No. 892,032. PATENTED JUNE 30, 1908.

P. H. DOUGLAS.

MACHINE FOR QUENCHING COKE.

APPLICATION FILED SEPT. 21, 1907.

3 SHEETS—SHEET 1.

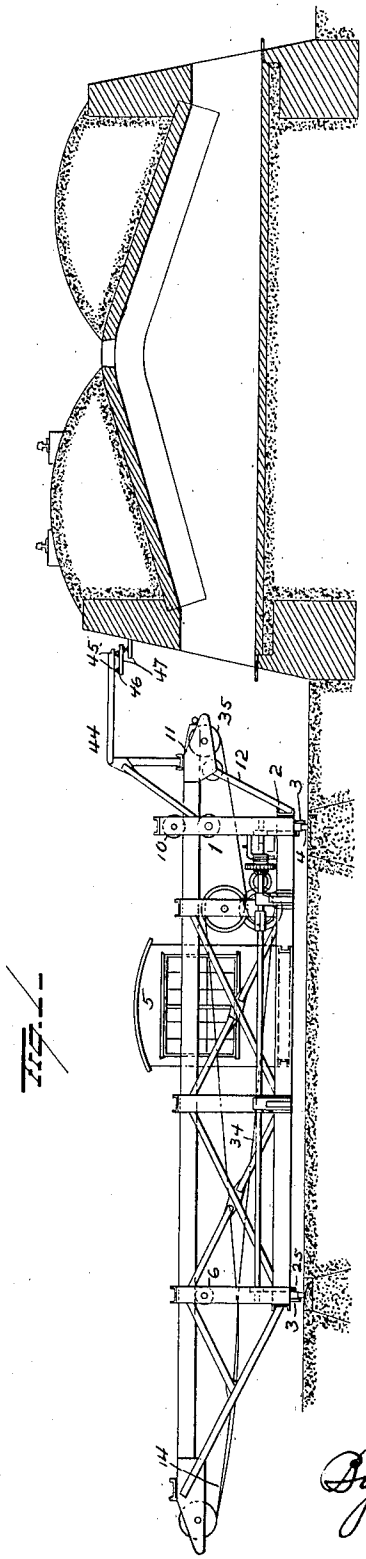


FIG. 1.

WITNESSES

E. L. Nottingham

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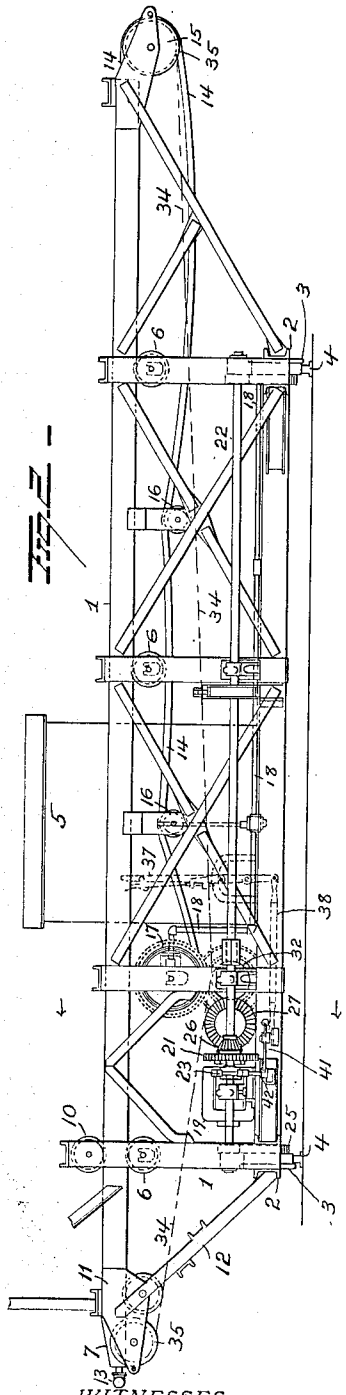


Fig. 2.

