position, a first stop means operatively connected to one of said carriage rails adjacent said first extreme position and moveable into and out of stopping relationship with said one rail, means responsive to movement of said carriage rails, for moving said first stop means into stopping relationship with said one carriage rail when said carriage rails are moved out of said first extreme position and for moving said stop means out of stopping relationship with said one carriage rail when said carriage rails are moved into said first extreme position, and a second stop means operatively connected to one of said carriage rails adjacent said second extreme position and movable into and out of stopping relationship with said last mentioned one rail, and means responsive to movement of said carriage rails for moving said second stop means into stopping relationship with said last mentioned one carriage rail when said carriage rails are moved out of said second extreme position and for moving said stop means out of stopping relationship with said last mentioned one rail when said carriage rails are moved into said second extreme position.

15. A transfer mechanism, comprising a carriage which is adapted to be moved along a predetermined path of movement, a pair of spaced apart carriage rails moveably mounted on said carriage for longitudinal movement relative to said carriage transverse to said predetermined path of movement of said carriage, a pivotally moveable shaft mounted on said carriage, a lever fixed to said shaft for imparting pivotal movement thereto, a crank fixed to said shaft, means operatively connecting said crank to said carriage rails for imparting longitudinal linear movement to the latter when the former is pivotally operated whereby to move said transfer rails to and from first and second positions, and stop means operatively connected to one of said carriage rails and being moveable into and out of stopping relationship therewith, and means responsive to movement of said carriage rails for moving said stop means into stopping relationship with said one carriage rail when said carriage rails are moved out of said first position and for moving said stop means out of stopping relationship with said one carriage rail when said carriage rails are moved into said second position.

16. Mechanism for transferring a car onto and off of a pair of track rails, comprising a pair of transfer rails extending transversely of said track rails, a carriage having a plurality of wheels disposed on said transfer rails for rotatably mounting said carriage thereon, a pair of carriage rails moveably disposed on said carriage transversely of said transfer rails, said carriage rails being spaced apart a like distance as said track rails are spaced apart and further being registrable therewith, means for moving said carriage rails in a longitudinal direction into and out of abutting relationship with said track rails when said two pairs of rails are in registry, and stop means operatively connected to one of said carriage rails and moveable into and out of stopping relationship therewith, and means responsive to movement of said carriage rails for moving said stop means into stopping relationship with said one carriage rail when said carriage rails are moved out of abutting relationship with said track rails and for moving said stop means out of stopping relationship with said one carriage rail when said carriage rails are moved into abutting relationship with said track rails.

17. Mechanism for transferring a car onto and off of a pair of track rails, comprising a pair of transfer rails extending transversely of said track rails, a carriage having a plurality of wheels disposed on said transfer rails for rotatably mounting said carriage thereon, a pair of carriage rails moveably disposed on said carriage transversely of said transfer rails, said carriage rails being spaced apart a like distance as said track rails are spaced apart and further being registrable therewith, means for moving said carriage rails in a longitudinal direction into and out of abutting relationship with said track rails when said two pairs of rails are in registry, and stop means operatively connected to one of said carriage rails and

moveable into and out of stopping relationship therewith, means responsive to movement of said carriage rails for moving said stop means into stopping relationship with said one carriage rail when said carriage rails are moved out of abutting relationship with said track rails and for moving said stop means out of stopping relationship with said one carriage rail when said carriage rails are moved into abutting relationship with said track rails, and means for clampingly holding said carriage rails in abutting relationship with said track rails.

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