Sept. 22, 1964 P. E. FORSANS 3,149,615

VAPORIZING JAM FRAME FOR OVEN DOOR

Filed June 25, 1962

FIG. 1.

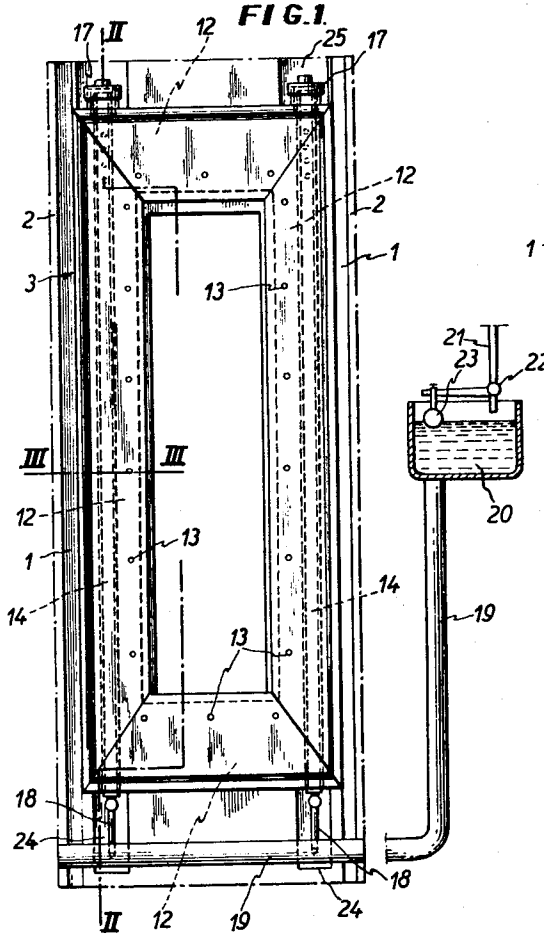


FIG. 2.

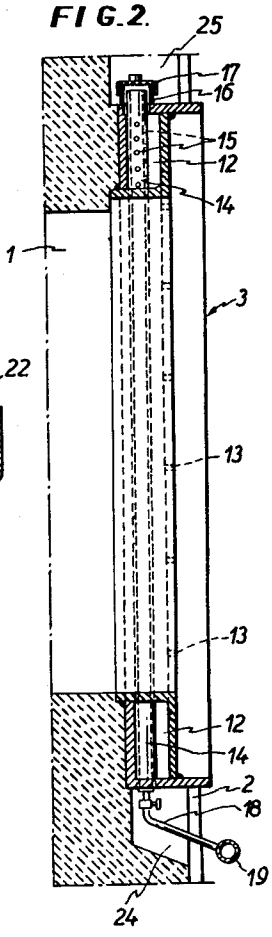


FIG. 3.

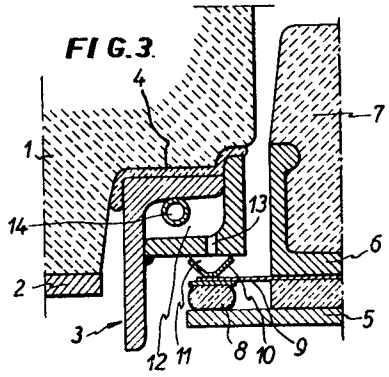
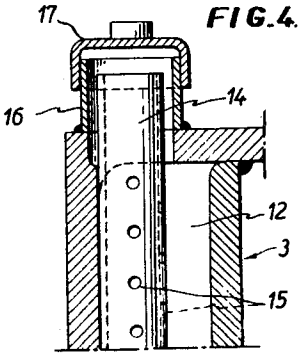


FIG. 4.



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VAPORIZING JAMB FRAME FOR OVEN DOOR

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This invention relates to an improvement to an oven front of the kind which comprises a hollow jamb frame around the oven opening, an oven door, a concave-like joint frame attached to said oven door, a sealing chamber formed between said joint frame and the jamb frame corresponding face, water supplying means for steam generation inside said hollow jamb frame and a plurality of openings spaced around said jamb frame to provide a communication between said hollow jamb frame and said sealing chamber so that the steam fills the sealing chamber and insures the tightness of the oven door.

An oven front of the above kind has been already proposed by the applicant; in the known embodiment, water is supplied directly to the hollow jamb frame; to produce suitable vaporization in the hollow jamb frame, experience has shown that the water level overtops the openings of the lower part of the hollow jamb frame, consequently water flows outwards and inwards of the oven and causes damages to the brickwork and to the oven control means, while flooding the catwalks and service galleries where the operators pass.

This invention has for its purpose to obviate the above drawbacks. For this purpose, an oven front of the above kind comprises a set of tubes arranged in said hollow jamb frame, means for connecting the lower part of said tubes to said water supplying means and holes provided in the upper part of said tubes.