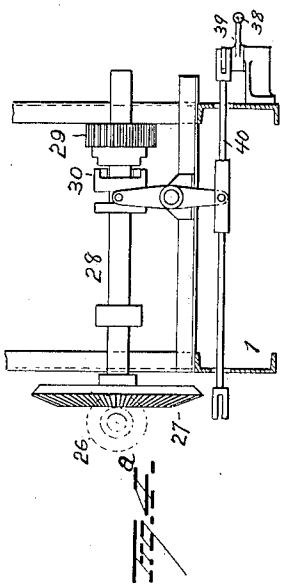


Fig. 4.

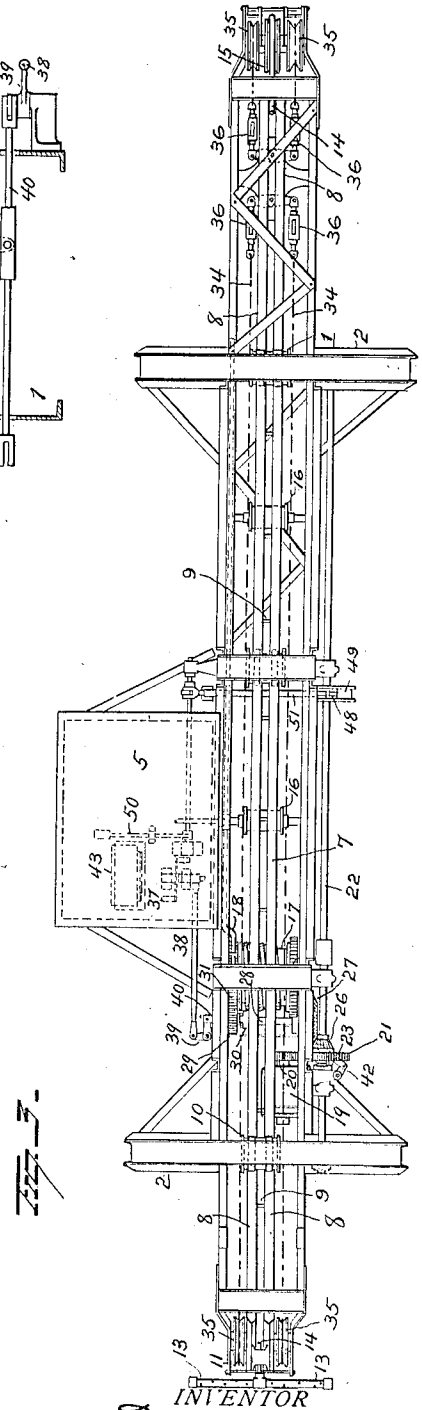


Fig. 3.

WITNESSES

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3 SHEETS—SHEET 3.

