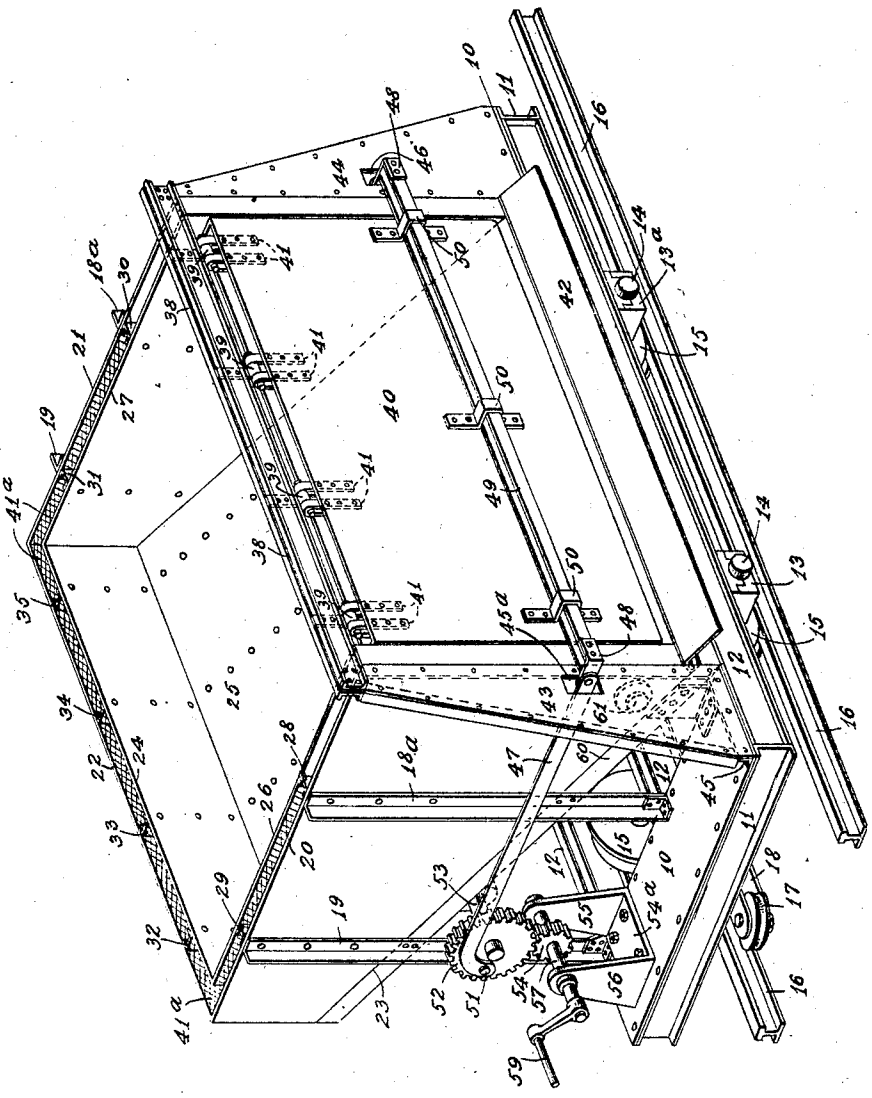
Feb. 19, 1924. 1,483,893

L. KIPP

COKE HANDLING CAR

Filed May 11, 1922 3 Sheets-Sheet 1

Fig. 1



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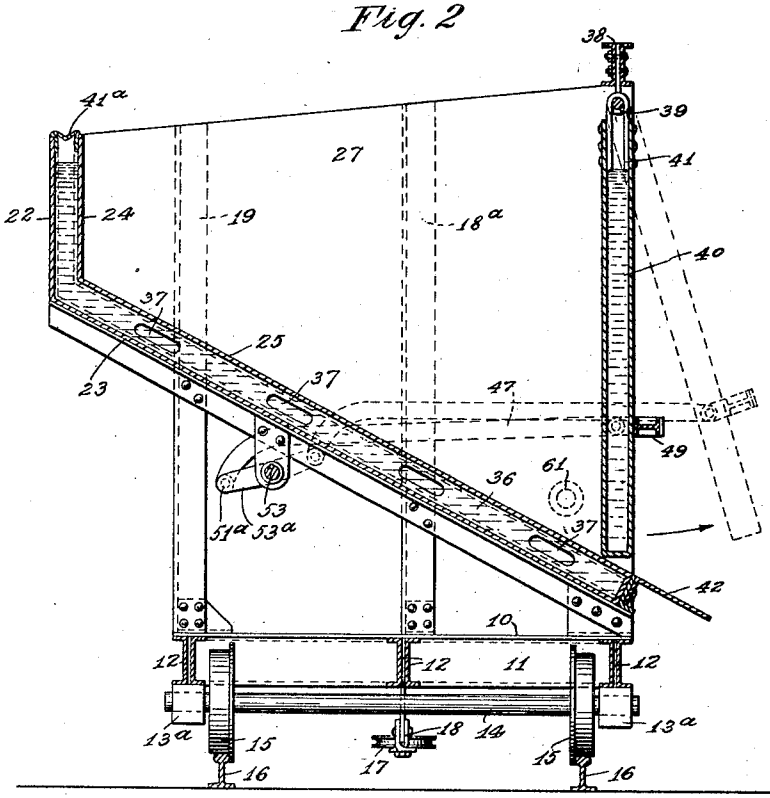
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Fig. 2



