

Oct. 5, 1926.

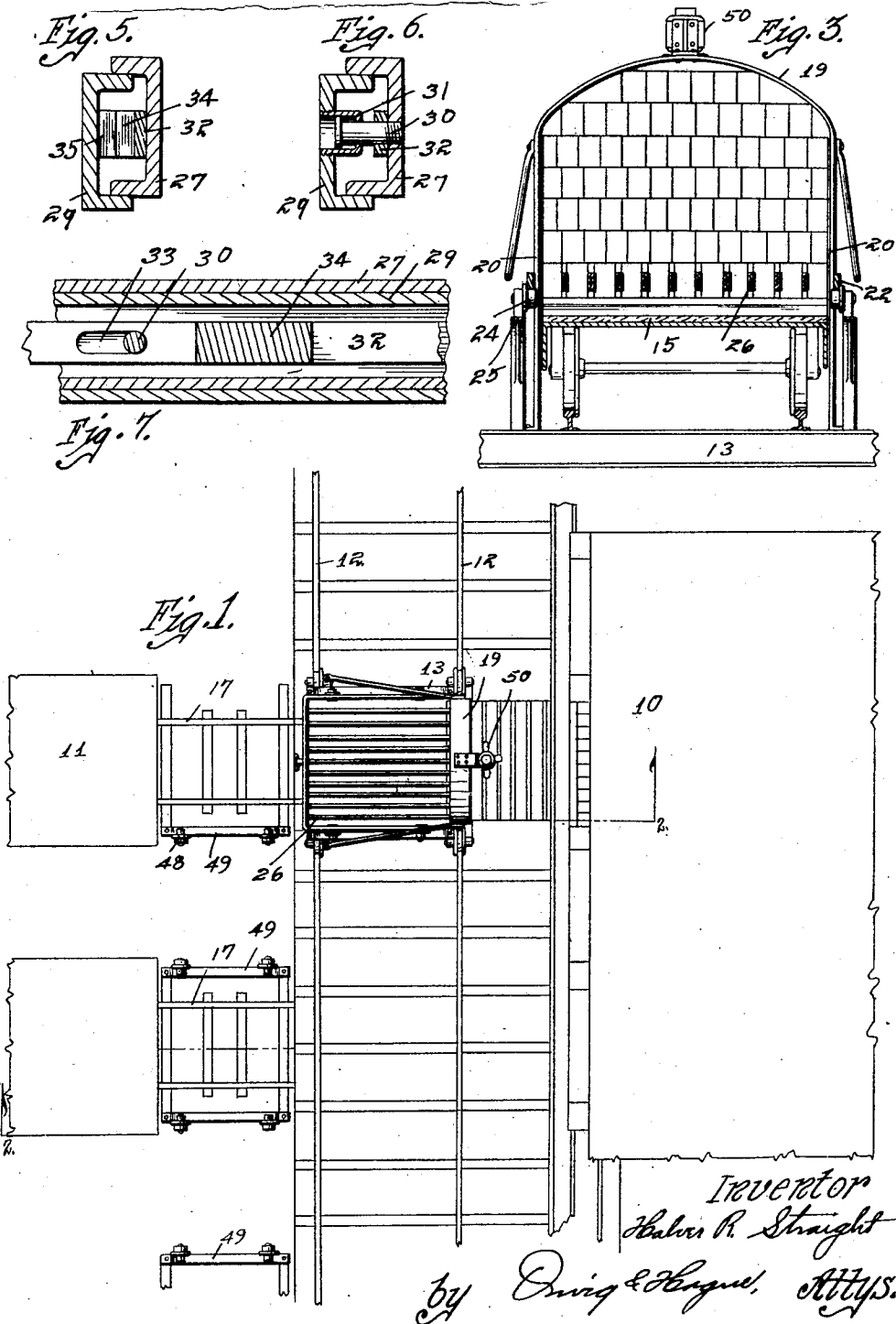
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GUIDE DEVICE FOR STACKING WARE ON KILN CARS