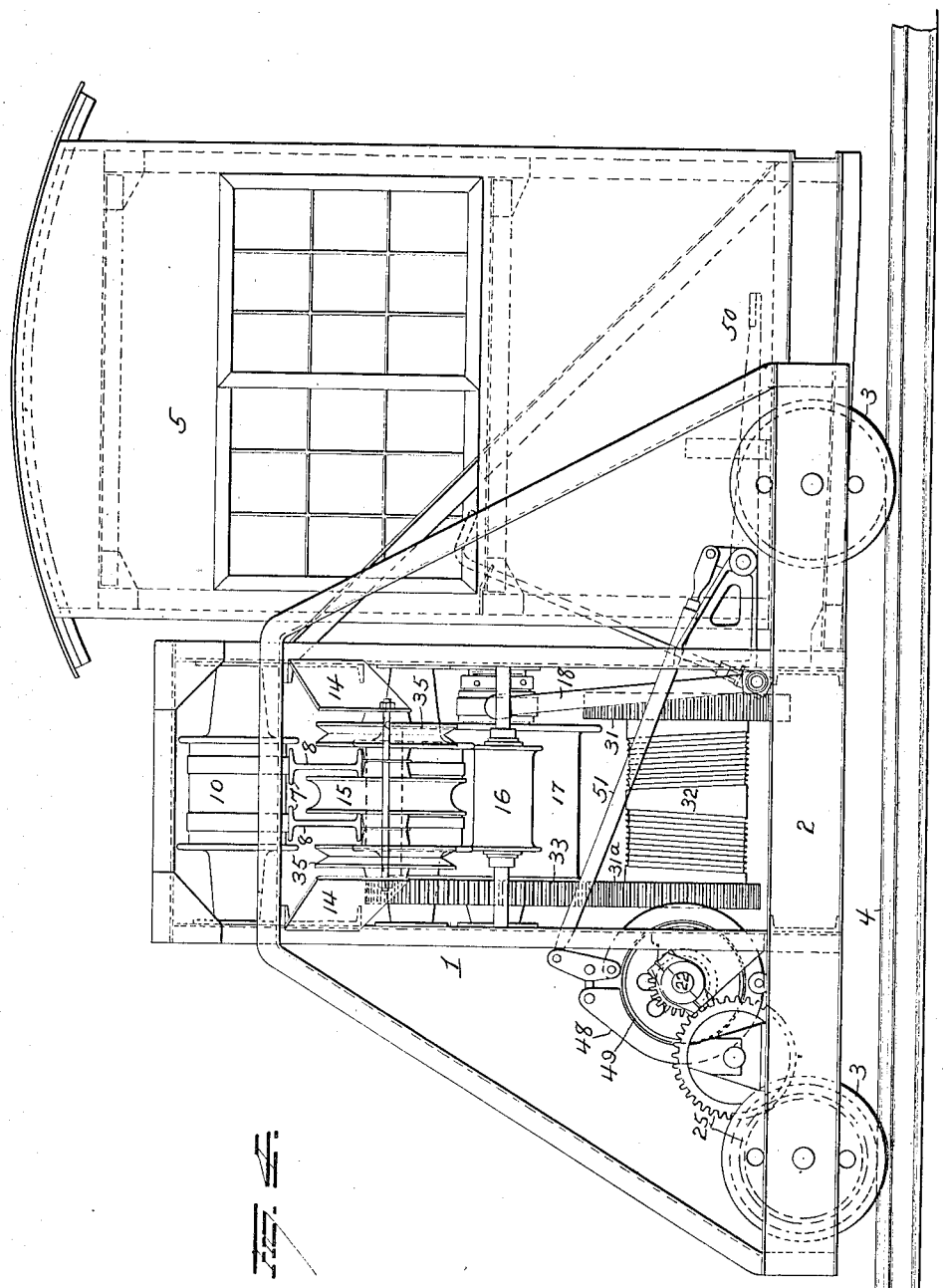


FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

PAUL H. DOUGLAS, OF CLEVELAND, OHIO, ASSIGNOR TO THE WELLMAN-SEAVER-MORGAN COMPANY, OF CLEVELAND, OHIO.

MACHINE FOR QUENCHING COKE.

No. 892,032. Specification of Letters Patent. Patented June 30, 1908.

Application filed September 21, 1907. Serial No. 394,001.

To all whom it may concern:

Be it known that I, PAUL H. DOUGLAS, a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Quenching Coke; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for quenching coke,—the object of the invention being to provide a machine, with the use of which, the coke can be effectually watered or quenched while the same is still in the oven.

A further object is to provide mechanical means which can be projected into a coke oven and operated to discharge water onto the coke therein.

A further object is to provide a portable machine which can be run from one coke-oven to another and having spraying means capable of being projected into an oven and moved while therein to distribute water over the coke for quenching the same while in the oven.

A further object is to provide mechanical means for quenching coke while in the oven, and to so construct such means that the coke can be quickly quenched with the expenditure of a minimum amount of labor, and without unduly cooling the oven and thus avoid delay in the continuation of the operation of the oven in coking subsequent charges.

With these objects in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of my improved apparatus, showing the application thereof, to a rectangular coking oven. Fig. 2 is a side elevation of the machine on a large scale. Fig. 3 is a plan view, Fig. 4 is an end view and Fig. 4ª is a transverse sectional view, partly broken away.

1 represents a rectangular framework, provided with transversely disposed trucks 2 which project laterally from each side of the framework and suitably braced thereto. The wheels 3 of the trucks are adapted to run upon suitable tracks 4 located in front of the coke-ovens. The framework 1 also supports a cab 5, located at one side thereof, to receive controlling devices as hereinafter explained.