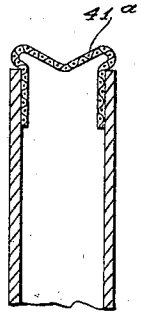


Fig. 3

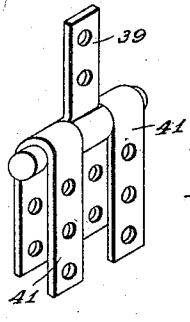


Fig. 4

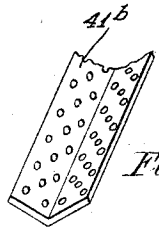


Fig. 5

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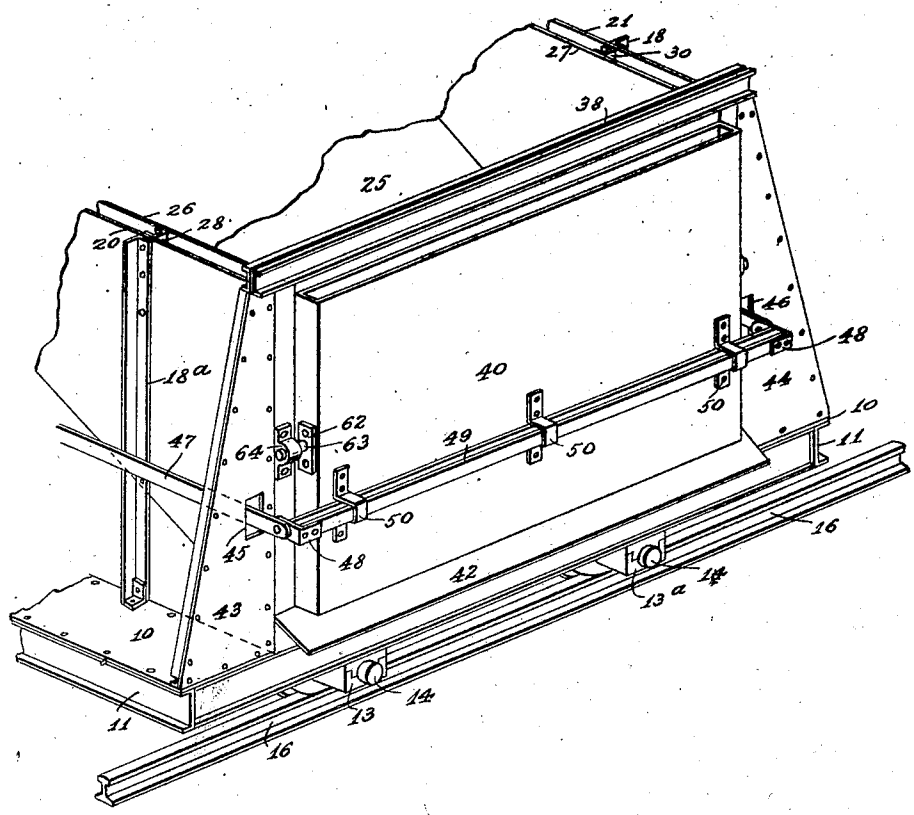
Feb. 19, 1924. 1,483,893

