No. 761,251. PATENTED MAY 31, 1904.

C. S. PRICE.

COKE QUENCHING APPARATUS.

APPLICATION FILED SEPT. 24, 1902.

NO MODEL.

Fig. 1.

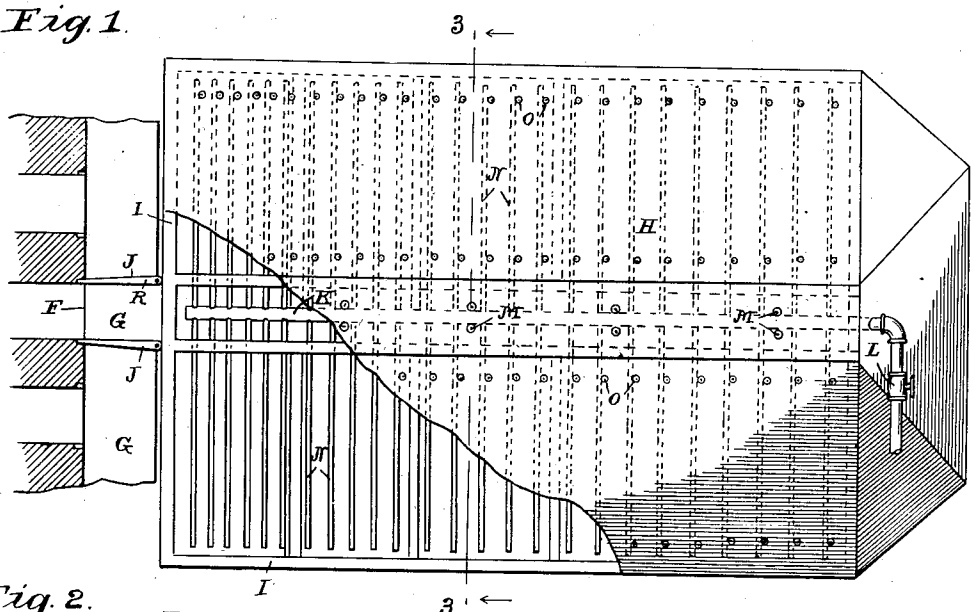


Fig. 2.

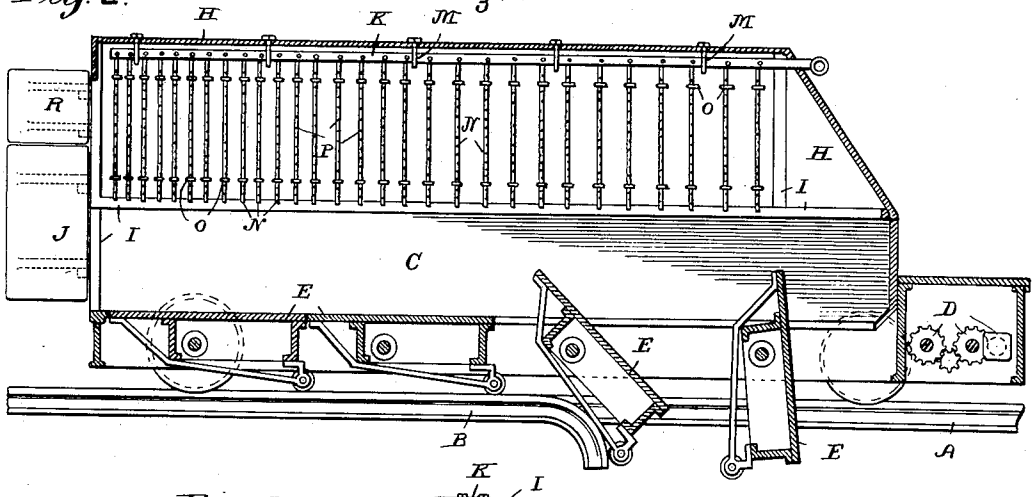
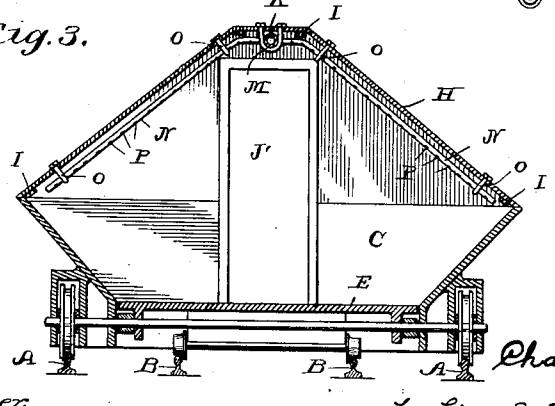