In the upper portion of the framework, rollers 6 are mounted and support a longitudinally movable ram or beam 7 which may comprise two members 8, 8, connected together at intervals as shown at 9. Near the forward end of the framework a guide roller 10 is mounted over the ram or beam 7, and the forward end of the latter passes through a bracket 11 supported by suitable braces 12

Pipes 13 having closed outer ends and perforated bottom walls, are carried by the forward end of the ram or beam 7 and adapted to be projected by the latter, into an oven for spraying water upon the coke in the same. A flexible pipe or hose 14 is connected with the spraying device 13 and extends rearwardly upon the ram or beam 7, said pipe or hose passing over a wheel 15 at the rear end of the framework. The flexible pipe or hose then extends forwardly over suitable guide-wheels 16 and is wound upon a drum 17 mounted in the forward portion of the framework. The inner end of this pipe is connected with the interior of the drum 17 and to a journal of the latter, a pipe 18 is swiveled. The pipe 18 extends to the rear portion of the machine, and may have connected thereto, a suitable flexible pipe to supply water from any convenient source.

A motor 19 for operating the machine, is mounted in the forward portion of the framework, and may be an electric motor as shown in the drawings, or any other type of motor may be employed if desired. The armature shaft of the motor is provided with a pinion 20 which transmits motion to a gear wheel 21 adapted to be connected with a shaft 22, through the medium of a clutch 23. The shaft 22 (which extends longitudinally of the machine), is mounted in suitable bearings secured to the framework, and is connected, through chains of gearing 25 with the truck wheels. Motion may thus be imparted from the motor to the truck wheels for propelling the machine to cause it to traverse along the trackway 4 from one oven to another.

A bevel pinion 26 is secured to rotate with the gear wheel 21 and meshes with a bevel gear 27 on a transverse shaft 28. A pinion 29 is mounted on the shaft 28 and adapted to be connected so as to rotate therewith, by

means of a clutch 30. The pinion 29 meshes with a gear 31 on a drum 32 mounted in the framework below the drum 17 and the latter is provided with a gear wheel 33 meshing with a gear wheel 31ª so as to receive motion from the latter. Ropes 34 are wound on the drum 32 and extend therefrom in opposite directions to respective ends of the framework, where they are passed over pulleys 35. The ends of the ropes terminate near the rear end of the machine and are connected with the traveling ram or beam 7, through the medium of turnbuckles 36 or other suitable adjusting devices. From this construction, it will be seen that when the drum 32 is rotated, the ram or beam 7 will be moved longitudinally for projecting the spraying device into an oven or withdrawing it therefrom.

A controller lever 37 is located in the cab 5 and connected, through the medium of a rod 38 with a bell-crank lever 39 pivotally attached at one side of the framework. The bell-crank 39 is connected, through the medium of a rod 40 with another bell-crank 41 at the opposite side of the framework, and said rod 40 is also connected with the clutch 30. The bell-crank 41 is connected, through the medium of a shipper-lever 42 with the clutch 23.

By means of the devices above described, a movement in one direction of the controller lever 37 will cause the operation of the clutch 23 and the locking of the gear wheel 21 to the shaft 22. The motion of this shaft 22 will be transmitted as previously explained, to the truck wheels for propelling the machine on the trackway 4. When the machine shall have arrived in front of a coke-oven, the operator will shift the lever 37 in the reverse direction, thus unlocking clutch 23 to stop the travel of the machine, and locking the clutch 30 so as to cause motion to be transmitted to the drum 32 for moving the ram or beam 7 longitudinally and thus projecting the spraying devices into the oven in position to spray water onto the coke for quenching the same. The ram or beam 7 may be caused to move back and forth by running the motor alternately in reverse directions, or by means of suitable reversing devices, and thus the water can be evenly distributed over the bed of coke in the oven.