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Fig. 6



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Patented Feb. 19, 1924. 1,483,893

UNITED STATES PATENT OFFICE.

LEONARD KIPP, OF WATERBURY, CONNECTICUT, ASSIGNOR TO WATERBURY IRON WORKS, INC., OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

COKE-HANDLING CAR.

Application filed May 11, 1922. Serial No. 560,040.

To all whom it may concern:

Be it known that I, LEONARD KIPP, a citizen of the United States, and a resident of Waterbury, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Coke-Handling Cars, of which the following is a specification.

This invention relates to coke-handling apparatus and more particularly to a car for holding red-hot coke while it is being quenched.

One object of this invention is to provide a car for transferring hot coke from the retort of a gas or coke plant to the quenching apparatus which may be located at a considerable distance from said retort.

A further object is to provide a coke-handling car having a water jacket surrounding the metal walls of the coke receptacle and adapted to prevent said walls from overheating.

A further object is to provide a coke-handling car having a water-cooled dumping or discharging door.

A further object is to provide a coke handling car of the above nature which will be simple in construction, cheap to manufacture, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawings one form in which the invention may be conveniently embodied in practice.

Fig. 1 represents a perspective view of the improved coke-handling car as it appears when mounted on its tracks or supporting rails.

Fig. 2 is a side view of the same, partly in section.

Fig. 3 is an enlarged sectional view taken through the top of one of the water jackets.

Fig. 4 is an enlarged perspective view of one of the hinge connections for supporting the discharging door, shown disconnected from the remainder of the car.

Fig. 5 is a perspective view of a modified form of strainer, shown in detached position.

Fig. 6 is a perspective view, similar to Fig. 1, with parts broken away, of a coke-handling car provided with a modified form of door mounting.

In the usual process of manufacturing coal gas and coke, it is customary to heat coal in suitable retorts to a high temperature until the gas is driven off and the coal is converted to coke. The red-hot coke is then ejected from the retort, quenched by sprinkling with water, and stored in suitable bins or pits until needed.

According to the practice now in common use, the red-hot coke, as it falls by gravity from the retort, drops into a single-walled receptacle composed of riveted iron plates. This receptacle, which is usually mounted upon wheels, is then moved over rails to a distance from the retort, and a spray of water is introduced from an overhead sprinkling pipe to quench the coke. The car is then emptied by opening the discharge door and allowing the quenched coke to fall by gravity into suitable coke bins or pits.

Considerable difficulty has been experienced in the use of the present type of single-walled coke receptacle, on account of the severe stresses and strains set up in the iron plates by the alternate contact with red-hot coke and the quenching water. It has been found in practice that these stresses and strains cause the plates to quickly buckle or warp out of shape and become cracked so that the car has to be frequently taken out of service for repairs. Not only is the use of the car thus lost for a considerable period, but the cost of repairing it is generally quite high. Moreover, the life of the present single-walled coke-handling car is very short, its depreciation being extremely rapid.

With the present invention the above and other disadvantages have been largely avoided. This has been accomplished by providing a coke-handling car having the metal walls of the coke receptacle surrounded by a water-jacket, in order to prevent said walls from overheating and thus eliminate buckling, warping and cracking of the plates.