Fig. 3.



Witnesses

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No. 761,251. Patented May 31, 1904.

UNITED STATES PATENT OFFICE.

CHARLES S. PRICE, OF WESTMONT, PENNSYLVANIA.

COKE-QUENCHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 761,251, dated May 31, 1904.

Application filed September 24, 1902. Serial No. 124,671. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. PRICE, a citizen of the United States, residing in the borough of Westmont, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Coke-Quenching Apparatus; 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 certain new and useful improvements in apparatus for quenching and cooling coke, the object of which is to provide a device of the class described whereby the hot or incandescent coke may be thoroughly, rapidly, and economically cooled immediately after it is discharged from the oven, the capacity of the apparatus being sufficient to receive at one time the entire charge of an ordinary oven and also so arranged as to serve a series of ovens.

One of the particular features of my invention is that by its operation the coke can be properly quenched and delivered from the apparatus without excess of moisture remaining therein, besides which the coke is harder, stronger, and brighter in appearance and structure, all of which enhance its quality and value.

My improved apparatus comprises a hood or covering, preferably formed of metal, provided internally with sprinkling-pipes connected with a source of water-supply and adapted to spray the hot coke as and after it is discharged from the oven.

I have shown my improved apparatus in connection with and mounted upon a coke-loader, as described in United States Letters Patent No. 637,427, dated November 21, 1899; but it will be understood that my improved apparatus can be used with any other suitable form of loader or support.

In order to make the matter more clear, I will now refer to the annexed sheet of drawings, which forms part of this specification and in which like letters refer to like parts.

Figure 1 is a plan view of my improved apparatus, the upper portion of the hood being partly broken away to clearly show the arrangement of the spray-pipes, and this figure also shows the adjoining coke-ovens in horizontal section. Fig. 2 is a central vertical longitudinal section of my improved apparatus mounted upon the coke-loader previously referred to, showing the latter in position for beginning the discharge of its contents into cars or other receptacles below. (Not shown.) Fig. 3 is a vertical transverse section on the line 3 3 of Fig. 1 looking in the direction of the arrows.

Referring now to the various characters of reference upon the drawings, F is the face of a coke-oven; G, a platform in front of the same, said platform being approximately level with the oven floor and slightly above that of my apparatus.

A represents transverse tracks upon which the entire apparatus is mounted and upon which it may be moved toward and from the ovens. C is the bottom or body, which is adapted to travel on said tracks and forms the support for my hood and its attachments.

E represents the bottom sections of the loader, which are pivoted so that they will successively drop open by gravity when their ends are disengaged from the supporting-rail B by the forward movement of the body, as shown in Fig. 2; but this latter feature is not intended to be considered as an essential part of my invention, although it is shown here for convenience and completeness of illustration.

D represents the motor and gears for moving the body of the apparatus on the tracks.

H is the hood, preferably formed of metal plates supported on a metal frame I, said hood being provided with a water-supply pipe K, extending longitudinally therein at the top and secured thereto by the U-bolts M. The supply-pipe K is provided with a valve L, placed outside of the hood and from each side of said pipe K extend a series of smaller pipes N, supported by the hook-bolts O and provided with small holes P, so that the cooling water can be distributed in a spray over the hot coke, said pipes N being closer together toward the end of the hood facing the oven for the purpose of sprinkling comparatively more

water on the hottest coke, thus promoting uniform quenching and cooling.

