

No. 793,238.

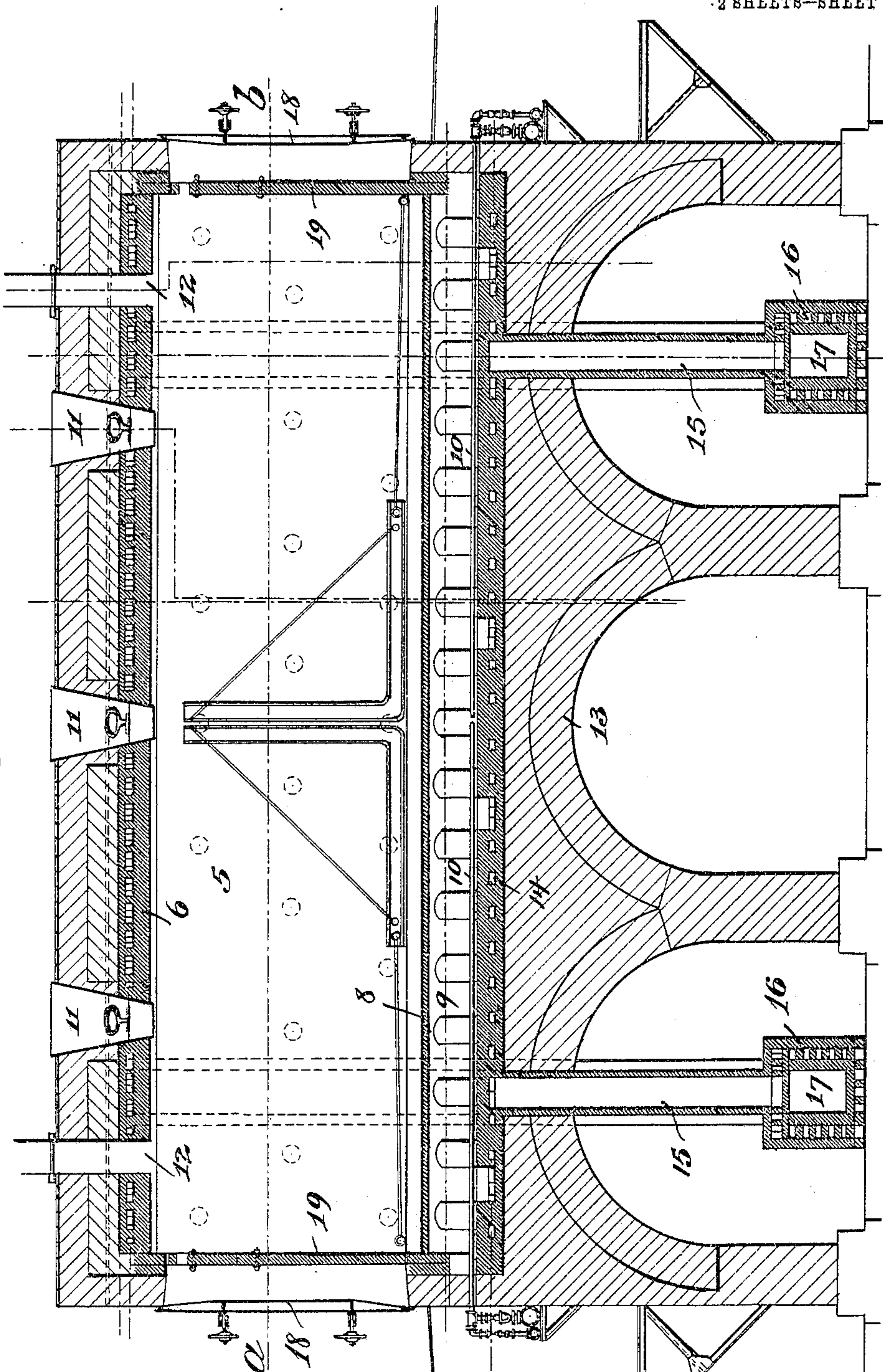
PATENTED JUNE 27, 1905.