For convenience in description, the respective front, side, and rear edges of the coke-handling car, its platform and supporting beams will be designated to correspond with the adjacent edges of the coke receptacle, the edge of the latter in which

the door is mounted being arbitrarily chosen as the front.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 represents a pair of side platforms, one of which is located on either side of the car. The side platforms 10 are mounted upon the horizontal end channels 11 and the three cross beams 12, each of which cross beams comprises a pair of U-shaped channel members arranged back to back, and secured together in any suitable manner as by riveting and welding.

The front and rear cross beams 12 have depending therefrom a pair of bearing blocks 13 and 13' in which are mounted the axles 14 supported upon the wheels 15 which are adapted to run upon the rails 16 of the track. In order to enable the car to be pulled backward or forward upon the track, the central cross beam 12 is provided with a pulley 17 at each end thereof, said pulleys being secured to the cross beam 12 by means of brackets 18, the latter being held between the channel members of said cross beam. A flexible cable or chain, not shown, is adapted to be attached to these pulleys and to be operated in any suitable manner, as by means of a motor-driven drum.

At the inner edges of each side platform 10, a pair of upwardly extending angle members 18[a] and 19 are provided, said members being riveted or otherwise secured to the outer walls 20 and 21 of the side jackets of the coke receptacle. Each side of the receptacle is formed in the shape of a trapezium, and is provided with a horizontal top portion, vertical end portions, and a bottom portion inclined forwardly and downwardly.

The coke receptacle is also provided with a rear inner wall 24, a bottom inner wall 25, a pair of side inner walls 26 and 27, secured in spaced relation to the adjacent outer walls 22, 23, 20, and 21 respectively, whereby water-jackets will be formed around the inner walls of the coke receptacle. In order to hold the adjacent walls of the water-jacket in spaced relation, a plurality of vertical spacing channel members 28, 29, 30, 31, 32, 33, 34 and 35 are provided in the side and rear jackets respectively. The inner and outer walls of the base jacket are held in spaced relation by means of four inclined channel members 36, which form continuations of the vertical rear jacket spacing channel members 32, 33, 34, and 35, previously mentioned.

In order to permit water to circulate freely between the several sections of the jacket, each of said spacing channels 36 is provided with elongated apertures 37. The front of the receptacle is closed by means of a door the frame of which consists of the front ends of the side and base jackets, and a top cross-beam 38 composed of two channel members secured back to back.

In order to permit the removal of the coke after it has been quenched, a discharge door 40 is pivotally supported from the cross beam 38 by means of a series of T-shaped hinge members 39—four in this instance. These hinge members 39 are connected, by rivets or the like, to the inner surfaces of the channel members of the top cross-beam 38. Depending from the hinge-members 39 are a series of pairs of U-shaped straps 41—four in this instance—said straps being secured to the inner faces of the front and rear walls 40 of the door. To prevent overheating, the discharge door 40 also is provided with a double-walled water jacket similar to the jackets of the side and rear walls previously described.

In order to permit evaporation to take place freely, each of the side, rear, and door jackets are left open at the top, whereby the walls of the coke-receptacle will be prevented from overheating. Strainers 41[a] are also provided in order to prevent coke and other materials from falling into the open jackets. These strainers 41[a] which cover the top of the rear jacket and extend about two thirds of the length of the side jackets, are preferably made from wire mesh as clearly shown in Fig. 3, but if desired, may also be made from a V-shaped strip of sheet metal 41[b] having suitable perforations as shown in Fig. 4.

In order to assist in discharging the coke into the coke-bin, an apron 42 is riveted to the base of the bottom jacket of the receptacle, as clearly shown in Figs. 1 and 2. This apron 42 serves to keep the quenched coke from coming in contact with the axle, the axle bearing, the wheels, and the track.

