

L. SCHANTL.
Coke-Ovens.

No. 163,333.

Patented May 18, 1875.

Fig. 2.

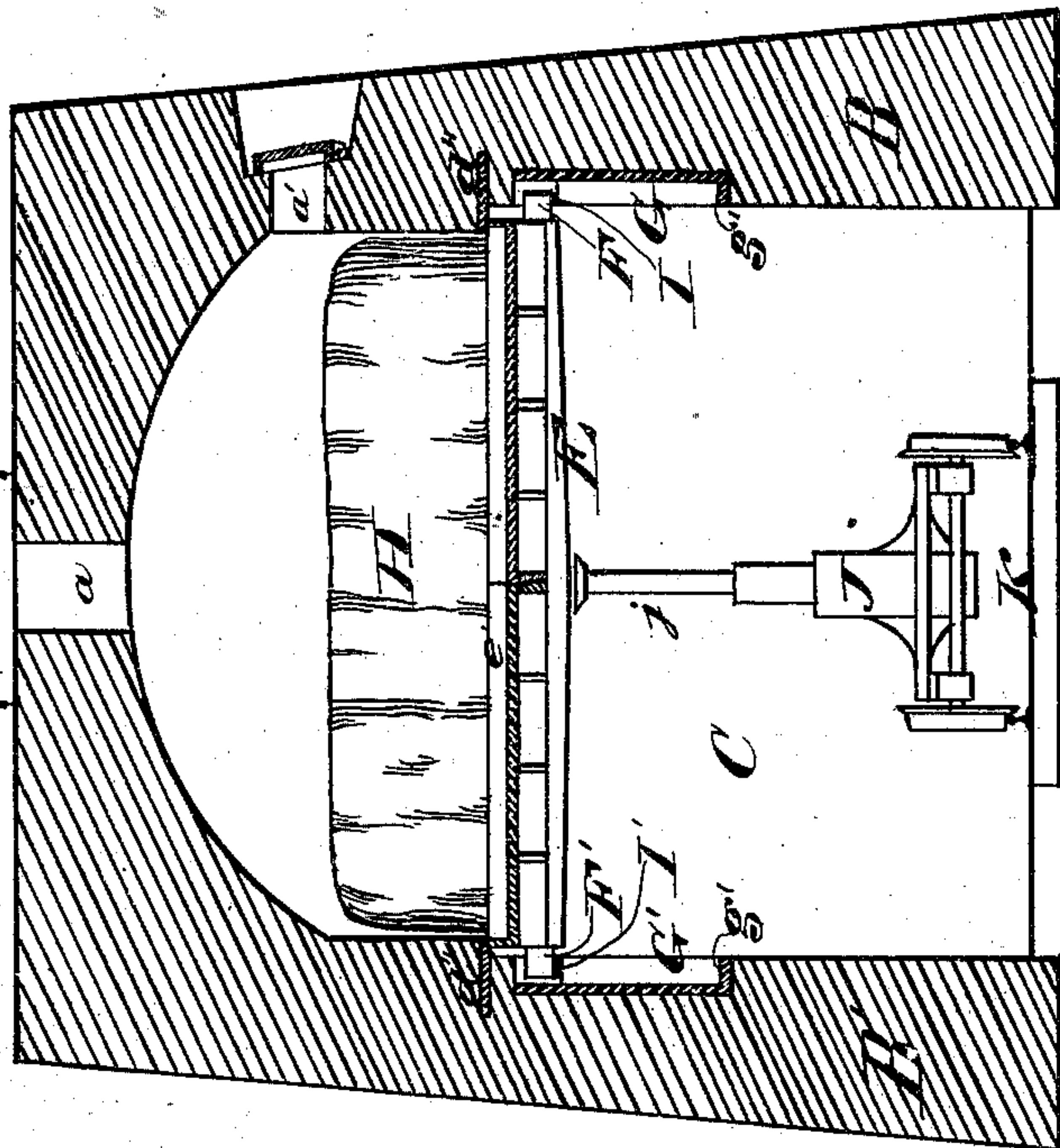
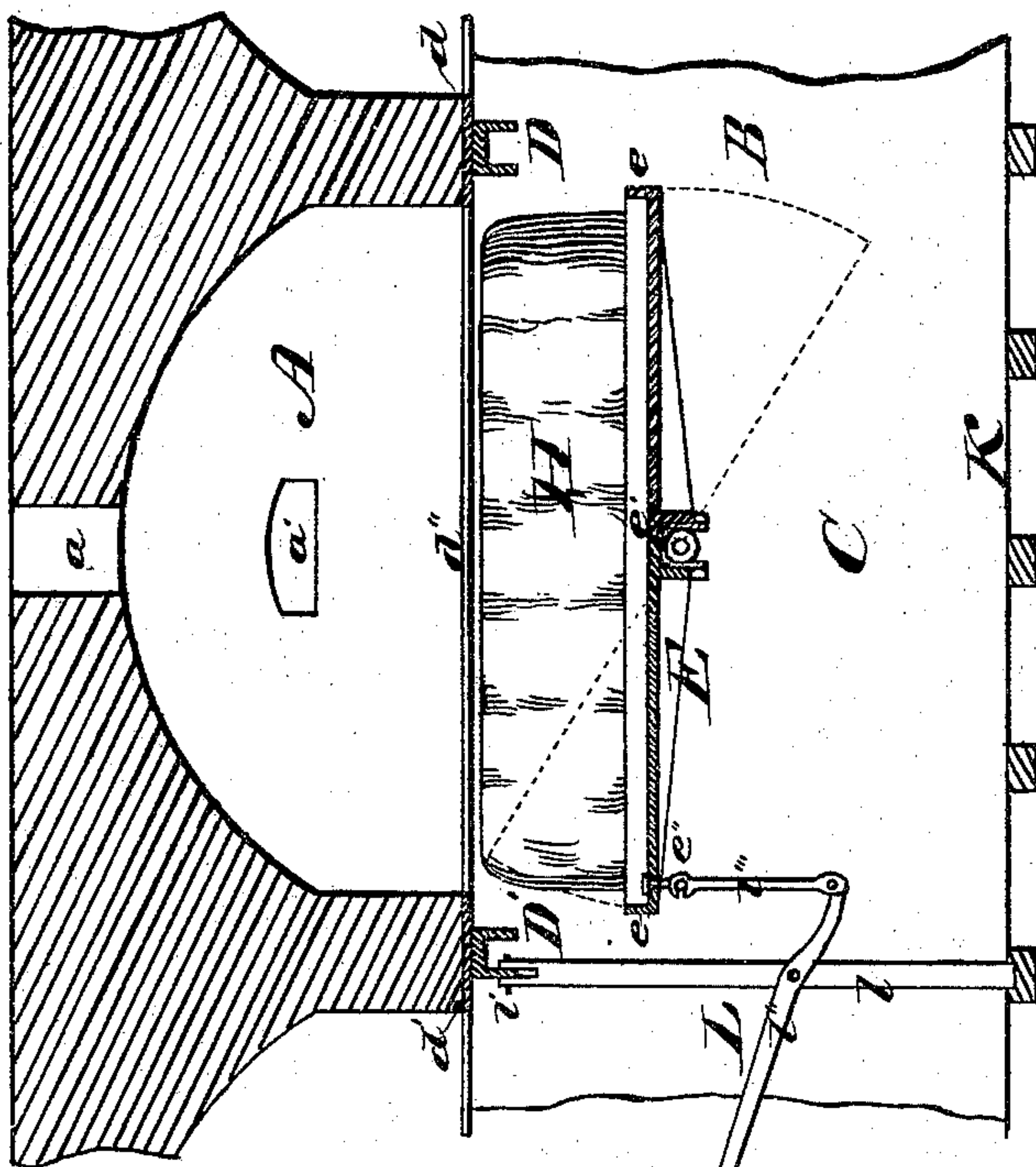