C. SCHROETER.  
DISCHARGER FOR COKE OVENS.

APPLICATION FILED SEPT. 10, 1903.

2 SHEETS—SHEET 1.

Fig. 1.



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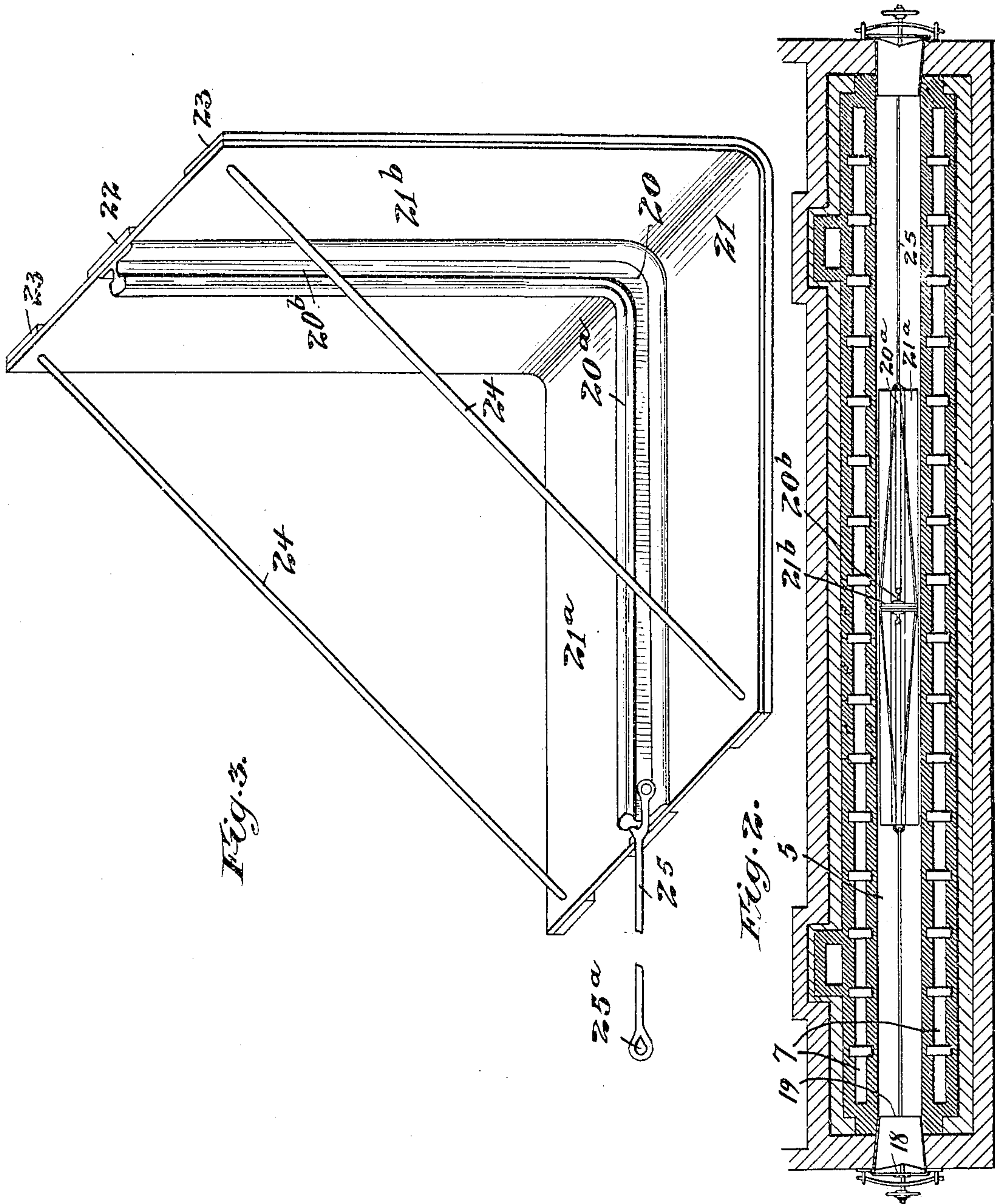


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# UNITED STATES PATENT OFFICE.

