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COKE QUENCHING APPARATUS.

APPLICATION FILED MAY 16, 1911.

1,001,543. Patented Aug. 22, 1911.

Fig. 2.

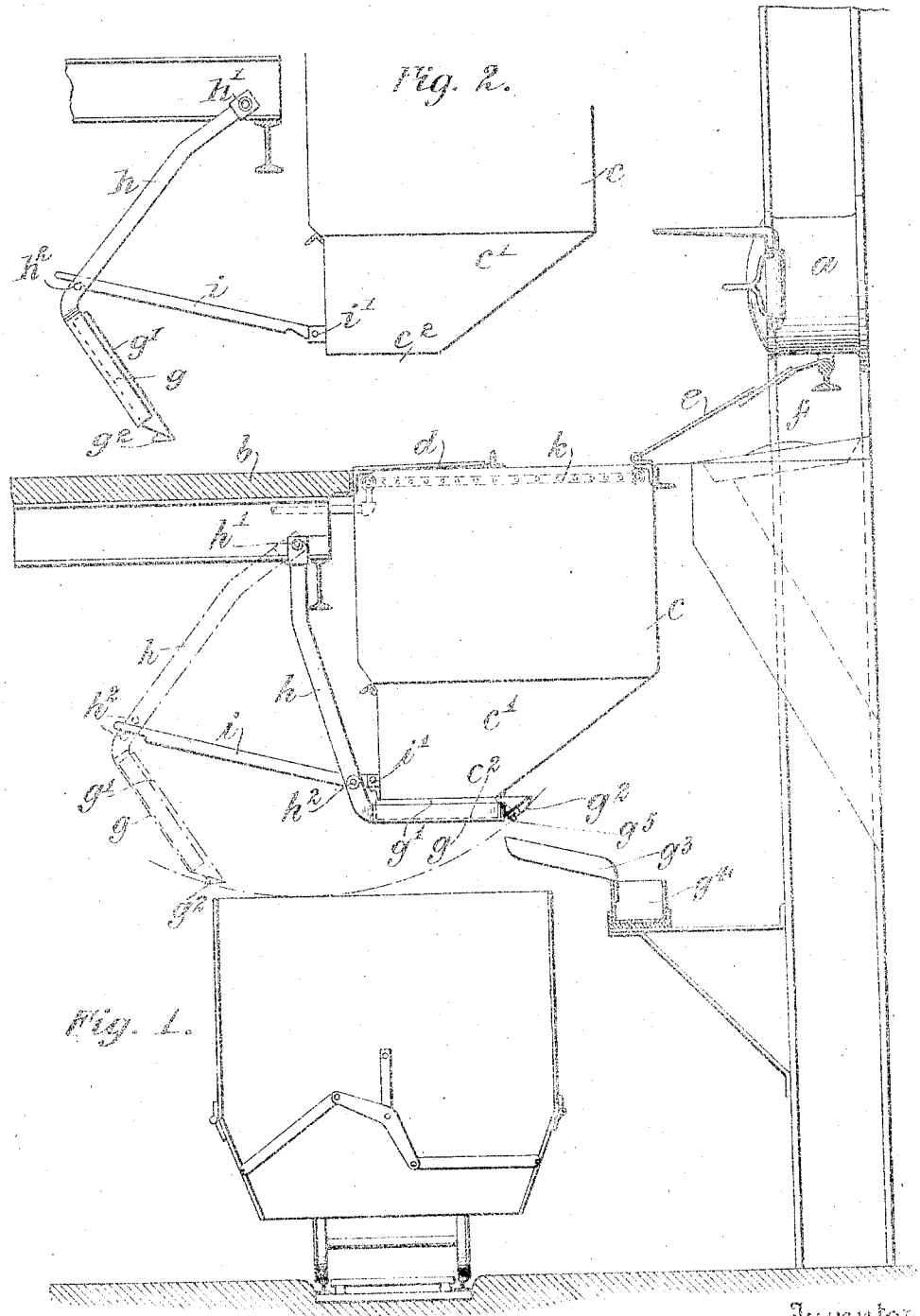

Fig. 1.

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UNITED STATES PATENT OFFICE.

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COKE-QUENCHING APPARATUS.

1,001,543. Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed May 16, 1911. Serial No. 627,594.