Filed Dec. 29, 1925

2 Sheets-Sheet 1



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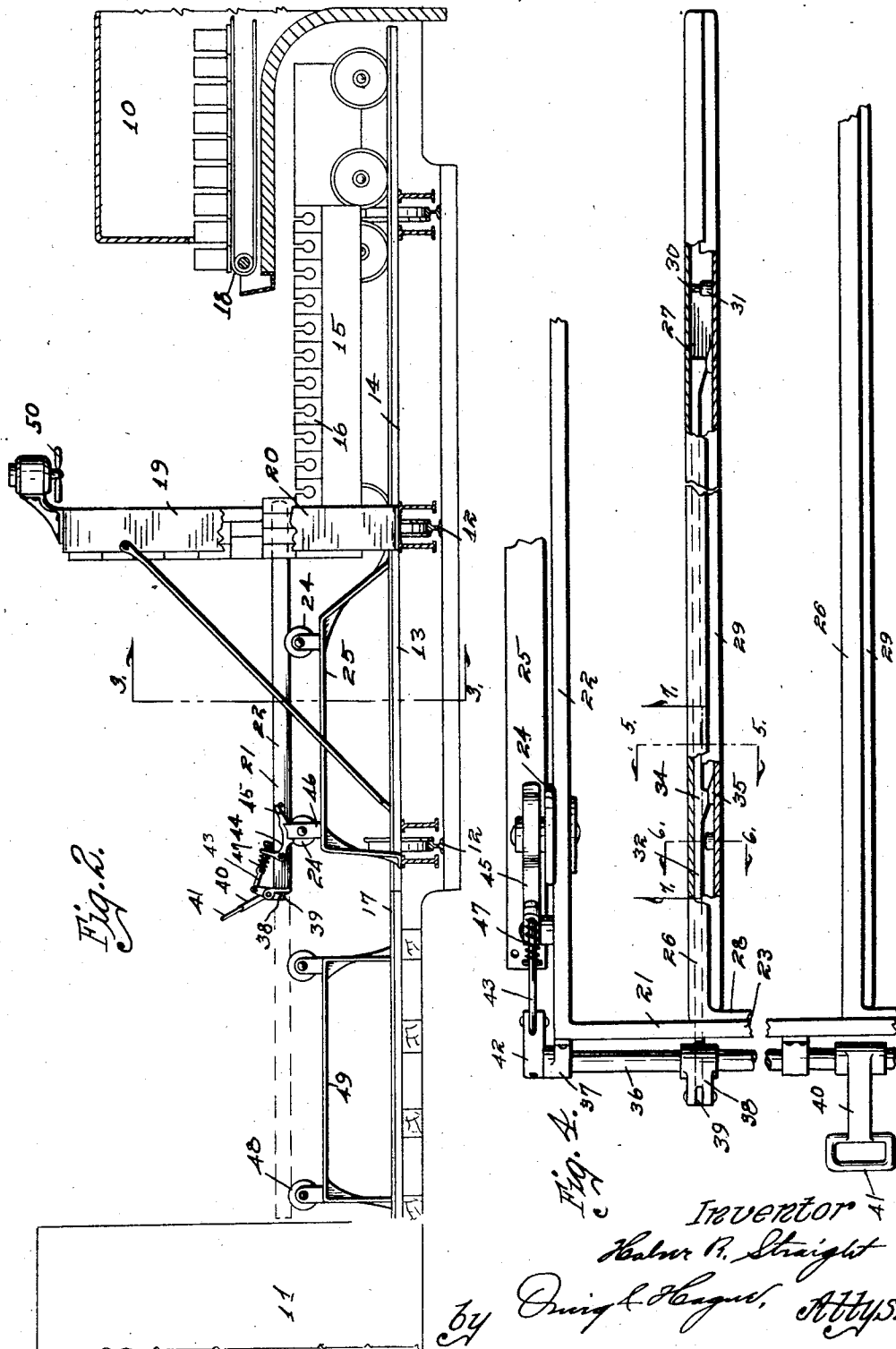
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Patented Oct. 5, 1926.

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UNITED STATES PATENT OFFICE.

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GUIDE DEVICE FOR STACKING WARE ON KILN CARS.

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The object of my device is to provide a mechanism of simple, durable and inexpensive construction, which may be used in connection with kiln cars in such a manner that the ware may be easily and quickly stacked thereon in a symmetrical manner, and at the same time function as a form so that the exterior contour of the stack of ware will fit the kiln in which the car is operated.