Vaporizing of the water thus only occurs inside the set of tubes which are incorporated into the hollow jamb frame, this frame thus supplying steam only without any danger of water being forced back through the supply openings which extend to the joint frame of the oven door jamb.

Other details and features of the invention will stand out from the description given below by way of non-limitative example and with reference to the accompanying drawings, in which:

FIGURE 1 is an elevation view of a vaporizing jamb frame according to the invention, this frame being mounted on the front wall of a coke oven cell, the door leaf being considered as removed.

FIGURE 2 is a vertical section along plane II—II of FIGURE 1.

FIGURE 3 is a view on a larger scale of an upright of a vaporizing jamb frame, as an horizontal section along plane III—III of FIGURE 1 and showing moreover a corresponding part of the door leaf in the adequate position to close tightly the oven cell.

FIGURE 4 is a partial vertical section, on a larger scale, of the upper part of FIGURE 2.

The pillars **1** of a coke oven cell are reinforced by metal plates **2** to which is attached, in some suitable way, the hollow jamb frame **3** which bears against the oven brickwork with the interposition of asbestos joints **4**. The cell is closed by the door leaf the sill **5** of which, provided with supports **6** and with a refractory lining **7**, also retains the wedging **8** which is resilient or not and which is located between the sill **5** and the resilient web

9 on which is attached the joint frame **10**, according to a well-known usual assembly. The joint frame **10** forms together with the corresponding face of the jamb frame **3**, the sealing chamber **11** which is filled with the steam supplied by the hollow space or ring **12** of the jamb frame **3** through the openings **13** which are spaced around the joint frame **10**.

According to the invention, vaporizing tubes **14** are located on either side inside the uprights of the jamb frame **3** and they are attached sealingly to the foot of this frame. The tubes **14** are open at the top and they are moreover provided with holes **15** around the head thereof, holes through which the steam which has been generated lower down inside these tubes spreads into the hollow ring **12** of the jamb frame **3**. The head of the tubes **14** passes through the top of this jamb frame **3** by being located inside tubings **16** which are sealed to the frame **3** and which are closed by removable plugs **17**. On the other hand, connections **18** with separating cock bring to the bottom of the tubes **14** the water to be vaporized which is supplied by the collector **19** connected to the battery of ovens. This collector **19** is supplied by a tank **20** which is located at the battery end and inside which the water supplied by a pipe **21** is maintained at a constant level by a cock **22** with a regulating float **23**.

It is clear that the water level of the tank **20** regulates automatically the water level inside the tubes **14**, where this water is vaporized at a rate which is precisely dependent on the water head inside the tubes **14**. The steam thus produced escapes through the open head of the tubes **14** and through the holes **15** and it fills the hollow ring **12** of the jamb frame to then distribute itself, through the openings **13**, inside the space **11** of the joint frame **10** which insures the tightness of the door. Indeed steam will tend to escape through the spaces which might be present between the edges of the joint frame **10** and the corresponding face of the jamb frame **3** and thus on one part prevent air penetrating into the oven from the outside and on the other part force back the deleterious combustion gases into the oven. The amount of water vaporized inside the tubes **14** is thus regulated at will by regulating the level inside the tank **20**, in such a way that the steam being generated be enough for the tightness of the door joint, without there being any water taken along by priming or for some other reason into the hollow ring **12**.

The vaporizing tubes may be supplied with cold water, or with water which has been first heated around rising columns of ovens or in some other way, in which case, the vaporizing inside the tubes **14** being faster, the level of the hot water supplied thereto may be lowered. It is possible to provide a supply with purified condensed waters or with raw waters which are more or less calcareous or soiled; in such a case, there will have to be provided means for drawing-off the deposits that might clog the tubes **14**. For instance, the water supply pipe **18**, with a small cross-section area, may be extended to a certain height inside the tube **14** with a larger diameter, to thus form inside the low part of said tube **14**, a collecting ring for the deposits which will then be exhausted into a bleeder collector by suitable means. The vaporizing tubes **14** may be increased in number or they may be provided as nests and also be located inside the hollow cross bars of the bottom or of the top of the jamb frame, all of these changes and many others remaining inside the scope of the invention.

I claim:

In combination with an oven front comprising a hollow jamb frame around the oven opening, an oven door, a concave-like joint frame attached to said oven door, a sealing chamber formed between said jamb frame and the jamb frame corresponding face, water supplying means for steam generation inside said hollow jamb frame and a plurality of openings spaced around said jamb frame to provide a communication between said hollow jamb frame and said sealing chamber, a set of tubes arranged in said hollow jamb frame, means for connecting the lower part of said tubes to said water supplying means and holes provided in the upper part of said tubes.

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