Fig. 1.



Witnesses:
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LEWIS SCHANTL, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN COKE-OVENS.

Specification forming part of Letters Patent No. **163,333**, dated May 18, 1875; application filed March 23, 1875.

To all whom it may concern:

Be it known that I, LEWIS SCHANTL, a resident of St. Louis, Missouri, have invented new and useful Improvements in Coke-Ovens, of which the following is a full, clear, and exact description, reference being hereby had to the annexed drawing making a part of this specification, where—

Figure 1 is a vertical longitudinal section; Fig. 2, a vertical cross-section.

Like letters indicate like parts.

To provide a strong, durable structure, in which coke of a superior quality can be economically made, and from which it can be readily discharged, are mainly the objects of the invention. It relates chiefly to the bottom of the oven, its operation, and the manner of discharging the oven.

Referring to the accompanying drawing, A represents the form of coke-oven which I preferably adopt in carrying out my invention. It is of the bee-hive type, and is mounted on parallel foundation-walls B and B', which inclose a room or pit, C, below the oven proper. D D' represent iron girders extending across over the pit and resting, at either end, in the walls B B'. Resting upon the girders, and also in the walls, are a series of plates, *d d' d''*, &c., constituting the immediate support for the bottom of the oven-wall. E represents the bottom of the oven. In form it is similar to the opening at the bottom of the oven, and, in diameter, slightly larger. It is preferably constructed of four similar perforated cast-iron plates, suitably fastened together, and, at their outer edge, provided with an upturned flange or rim, *e*, partly to inclose a fire-brick hearth, *e'*, which is laid on the plates, and partly, when the oven bottom is closed, as in Fig. 2, to aid in forming a tight joint by coming against the plates *d d'*, &c. This bottom is movable for the purpose of discharging the oven below into the pit C. This movement is peculiar, and constitutes a principal feature of the invention. It is twofold, directly downward into the position shown in the full lines in Fig. 1, after which it is tilted as indicated by the dotted line in the same figure. To this end the bottom is mounted on trunnions F F', which, at either side, are arranged in guides G G', which, respectively, are con-

tained in the walls B B'. The guides extend downward enough to enable the bottom to be dropped sufficiently for the top of the charge H to clear the bottom of the oven-wall, and at their lower ends, are suitably shaped for the trunnions to turn. When the bottom is in place it presses closely against the plates *d d' d''*, &c., and is supported by removable pins I I'. J represents a portable apparatus used in lowering the bottom. For this purpose I preferably employ a jack-screw, or a hydraulic jack, and attached to a truck which is run in on a trackway, K, that extends along the bottom of the pit. L represents a device, also portable, used in tilting the oven-bottom. It consists of a post, *l*, which, when in use, can rest on one of the trackway ties and be steadied in position by a pin, *l'*, passing through its upper end into the guide D', and of a lever, *l''*, pivoted to the post *l*, and at its end provided with a hook, *l'''*, which engages with a stirrup-bolt, *e''*, in the under side of the bottom E.

To operate the oven, it is charged in the usual way through the opening *a* above, and the charge is leveled through the hole *a'*. When the coking is completed the jack J is brought into requisition by running it along the track and bringing its ram *j* up against the bottom E. The pins I I' are then withdrawn, and the bottom, by means of the jack, lowered into the bearings *g g'* of the guides G G'. The jack is then removed, and, if desired, a car run in after it to receive the charge. By means of the device L the bottom is tilted, discharging the coke below. By reversing the described movement the oven is again closed up, and before its walls have chilled. While the discharging of the oven takes place the opening *a* is preferably closed.

Several important advantages accrue from my invention. The entire construction is very simple, strong, and compact. The principal portion thereof, especially when a set of these ovens are arranged continuously, as indicated in Fig. 1, is inclosed and protected by its own walls, preventing any interference of wind, rain, or snow, and any undue chilling of the oven when opened. The act of discharging being but momentary, the coking operation virtually becomes continuous, largely increas-

ing the capacity of the oven, and in being able to discharge the oven at once, both the tedious operation and the expensive labor incident to the process of raking out the contents of the oven, as well as the costly apparatus employed in ramming out the contents, are alike dispensed with. The heat is stored up in the walls, insuring an even temperature, increasing the durability of the structure, and resulting in the production of a coke which is dense, hard, uniformly good throughout, free from sponginess and from black footings, and being of a bright silvery appearance. An especial benefit, however, arises from the mode of operating the bottom, as described. The oven can be charged much more fully than in any other oven previously constructed with a movable bottom.

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

1. The combination, with a coke-oven, of a bottom having a vertical and oscillating movement, substantially as described.

2. The combination of the oven A, walls B B', guides G G', pins I I', and bottom E, substantially as described and shown.

3. The combination of the oven A, walls B B', girders D D', plates *d d'*, &c., bottom E, flange *e*, and pins I I', substantially as described.

4. In combination with the oven A, walls B B' girders D D', plates *d d'*, &c., bottom E, flange *e*, the guides G G', and lowering apparatus J, as and for purpose described.

5. The combination of the oven A, walls B B', girders D D', plates *d d'*, &c., bottom E, flange *e*, pins I I', guides G G', substantially as described and shown.

6. The bottom E, trunnions F F', walls B B', guides G G', and lowering apparatus J, substantially as described.

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Witnesses:

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