The top door-supporting cross-beam 38 is itself supported by means of a pair of vertical triangular brace members 43 and 44. The brace members 43 and 44 are secured to the side platforms 10 by means of suitable angle members 45, and the brace members 43 and 44 are provided with a pair of rectangular apertures 45[a] and 46 to permit door-operating rods 47 to freely reciprocate therein. Each of the door-operating rods 47 is preferably rectangular in section, and is pivoted at its forward end to an angle bracket 48 secured to an I-beam 49, the latter being held upon the door by means of a series of hangers or brackets 50—three in this instance. The rear ends of the rods 47 are curved downwardly, and are connected to suitable pins 51 and 51[a], located on the outer ends of a gear 52 and an arm 53[a] at the opposite sides of the car respectively. The gear 52 and arm 53[a] are

mounted on the ends of a shaft 53 extending under the inclined bottom jacket of the car.

In order to operate the gear 52, a pinion 54 is provided, said pinion being supported in a U-shaped bracket 54ª bolted to the left-hand platform 10 near the rear end thereof, as viewed in Fig. 1. Mounted upon the arms 55 and 56 of this U-shaped bracket 54ª is a pinion shaft 57 carrying the pinion 54 which meshes with the gear 52 previously described, and said shaft 57 is also provided with a handle 59 secured at its outer end.

In the modified form of door mounting shown in Fig. 6, instead of hinging the door at the top cross-beam, the door is hinged at its central portion. Each side of the door has a bracket 62 riveted thereto, as clearly shown in Fig. 6, and each bracket 62 is provided with a horizontal trunnion 63 integrally formed therewith. Each of the trunnions 63 is mounted to rotate in a bearing member 64 riveted or otherwise secured to the forward ends of the side jackets.

In order to permit the removal of any sediment which may gather in the jacket, the bottom forward portions of the side jackets are provided with suitable hand holes 61.

In operation, the coke-handling car is first drawn up upon its tracks beside the retort from which the coke is to be ejected. This is accomplished by means of the cable or chain previously mentioned. The retort is then opened, and the red-hot coke will fall by gravity into the rear of the coke-receptacle, and will slide along the inclined bottom 25 until it rests against the door 40.

As will be evident, the hot coke will be kept from injuring the metal with which it is in contact by the water in the jackets. The heat transmitted from the coke through the jackets will be rapidly absorbed by the water, which after a short time will be brought to the boiling point. Evaporation from the jacket water will still further assist in cooling the metal in contact with the hot coke. The strainers on the rear jacket and on the rear portions of the side jackets will prevent any coke, dirt, or other objectionable materials from falling into the jackets which might have a tendency to clog them up, and thus reduce their efficiency.

When a charge of coke has been completely ejected from the retort, the car will be drawn along the rails away from the oven, and the hot coke will be quenched by spraying it with water from suitable sprinkling apparatus. The sprinkling apparatus will also replenish any water which may have evaporated from the open water jackets.

When the coke has been completely quenched, the operator will open the door at the front of the car by turning the handle 59 in its proper direction permitting the quenched coke to fall by gravity into the coke-pits as has been previously described.

It will thus be seen that by means of this invention, an improved water-cooled coke-handling car has been provided in which buckling, warping, and cracking of the plates will be reduced to the minimum. It will also be seen that this invention will reduce the expense of up-keep, cut down depreciation, and will permit the coke-handling car to be kept in service, practically without interruption.

While there has been disclosed in this specification several forms in which the invention may be embodied, it is to be understood that these forms are shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosures, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In a coke-quenching conveyor-car for use in gas houses, a base frame adapted to be supported upon a track by means of which the car may be drawn up to and away from a coke-retort, a coke receptacle mounted upon said base and adapted to receive a charge of red-hot coke from said coke-retort, said receptacle having an inclined bottom, and having its front portion closed by a swinging door, and means for water-cooling the sides and bottom of said receptacle.

2. In a coke-quenching conveyor-car, a base frame adapted to run upon a track, a coke receptacle mounted upon said base and adapted to receive a charge of red-hot coke from a coke retort, said receptacle having a forwardly and downwardly inclined bottom portion, a door for closing the front of said receptacle, the rear sides and bottom of said receptacle being hollow and adapted to contain a cooling fluid to prevent overheating of sides and bottom.

