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CARBONIZING RETORT FOR USE IN COKE AND GAS PRODUCING CHAMBER OVENS

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Fig. 1.

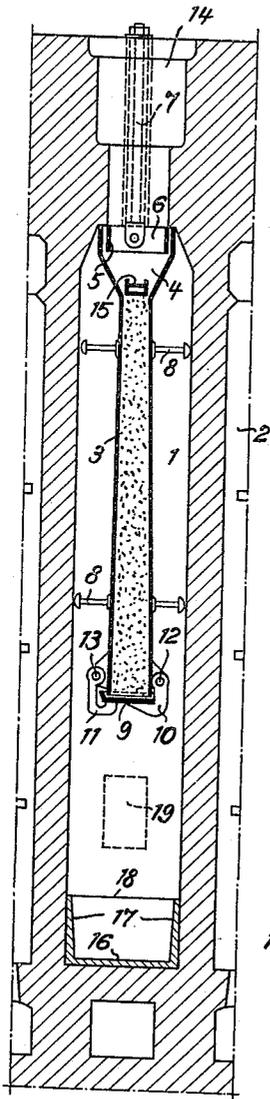


Fig. 3.

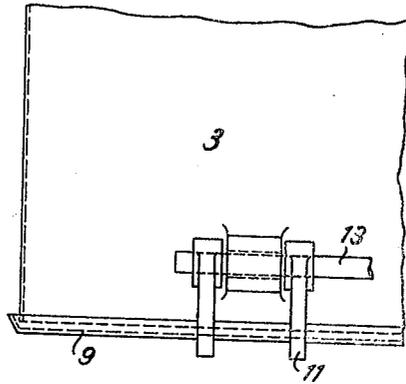
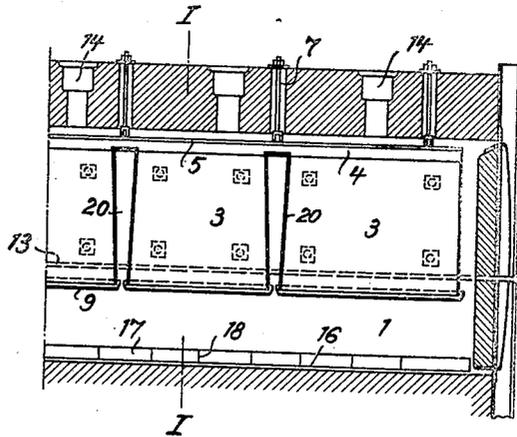


Fig. 2.



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CARBONIZING RETORT FOR USE IN COKE AND GAS PRODUCING CHAMBER OVENS

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4 Claims. (Cl. 202—217)

The invention is concerned with the problem of producing low or medium temperature coke in existing coke and gas producing chamber ovens by means of suitable iron carbonizing retorts arranged in the chamber oven.

The insertion of iron carbonizing retorts into chamber ovens for producing coke and gas is in itself already known. The improvement according to the invention consists in that a vertical iron retort shaped to correspond approximately with the shape of the chamber and arranged to discharge downwardly, is suspended freely from the arch of the chamber. The retort is charged through the existing charging holes of the chamber oven and the charge can then be levelled in the usual manner. The coke is removed at the bottom part of the chamber oven and for this purpose a hinged cover plate on the vertical retort is located a certain distance above the bottom of the chamber oven. The low temperature coke removed from the chamber ovens is after discharge from the retort pressed out of the chamber by means of the usual pusher bar of the coke pushing machine with the use of auxiliary devices to be hereinafter described.

The form of construction of the carbonizing retort according to the invention will now be described in detail by reference to the example of construction illustrated in Figs. 1-3 of the drawing.

Fig. 1 is a vertical cross-section of the oven along the line I—I of Fig. 2 and on an enlarged scale as compared with Fig. 2. Fig. 2 is a longitudinal section on a reduced scale through half of a horizontal chamber oven (coke side). Fig. 3 shows a detail of Fig. 1 on an enlarged scale illustrating a side elevation of a portion of the retort with its closure member and the locking devices therefor.

Referring to the drawing, 1 denotes the oven chamber of a coke and gas producing horizontal chamber oven which is heated in known manner by heating flues on both sides of the chamber such as that indicated at 2 and is charged from the top through charging holes 14.