A further object is to provide in connection with my improved guide device means whereby air may be circulated between the said guide and the kiln for the purpose of removing the heated air.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of one end of a drier kiln and one end of a number of burning kilns, showing the manner in which my improved device is mounted relative thereto.

Figure 2 is a transverse sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a detail sectional view taken on the line 3—3 of Figure 2.

Figure 4 is an enlarged, segmental, plan view of the spacing rack.

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 4.

Figure 6 is a detail sectional view taken on the line 6—6 of Figure 4; and

Figure 7 is a detail sectional view taken on the line 7—7 of Figure 4.

I have used the reference numeral 10 to indicate the drier kiln, the delivery end of which is shown in section in Figure 2. Opposite the delivery end of the said drier kiln is a number of tunnel and burning kilns 11. The ends of the said kilns 11 are parallel with the end of the kiln 10. A track 12 is mounted between the said drier and burning kilns. Said track is designed to carry a transfer car 13 which is provided with transversely arranged tracks 14 on which is mounted the kiln car 15, said car having a grooved or corrugated floor 16. Each of the kilns 11 is provided with a track 17, the outer end of which terminates adjacent to the end of the transfer car 13 so that the tracks 14 may be brought into alinement with any one of the tracks 17 and thereby

provide means whereby the car 15 may be moved into position on the tracks 14, having one end extending beneath the delivery end of the kiln conveyor 18 for receiving ware from said conveyor, after which the said car may be moved into any one of the kilns 11.

Said kilns 11 are of the tunnel type. In operating cars in the tunnel kilns it is usually necessary to very accurately stack the ware on the said car so that after it has been placed thereon and the car moved into position in the kiln, the outer contour of the stacked ware will substantially fit the inner surface of the kiln, so as to provide means for properly circulating the burning and cooling mediums. To accurately accomplish this result, I have provided on the transfer car an inverted U-shaped frame member 19 having side members 20, the lower ends of which are connected to the central portion of the transfer car 13. The members 20 are spaced apart in such a manner that the car 15 may be moved between them. The member 19 is so located that when the car 15 is at its outer limit of movement with its outer end beneath the conveyor 18, the inner end of the car will rest between the members 20 in the position shown in Figure 2. The member 19 is of substantially the same shape as the cross sectional area of the inner face of the tunnel kiln, so that the said member 19 may serve as a guide for stacking the ware.

It is sometimes desirable to equally space the blocks of ware in the lower tiers. To accomplish this I have provided a rack 21 which comprises frame members 22 having their inner ends connected by a cross member 23. Each of the frame members 22 is mounted on a pair of rollers 24. Each pair of said rollers is supported by means of a frame member 25 secured to the transfer car 13. Said members 25 are spaced apart to permit the car 15 to pass between them. The bar 23 is provided with a series of outwardly extending fingers 26, each of which comprises a channel iron 27 having its inner end bent laterally at 28 and rigidly secured to the bar 23. Adjacent to the flange side of said channel bar 27 is a second movable channel bar 29 provided with a series of inwardly extending sleeves 31 slidably mounted on pins 30 which are mounted in the web of the channel iron 27, as clearly shown in Figure 6. By this arrangement it will be

seen that the channel 29 is free to slide toward and from the channel 27, the flanges of one channel being arranged in overlapping relation with the adjacent channel.

Each of the channels 27 is provided with a slide bar 32 which has slots 33 for receiving the pins 30. Said slide bar is provided with a series of inwardly extending lugs 34 designed to coact with corresponding lugs 35 in the channel member 29 in such a manner that as the said bar 32 is moved longitudinally in one direction, the said bar 29 will be moved outwardly from the channel 27.

For actuating the bars 32 I have provided adjacent to the inner face of the bar 23 a rock shaft 36 rotatively mounted in suitable bearings 37. Said shaft 36 is provided with a series of rock arms 38, one for each of the bars 32. Said arms 38 are operatively connected with their respective bars by means of a pin 39 mounted in a suitable slot in said arm. The shaft 36 is provided with a lever 40 having at its outer end a hand piece 41. One end of the shaft 36 is provided with a rock arm 42 to which a link 43 is connected, said link being slidably mounted in one member of a bell crank 44 pivotally connected to one of the side members. The other member of the bell crank 44 is provided with a latch device 45 which is designed to engage the upper end of a supporting member 46. The link 43 is provided with a spring 47.