To enable the coke to be pushed within the hood through the opening J′ without spreading and scattering between the oven-door and the hood, I provide adjustable guides J, which extend over the platform G and fit tightly against the oven-door jambs when the apparatus is in working position. I also provide a door R, as shown in Fig. 2, which, together with one of the adjustable guides or doors J, is used to completely close the opening J′ in the hood as desired during the process of spraying and steaming the coke. My apparatus is made wider than the coke-oven, so that when the coke is pushed within the hood it will spread over the bottom or body portion of the apparatus, thus exposing more of its surface, and consequently facilitating the quenching.

My improved hood not only facilitates and improves the cooling and quenching of the coke, but is also economical in operation, and the oxidation and resultant waste of coke is prevented by the steam inclosed within the walls of the hood and by the fact that the air is excluded therefrom.

An important feature of my improved apparatus is that it enables me to thoroughly dry the coke after it is quenched and before it is discharged from the apparatus, as follows: Immediately after the introduction of the hot coke within the hood the openings are partially or completely closed, as desired, the water is turned on, and a large volume of steam is consequently formed by the contact of the water sprays with the incandescent coke, the walls of the hood meanwhile absorbing heat from the steam and that radiated and conducted from the coke. The water is then turned off, and the coke retained within the hood is very soon dried by the heated walls of the apparatus and its own internal heat.

The operation of my improved apparatus is, briefly, as follows: When the contents of an oven have been coked and it is desired to remove the same, the oven-door is opened, my apparatus is moved up to the oven, the adjustable guides J are extended over the platform G, as shown in Fig. 1, the coke is discharged from the oven by a suitable pusher or other means, after which the coke is quenched and dried, as above explained, and finally discharged into cars or other receptacles by the forward movement of the apparatus.

Although I have shown my improvements in considerable detail, I do not wish to be limited to the exact and specific particulars of arrangements and details shown, but may use such substitutions, modifications, or equivalents thereof as are embraced within the scope of my invention and as pointed out in the claims.

Having thus given a description of my invention, what I claim, and desire to secure by United States Letters Patent, is—

1. The combination with a retort coke-oven, of a quenching apparatus consisting of a covered receptacle of considerably greater width than the coke-oven, said apparatus being provided with a door-opening adapted to register with that of the coke-oven, a series of water-spray pipes mounted within the upper portion of said receptacle, and means for supplying and regulating the flow of water therethrough.

2. In a coke-quenching apparatus a bottom or body portion having a floor substantially on a level with that of the coke-oven, a covering-hood mounted on the body portion aforesaid, one end and two sides of said hood being arranged in inclined positions, the outer end of said hood adjoining the face of the oven being substantially vertical and provided with an end door-opening extending from the floor upwardly, said apparatus being of considerably greater width than the coke-oven, a series of water supply and distributing pipes arranged within and supported by said hood, and means for supplying and regulating the flow of water therethrough.

3. In a coke-quenching apparatus, a bottom or body portion, mounted upon a car, a covering-hood mounted on said body portion, a series of water-spray pipes arranged within said hood and means for regulating the supply of water therein, the floor of said body portion being formed of tilting sections provided with supporting-rollers, tracks upon which said rollers run arranged to open and close said tilting sections by the transverse movement of said body portion.

4. In a coke-quenching apparatus, a bottom or body portion having the general form of a hollow inverted frustum of a pyramid, a covering-hood mounted on said body portion, two sides and one end of which hood are inclined, the other end adjoining the coke-ovens being substantially vertical and provided with a door-opening therein extending from the floor upwardly, a series of water-spray pipes arranged within said hood, means for regulating the supply of water thereto, and means for closing said door-opening and thereby steaming the coke contained within said apparatus.

In testimony whereof I hereto affix my signature in the presence of two witnesses.

CHARLES S. PRICE.

Witnesses:
STONE EDELEN,
HERBERT LUEBBERT.