In the construction according to the invention, in these existing horizontal chamber ovens which are combined to form a battery, there are freely suspended from the chamber arch one or more vertical retorts 3 which are arranged to empty downwards. With this object in view, the vertical retort 3 which widens downwards in conical fashion and whose upper end is widened so as to form a continuous gas collecting chamber 4, is attached to iron supports 5 which are intercon-

ected by webs 6 to form a rigid supporting member. By means of screw bolts 7, which pass through the cover of the chamber and are fixed to the webs 6, the vertical retort 3 is secured under the cover arch of the oven chamber 1. The width of the vertical retorts measured in the direction of the width of the oven chamber, preferably amounts to only a fraction of the usual chamber width of horizontal chamber ovens, for example approximately 70-120 mm. In order that each freely suspended retort may be prevented from swinging, it is stayed against the walls of the chamber by bolts 8. The height of the vertical retorts likewise amounts to only a part, approximately two-thirds, of the height of the existing oven chambers, in order to allow room at the bottom for discharging the low temperature coke from the retort into the oven chamber 1. A flap-like hinged cover plate or closure member 9 of the vertical retort 3 is held by two claw-shaped locking devices 10 and 11 which are adapted to be turned outwards by means of shafts 12 and 13.

The opening is effected in such manner that first of all the claw 11 is, by means passing through one or both oven doors, moved from under the hinged cover plate 9 by turning the shaft 13, and then the plate 9 is swung down by the arm 10 fixed thereto being turned. The coke falls on to a metal plate 16 which rests on the bottom of the oven during the carbonization process or is inserted shortly before discharge from the retort, which plate, together with side walls 17, preferably provided thereon, forms an open box or trough, in order to facilitate the removal of the coke from the chamber. The metal plate 16 is thrust out by means of the pusher bar 19 (indicated by broken lines in Fig. 1) of the coke pushing machine. The trough consisting of the base plate 16 and the side walls 17 can be subdivided into separate boxes by transverse walls 18 (Fig. 2), in order to prevent the coke from becoming congested and thereby possibly pulverized, while the base plate 16 is being pressed out.

After the coal has been inserted into the retorts 3 through the charging holes 14, it is levelled in the usual manner by the levelling bar 15 (Fig. 1) of the pushing machine, which, its width being suitably modified, is moved inside the funnel-shaped gas collecting space 4 of the vertical retort 3.

In order to obtain greater stiffening of the freely suspended walls of the vertical retort 3, and particularly in order to prevent them from being twisted by being heated to the desired temperature for carbonization (about 500°) or for

medium temperature coking (about 700° C.), a plurality of vertical retorts 3, as shown in Fig. 2, are arranged over the entire length of the chamber and are interconnected by partition members 20. In order to make it easier for the coke to fall out, the partitions 20, in the same way as the side walls of the vertical retorts, are tapered downwardly in conical fashion. At the top the retorts are preferably so designed as to form a common gas collecting space 4 (Fig. 2) in order to facilitate the levelling of the coal and also the removal of the volatile carbonization products. The distillation gases leave the retorts through the ascension pipe of the horizontal chamber oven.

What I claim is:—

1. In an externally heated horizontal coking chamber oven having a roof with the usual unobstructed charging openings therein, a carbonizing retort arranged wholly within said chamber oven and suspended from the roof thereof at points intermediate said charging openings, means for charging said retort through said charging openings, and means for discharging the contents of said retort within the chamber oven.

2. In an externally heated horizontal coking chamber oven having a roof with the usual unobstructed charging openings therein, a carbonizing retort arranged wholly within said chamber oven and freely suspended from the roof thereof at points intermediate said charging openings, means attached to said retort and engaging the walls of said chamber oven for preventing swinging movement of said retort, the horizontal sides of said retort at the top thereof diverging outwardly to form a funnel, means for charging the

funnel end of the retort through the charging openings in the chamber oven roof, and means for discharging the contents of said retort within the chamber oven.

3. In an externally heated horizontal coking chamber oven having a roof with charging openings therein, a carbonizing retort arranged wholly within said chamber oven and suspended from the roof thereof, said retort being frusto-conical in cross section for maintaining the material to be coked in a solid frusto-conical shape within said retort for easy delivery to said chamber oven and the sides of said retort at the top thereof diverging outwardly to form a funnel-shaped portion, means for charging the funnel end of the retort through the charging openings in the chamber oven roof to deliver material to said retort, and means for discharging the contents of said retort within the chamber oven.

4. In an externally heated horizontal coking chamber oven having a roof with the usual unobstructed charging openings therein, a carbonizing retort arranged wholly within said chamber oven and suspended from the roof thereof at points intermediate said charging openings, said retort having a discharge opening, means for charging said retort through said charging openings, a closure for the discharge opening of said retort comprising a cover plate fixed to a spindle pivotally carried by the retort and extending outwardly through the oven end structure, and means on the spindle outside of said oven structure for operating said spindle to open and close the cover plate.

CARL STILL. 35