The fingers 26 are spaced apart a distance equal to the desired spacing of the ware, and are of a length substantially equal to the length of the car 15. The device is mounted in such a manner that the outer ends of the members 26 will rest above the inner end of the car 15 with the lower edges of the members 26 substantially level with the top of the floor member 16, as clearly shown in Figure 2. The rack is locked against movement by means of a latch 45. It will be seen that the ware may be placed on the inner end of the car 15 between the fingers 26. The member 29 is moved to its outer limit of movement by means of the bar 32, at which time the lever 40 is in the position shown in Figure 2. The frame 19 may then be stacked with ware in the manner clearly shown in Figure 3, so that the outer contour of the pile of ware may conform to the inner surface of the burning kiln. After the space between the members 20 has been filled, the car 15 may then be moved inwardly a distance equal to about two feet and a second tier placed in position. This operation is continued until the entire car has been filled, the ware being moved relative to the fingers 25, at which time the car 15 will be beneath the rack 21. The transfer car may then be moved on its track until the rack

21 is in alinement with a set of supporting rollers 48 mounted on the frame members 49, which are so arranged that the rack 21 may be moved inwardly from the stack of ware to a position on the rollers 48. The lever 44 is moved inwardly which will cause the latch 45 to be lifted from the support 46 and the slide bars 32 to be moved outwardly, causing the lugs 34 to disengage the lugs 35 and to permit the bars 29 to be moved inwardly and thereby relieve the members 26 of any binding tendency with the ware, so that the said rack 21 is free to move inwardly. After the rack has been delivered to the rollers 48, the transfer car may then be moved so that the car 15 is in alinement with any of the tracks 17 and the said car delivered thereto. The transfer car may then be moved to position to receive an empty kiln car and again in alinement with the rack 21, which will be placed in position on the rollers 24 and the operation above described may be repeated.

It will be noted that the guide frame 19 is supported at a position near one side of the kiln 10 and that the operator may stand on the car 15 between said kiln and said guide frame.

It should be borne in mind that the ware as it comes from the kiln 10 is heated to a considerable temperature, and that the operator stands between the stack of ware in the frame 19 and the kiln 10. To provide means for circulating air in said space, I have provided an electric fan 50, preferably located on the upper side of the frame member 19, thereby providing means whereby the operator may have plenty of ventilation and may be kept reasonably cool.

Thus it will be seen I have provided a device of simple, durable and inexpensive construction, which may be used in connection with a kiln car whereby the ware in the bottom tier of the stack may be accurately spaced so that all of the ware in the car may be lifted by suitable lifting means. The space in the lower tier provides means whereby suitable lifting fingers may be inserted in the stack of ware, and further provides means whereby the outside contour of the stack may be made to fit the interior of the burning kiln. It will also be seen that I have provided means for cooling the operator.

I claim as my invention:

1. In combination, a transfer car, a kiln car mounted thereon, and a frame member carried by said transfer car, having the shape of the interior of the kiln in which the car is to be used, for the purpose of providing a form for stacking the ware on said car.

2. In combination, a transfer car, a kiln car mounted thereon, a frame member carried by said transfer car, having the shape of the interior of the kiln in which the car

is to be used, for the purpose of providing a form for stacking the ware on said car, and a series of spacing members having one end fixed to said transfer car and the other ends extending through said frame, said spacing members being mounted above the car and parallel with its upper surface.

3. In a device of the class described, a transfer car, a kiln car supported thereon, designed to receive a stack of ware, a guide frame carried by said transfer car, the interior surface of said frame being of substantially the same size and shape as the interior of the kiln in which the car is to be used, and means for supporting said kiln car so that it may be moved through said frame, and so that the said frame will serve to provide a form for the stack of ware as it is placed in position.