3. In a coke-quenching conveyor-car, a base frame, means secured to said frame for permitting said car to run upon a track leading up to the side of a coke-retort, said car having a coke-receptacle, said receptacle being provided with vertical rear and side water jackets and a downwardly and forwardly inclined base water jacket, and a door for closing the front of said receptacle, said water jackets serving to prevent overheating of said receptacle.

4. In a coke-quenching conveyor-car, a base frame having means secured thereto

adapted to run upon a track whereby said car may be moved up to and away from a coke retort, said car having a coke-receptacle, said receptacle being provided with vertical rear and side water jackets and a downwardly and forwardly inclined base water jacket, a door for closing the front of said receptacle, said door also having a water jacket, said water jackets serving to prevent overheating of said receptacle.

5. In a coke-quenching conveyor-car, a base frame, means on said frame adapted to rest upon a track leading up to a coke retort, said car having a coke-receptacle, said receptacle having vertical rear and side water jackets and a downwardly and forwardly inclined base water jacket, a door for closing the front of said receptacle, said rear and side jackets being open at the top to permit the free evaporation of water therefrom.

6. In a coke-quenching and conveying car, a base frame having means adapted to run upon a track leading up to a coke retort, said car having a coke-receptacle, said receptacle having vertical rear and side water jackets and a downwardly and forwardly inclined base water jacket, a door for closing the front of said receptacle, said rear and side jackets being open at the top to permit the free evaporation of water contained therein, said rear and side jackets also having straining means to prevent the coke from dropping into said jackets.

7. In a coke-handling car, a base frame adapted to run upon a track, a coke receptacle mounted upon said base, said receptacle having a forwardly and downwardly inclined bottom portion, a door for closing the front of said receptacle, the rear sides and bottom of said receptacle being jacketed to receive a cooling fluid, and means to permit the free evaporation of the cooling fluid from the rear side and bottom jackets of said receptacle.

8. In a coke-handling car for use in transporting and quenching red-hot coke from a coke retort, a base frame, a receptacle for receiving the coke mounted on said frame, said receptacle having an open front framework, a door pivoted at the top of said open front framework and adapted to close said framework, a rod connected at one end to the bottom portion of said door and having its other end connected to a gear, a pinion in mesh with said gear, said pinion being mounted upon a handle-operated shaft whereby said door may be readily opened to permit the coke to be discharged from said car, said door having a water jacket to prevent overheating.

9. In a coke-handling car, a base member, a coke-containing receptacle mounted upon said base member, the sides and bottom of said receptacle having water jackets to prevent overheating when said receptacle is filled with red-hot coke.

10. In a coke-handling car, the combination of a receptacle adapted to receive red-hot coke from a coke oven, and also adapted to hold said coke while it is being quenched, with means forming a portion of said receptacle to prevent overheating of said coke receptacle, said means comprising a water jacket, said jacket having a series of vertical partitions dividing it into compartments.

11. In a coke-handling car, a base member, a receptacle adapted to receive red-hot coke from a coke-oven, and also adapted to receive cooling water for quenching said coke, said receptacle mounted upon said base member, and means forming a portion of said receptacle to prevent overheating of the sides and bottom of said receptacle.

12. In a coke-handling car, a receptacle adapted to receive red-hot coke and cooling water for quenching said coke, said receptacle having water jackets upon its sides and bottom to prevent overheating thereof.

13. In a coke-handling car, a receptacle adapted to receive red-hot coke and cooling water for quenching said coke, said receptacle having water jackets upon all surfaces in contact with the red coke to prevent overheating of said surfaces, the water in said jackets forming a continuous uninterrupted column from top to bottom.

14. In a coke-handling car, a receptacle adapted to receive red-hot coke and cooling water for quenching said coke, said receptacle having its sides provided with a water jacket having a continuous layer of water from top to bottom to prevent overheating of said surfaces.

In testimony whereof, I have affixed my signature to this specification.

LEONARD KIPP.