Any suitable controller 43 may be located in the cab 5 for controlling the operation of the motor, and a suitable trolley bracket 44 may be mounted on the forward end of the framework and provided with suitable shoes 45 connected with the motor and adapted to run on suitable trolley wires 46 supported by brackets 47 projecting from the coke oven and receiving current from any convenient source of power.

For the purpose of accurately controlling the travel of the machine, a brake 48 is provided and adapted to engage a brake-wheel 49 on the shaft 22 which transmits motion to the truck-wheels. For operating this brake, a foot lever 50 is located in the cab 5 and connected with the brake through the medium of a rod 51.

Various changes might be made in the details of construction and the type of the various instrumentalities herein described, without departing from the spirit of my invention or limiting its scope, and hence I do not wish to restrict myself to the exact details herein set forth.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is,—

1. In a coke quenching machine, the combination with traveling framework, of a longitudinally movable ram or beam carried thereby and adapted to be projected into an oven, fluid discharging means carried by said ram or beam and adapted to be projected with the same into the oven, a motor mounted on the framework, means actuated by said motor for propelling the framework, and means also actuated by said motor for moving the ram or beam longitudinally.

2. In a coke quenching machine, the combination with framework, of a longitudinally movable ram or beam, fluid discharging means carried by said ram or beam, a drum, a flexible device wound on said drum, extended over respective ends of the frame and connected with the ram or beam, and means for rotating said drum to move the ram or beam longitudinally.

3. In a coke quenching machine, the combination with framework, a longitudinally movable ram or beam carried thereby, fluid discharging means carried by said ram or beam, a drum mounted in the framework, pulleys at the ends of the framework, flexible devices wound on said drum and passing in opposite directions therefrom over the pulleys at respective ends of the framework and connected with the ram or beam, a motor, gearing between said motor and drum, and means for controlling the operation of the drum to move the ram or beam longitudinally.

4. In a coke quenching machine, the combination with framework mounted on wheels, of a movable ram or beam carried by said framework, a fluid discharging device carried by said ram or beam, a motor mounted on the framework, a shaft geared to wheels of the framework, gearing between said motor and shaft, means for transmitting motion to the ram or beam, and a brake connected with said shaft.

5. In a coke quenching machine, the combination with framework mounted on wheels, a movable ram or beam carried by said framework, and a fluid discharging device carried by said ram or beam, of a motor mounted on the framework, gearing con-

necting said motor with wheels of the framework and including a clutch, means for moving the ram or beam longitudinally, gearing, including a clutch, actuated by said motor for propelling the ram or beam moving means, and means for operating both of said clutches.

6. In a coke quenching machine, the combination with framework, of a longitudinally-movable ram or beam carried thereby, fluid discharging means carried by said ram or beam, a drum mounted in the framework, a flexible pipe wound on said drum and connected with said fluid discharging means, means for connecting a fluid supply to the inner end of the flexible pipe on the drum, and means for moving the ram or beam longitudinally.

7. In a coke quenching machine, the combination with framework, and guide rollers mounted thereon, of a longitudinally movable ram or beam sustained and guided by said rollers, a fluid discharging device carried by said ram or beam, and means for conducting fluid to said device.

8. In a coke quenching machine, the combination with framework, of a longitudinally movable ram or beam carried thereby, a spraying device carried by said ram or beam, a wheel or pulley at the rear end of the framework, a flexible pipe connected with said spraying device, passed over the ram or beam and over the wheel or pulley at the rear end of the framework, a drum on which said pipe is wound, and means for conducting water through the drum to said flexible pipe.

9. In a coke quenching machine, the combination with a traveling framework, a longitudinally movable ram or beam carried thereby, and a fluid discharging device carried by the ram or beam, and means for actuating the ram or beam, of a motor, gearing connecting the motor with wheels of the traveling frame, said gearing including a clutch, gearing actuated by the motor for driving the ram actuating means, said last-mentioned gearing also including a clutch, a single controlling lever, and connections between said lever and both of said clutches, whereby the travel of the framework and the travel of the ram or beam can be controlled through the medium of the single controlling lever.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

PAUL H. DOUGLAS.

Witnesses:
W. G. HILDEBRAN,
K. NEHRENST.