4. In a device of the class described, a transfer car, a kiln car supported thereon, designed to receive a stack of ware, a guide frame carried by said transfer car, the interior surface of said frame being of substantially the same size and shape as the interior of the kiln in which the car is to be used, means for supporting said kiln car so that it may be moved through said frame, and so that the said frame will serve to provide a form for the ware as it is placed in position, and means carried by said transfer car for spacing the ware while it is being placed on said car and in said frame.

5. In a device of the class described, a kiln car for receiving ware, means for supporting said kiln car, and a guide member carried by said supporting means in such a manner and so constructed that the kiln car may be passed through it, the inner surface of said guide member being of substantially the same size and shape as the inner surface of the kiln in which the kiln car is to be used, said guide member being designed to provide a form for shaping the stack of ware as it is being placed on the car.

6. In combination, a dryer kiln having a delivery conveyor, a transfer car having one edge mounted beneath the delivery end of said conveyor and designed to move in a transverse direction to the movement of said conveyor, said transfer car being provided with tracks extending parallel with said conveyor, a kiln car for said tracks, a guide member carried by said transfer car and arranged and constructed to permit the said kiln car to travel through it, said guide member being of substantially the same size and shape as the interior of the kiln in which the kiln car is to be used, the said guide member being located a slight distance from the delivery end of the kiln to provide a space for the workmen, and means mounted above said guide member for producing a downward current of air between said kiln and said guide member.

7. In a device of the class described, a kiln car for receiving ware, means for supporting said kiln car, a guide member carried by said supporting means in such a manner that the kiln car may be passed through it, the inner surface of said guide member being of substantially the same size and shape as the inner surface of the kiln in which the kiln car is to be used, said guide member being designed to provide a form for shaping the stack of ware as it is being placed on the car, and means carried by said transfer car for spacing the ware while being placed on said car and in said guide member.

8. In combination, a dryer kiln, a guide member located near the delivery end of said kiln, a kiln car having one end extending beneath the delivery end of said kiln, and the other end through said guide member, and means for producing a current of air between said kiln and said dryer kiln.

9. In combination, a drier kiln, a guide member located near the delivery end of said drier kiln, and a kiln car designed to be mounted in said guide member and having one end adjacent to said drier kiln, said guide member being of substantially the same size and shape as the interior of the kiln in which the car is to be used, and designed to act as a form for receiving the ware as it is being placed on the drier kiln.

10. In combination, a drier kiln, a guide member located near the delivery end of said drier kiln, a kiln car designed to be mounted in said guide member and having one end adjacent to said drier kiln, said guide member being of substantially the same size and shape as the interior of the kiln in which the car is to be used, and designed to act as a form for receiving the ware as it is being placed on the drier kiln, and means for spacing the ware as it is being placed in said guide members.

11. In combination, a drier kiln, a series of burning kilns, a track extending parallel with, adjacent to and between the ends of said kilns, a transfer car for said track, a drier car for said transfer car, a guide member, a spacing rack, means for movably mounting said rack on said transfer car, and means located adjacent to one side of said tracks for receiving said rack.

12. In combination, a drier kiln, a number of burning kilns, a kiln car, means for moving said kiln car into alinement with any one of said burning kilns and into alinement with the delivery end of said drier kiln, said means being designed to carry a guide frame and a spacing rack, said spacing rack being adapted to be moved into and from position on said movable means, and stationary means for supporting said rack when disconnected with said movable means.

13. In a device of the class described, a spacing rack, comprising a frame member,

a series of parallel fingers, each of said fingers being provided with an adjustable bar, and means for simultaneously operating all of said adjustable bars.

- 5 14. In a device of the class described, a transfer car, a kiln car movably mounted thereon, a spacing rack provided with a series of horizontally arranged fingers, means for mounting said rack so that the
10 said kiln car may be moved longitudinally beneath said fingers, means for movably mounting said rack, and means for locking said rack against movement.

15 15. In a device of the class described, a transfer car, a kiln car movably mounted thereon, a spacing rack provided with a series of horizontally arranged fingers, means for mounting said rack so that the said kiln car may be moved longitudinally
20 beneath said fingers, means for movably mounting said rack, means for locking said rack against movement, and stationary means for supporting said rack when it has been removed from said transfer car.

Des Moines, Iowa, August 19, 1925.

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