CARL SCHROETER, OF CHICAGO, ILLINOIS.

## DISCHARGER FOR COKE-OVENS.

SPECIFICATION forming part of Letters Patent No. 793,238, dated June 27, 1905.

Application filed September 10, 1903. Serial No. 172,632.

*To all whom it may concern:*

Be it known that I, CARL SCHROETER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dischargers for Coke-Ovens, of which the following is a specification.

My invention relates to a new and improved means for effecting the unloading of ovens and retorts in which coal is coked.

In modern coke-ovens it has come to be a desideratum to effect the unloading or discharging of the ovens as expeditiously as possible in order that the oven may lose as little of its heat as possible prior to the introduction of the next charge of coal, and for this purpose various devices have been employed, most of them bearing a strictly structural relation to the form or type of oven with which they are employed, for drawing or forcing out the coked charge with a minimum number of operations and in a minimum amount of time. These devices, so far as I am aware, have for the most part been designed to be introduced into the oven or retort after the coking operation has been completed to engage and force or draw out the contents. In a few instances it has been proposed to employ a discharger which is left within the oven or retort during the coking operation, the coal being dumped and piled thereon when charged into the oven; but this class of dischargers has not met with much favor, owing to the crude and inefficient forms in which they have been employed.

It is the object of my invention to provide an improved discharger for coke ovens and retorts of that type or class which are placed in the retort prior to the reception of its charge and are allowed to remain therein during the coking operation, the leading feature of my improvement residing in the capability of the discharger to effect the thorough and complete emptying of the retort by a single outward movement, to which end the discharger takes the general form of an angle-iron having a horizontal member resting upon the sole or floor of the retort and a vertical member of a height substantially equal to that of the charge of coal, the discharger being of a width to just fill the retort from side to side.

My improved discharger has been designed

more particularly for use in connection with a coke-oven such as forms the subject-matter of an application filed by me on the 20th day of April, 1903, Serial No. 153,569, wherein the retort is in the form of a long and relatively narrow chamber of uniform dimensions throughout and open at both ends, the latter being provided with suitable doors or sealing devices operative while the coking is going on, and when using my improved discharger in such a retort I preferably employ a pair of dischargers placed back to back in close juxtaposition at the center of the retort, one of the dischargers being adapted to be drawn through the opening at one end and the other through the opening at the other end.

My invention, in the best form which I have as yet devised for the same, is illustrated in the accompanying drawings, wherein—

Figure 1 is a longitudinal vertical sectional view through a coking-retort of a coke-oven such as constitutes the subject-matter of my previous application above referred to, showing a pair of my improved dischargers operatively placed therein. Fig. 2 is a horizontal sectional view of the same on the line *a b* of Fig. 1; and Fig. 3 is an isolated detail perspective view of a discharger, on an enlarged scale, to more clearly illustrate the detail construction thereof.

Referring to the drawings, 5 designates the chamber of a coking-retort constituted by a top wall 6 and side walls 7, which are in the nature of heating-jackets, being formed with interior checker-work, and a sole 8, beneath which is a combustion-chamber 9, to which fuel is admitted under an air-blast through burner-pipes 10, extending therein from each end.

11 represents holes in the roof of the retort through which the coal is charged, and 12 pipes or chimneys to carry off the volatile gases.

13 designates a substructure on which the retort or oven rests, and 14 an open or checker work base or sole of the combustion-chamber 9, into which air to support combustion is introduced through flues 15, communicating with the checker-work jackets 16 of a regenerator-flue 17, through which the spent products of combustion are passed to the chimney.



18 designates iron doors closing the opposite ends of the retort, and 19 slabs or plates of fireproof clay constituting an inner lining for the iron doors to protect them from undue heating.

The parts above described accord with the construction of retort set forth in my prior application above referred to, it being understood that the gaseous fuel admitted through the pipes 10 to the combustion-chamber and through other pipes into the side walls or jackets 7 burns with intense heat in said combustion-chamber and jackets, thereby effecting the coking of the coal within the retort 5.