To all whom it may concern:

Be it known that I, DONALD McDONALD, a citizen of the United States, residing in Louisville, in the State of Kentucky, have invented certain new and useful Improvements in Coke-Quenching Apparatus, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention relates to the handling of coke in gas plants and in other coke producing plants, and especially to apparatus of this general character in which the coke is discharged from the retorts into temporary containers in which the hot coke is quenched by the admission of water. Such temporary containers or receivers are usually placed in the floor, immediately in front of the bench of retorts, and the coke, when quenched, is discharged through the bottom of the containers into cars or upon a conveyer in the cellar of the coke house, below the floor which supports the container. The steam which is generated in the quenching is discharged mainly through the open tops of the containers, above the floor, and it is desirable that as little steam as possible shall escape into the cellar, below the floor, where its presence would interfere with the operations which are necessarily carried on there and from which it would pass to other parts of the plant where it would also be objectionable. It is also especially undesirable that air shall be admitted to the hot coke in the temporary container for the reason that the coke is thereby kept in combustion and is consumed while the heat which is thereby generated soon destroys the containers. Nevertheless, in coke quenching apparatus of the kind to which this invention relates particularly, the containers, which are closed at the bottom by ordinary swing doors, are liable to become more or less warped so that the doors cease to close tightly and considerable steam is therefore permitted to escape into the cellar.

It is the object of this invention to provide for such temporary receivers or containers, in which the hot coke is quenched, practicable water-sealed doors which can be opened and closed readily and without interference with any of the operations carried on in the cellar and will effectually prevent the admission of air to the hot coke and the escape of steam through the discharge openings of the containers notwithstanding the distortion of the containers by successive heating and cooling.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which it is illustrated, and in which—

Figure 1 shows, partly in elevation and partly in vertical section, a portion of a bench of retorts, one of the containers supported by the floor below the bench of retorts, and the improved, water-sealed door with its appurtenances, the car into which the quenched coke is discharged being also shown. Fig. 2 is a detail view showing the lever in its open position and engaged by the latch.

A single retort is shown in part at *a*, but it will be understood that in an ordinary gas plant there are many of such retorts arranged in horizontal and in vertical series. In the floor *b*, in front of each vertical series of retorts, is supported a temporary container or receiver *c*, into which the coke from such vertical series of retorts may be discharged. The open top of each container *c* may be closed by doors *d* and *e*, the latter being shown as adapted to be supported, as at *f*, to form a guide to direct the coke into the container. The lower part *c'* of each container is preferably built with converging walls to form a chute, with a comparatively narrow mouth, as at c^2, through which the coke, when quenched, may be discharged into the car or upon the conveyer below. A door *g* having a vertical flange or walls *g'*, so that it forms a pan, is supported below the mouth c^2 of the container, so that its vertical flange shall surround the lip c^2 of the mouth of the container. When filled with water, from any suitable source, and supported in the position shown in full lines, the pan *g* forms a water-sealed door for the container, preventing the escape of steam and the ingress of air through the mouth of the container, even when such mouth has been somewhat warped out of shape. The door is suitably formed so that it may be swung away from the container to permit the discharge of the quenched coke, and for this purpose may be supported conveniently by a lever *h* which is pivoted at *h'*, preferably above the lower edge of the mouth, whereby the door may be swung entirely away from the mouth of the container, as indicated by dotted lines, so as to permit the free discharge of the coke with-

out striking the car or conveyer below. A latch i, pivoted at i', engages a stud h^2 on the lever h to hold the door either in the closed position, shown by full lines, or in the open position, shown by dotted lines. The door or pan g has a lip or spout g^2 through which excess of water flows into the drip pan g^3 and thence into the trough g^4 which is common to all of the containers. As it is undesirable to dump upon the coke in the car below any part of the water which may remain in the pan g^3 after the quenching, there may be provided, as at g^5, a plug which may be withdrawn before the pan is swung away in order to permit all of the water which remains therein to be discharged into the drip pan g^3.

In the operation of quenching coke with the improved apparatus, the door or pan g having been swung into closed position and there held by the latch i, water is discharged into the container through the perforated pipe k and at the same time the hot coke is discharged into the container from the retorts. The pan g, which usually holds about ten gallons, fills with water and completely seals the bottom of the container, preventing ingress of air and the discharge of steam into the room below the floor b. When the coke has been completely quenched the plug g^5 is withdrawn to permit the water to run out of the pan and give the coke an opportunity to drain. Finally the latch i is disengaged from the lever h and the pan is swung back into the position shown by dotted lines to permit the coke to be discharged from the container into the car below.

I claim as my invention:

1. An apparatus for quenching coke comprising a container to receive the hot coke and having a discharge opening in its bottom, means to supply water, a pan-like door for said discharge opening having a flange to surround the lip of said opening and adapted to hold water to form a water seal for said opening, and a substantially vertical lever pivoted at its upper end near the container and supporting the door at its lower end.

2. An apparatus for quenching coke comprising a container to receive the hot coke and having a discharge opening in its bottom, means to supply water, a pan-like door for said discharge opening having a flange to surround the lip of said opening and adapted to hold water to form a water seal for said opening, a substantially vertical lever pivoted at its upper end near the container and supporting the door at its lower end, and a latch to engage said lever in its open and closed positions.

This specification signed and witnessed this third day of May, A. D., 1911.

DONALD McDONALD.

Signed in the presence of—
O. L. FISCHER,
F. S. McDONALD.