Referring now to that feature—the discharger—to which my present invention relates and considering more particularly Fig. 3 of the drawings, wherein the same is illustrated in isolated detail, 20 designates an iron bar (herein shown as having the form of a railroad-rail) bent at right angles at or about its central longitudinal point to thereby provide a horizontal member 20<sup>a</sup> and a vertical member 20<sup>b</sup>. This bar constitutes a main longitudinal supporting and reinforcing rib for the body portion of the discharger, which in the preferred construction is formed from a rectangular blank 21 of sheet metal similarly bent at right angles at or about its longitudinal central line to thereby form a horizontal member 21<sup>a</sup> and a vertical member 21<sup>b</sup>. This plate is rigidly united to the under and rear side of the bar 20 and is further preferably provided on its under and rear surface with central and marginal longitudinal reinforcing-strips 22 and 23, respectively, suitably bent to fit the surface of the plate, to which they are securely united. The horizontal and vertical members of the discharger thus formed may be maintained in rigid relation to each other by means of diagonal braces or tie-rods 24, connecting their respective free end portions. To the free end of the horizontal member 20<sup>a</sup> of the central bar 20 is pivoted or otherwise secured a link 25, having at its outer end an eye 25<sup>a</sup> for the attachment of the hooked end of a rod or bar or other retracting device. (Not shown.)

In practice when the retort is empty and about to be charged with coal a pair of these dischargers are inserted through the opposite open ends of the retort, being pushed into the latter until they occupy a central position back to back therein, as plainly shown in Figs. 1 and 2. The end doors having then been closed and sealed the coal is charged into the retort through the holes 11, after which the latter are plugged and the retort subjected to heat to effect the coking. When the latter operation is completed, the end doors are opened, grappling means applied to the links 25, and the dischargers withdrawn, in which latter operation the vertical members 21<sup>b</sup> of the dischargers serve to push or thrust the entire charge out of the retort, each discharger

performing this function upon that portion of the coked charge lying between its vertical member and its respective opening. During the coking operation the dischargers are of course subjected to the same heat as the coal; but the presence of the tie-rods 24 prevents any tendency of the metal while thus heated to yield along the line of bend under the resistance afforded by the weight of the coke.

By the use of these dischargers the retort may be quickly emptied by a single extracting operation, after which the dischargers may be as quickly returned to operative position within the retort, the end doors closed, and the retort recharged and refired.

While for simplicity and economy I prefer the described detail construction of discharger as shown in Fig. 3, yet it is evident that this construction may be considerably varied without departing from the spirit of the invention.

Believing myself to be the first to suggest or provide a discharger adapted to remain in the retort during the coking and having a vertical member equal or substantially equal in height to the height of the charge, with means for bodily withdrawing the discharger and thereby pushing out in advance of the vertical member the discharge or that portion thereof lying against and in front of said vertical member, I do not limit myself to any particular construction of discharger, so long as the said vertical member be present therein.

I claim—

1. A discharger for coke ovens and retorts adapted to remain in the coking-chamber during the coking operation and comprising a metal plate equal in width to the oven and bent at substantially right angles to form a horizontal member lying upon the sole of the retort and a vertical member of substantially the height of the charge, a similarly-bent bar constituting a reinforcing-rib secured to said plate longitudinally and substantially centrally thereof, and a pair of tie-rods uniting the free ends of said horizontal and vertical members, substantially as described.

2. A discharger for coke ovens and retorts adapted to remain in the coking-chamber during the coking operation and comprising a metal plate equal in width to the oven and bent at substantially right angles to form a horizontal member lying upon the sole of the retort and a vertical member of substantially the height of the charge, a similarly-bent bar constituting a reinforcing-rib secured to one side of said plate longitudinally and substantially centrally thereof, a plurality of longitudinal reinforcing-strips secured to the opposite side of said plate, and a pair of tie-rods uniting the free ends of said horizontal and vertical members, substantially as described.

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