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DOOR JAMB STRUCTURE FOR COKE OVEN BATTERY

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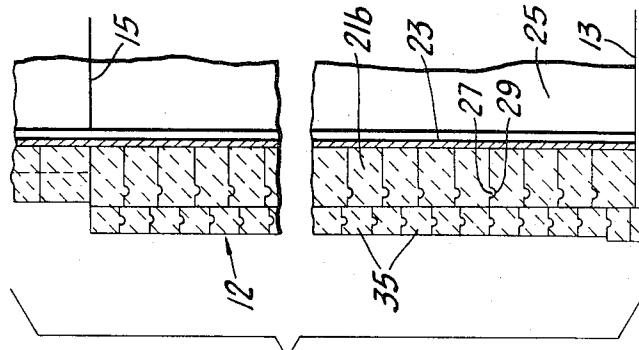


FIG. 2

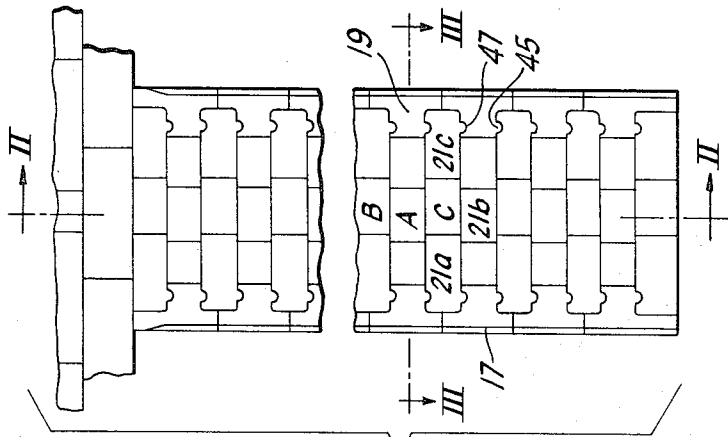


FIG. 1

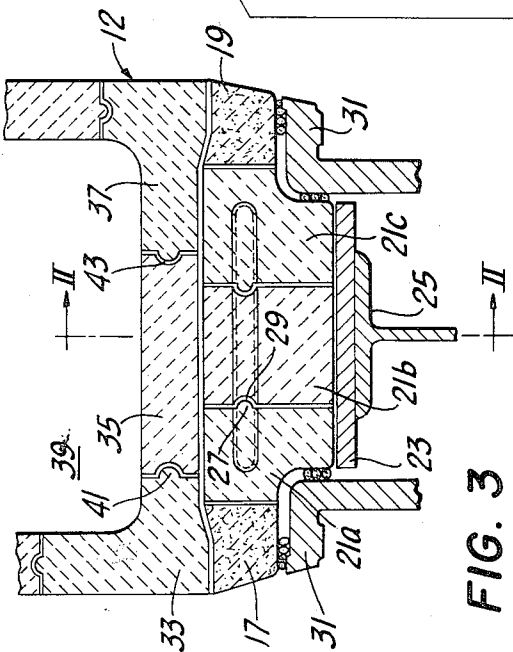


FIG. 3

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## DOOR JAMB STRUCTURE FOR COKE OVEN BATTERY

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9 Claims

### ABSTRACT OF THE DISCLOSURE

A coke oven door jamb structure in accordance with the invention includes a pair of spaced apart end jamb bricks arranged in vertical courses. Between the end jamb bricks are vertically arranged courses of intermediary bricks; each course including a plurality of such bricks. The end jamb bricks are of equal size and shape except at the top and bottom of the heating wall. A stretcher brick and two corner bricks in each horizontal course of vertically arranged courses coact with the end jamb and intermediary bricks to form the end heating flue wall.

### BACKGROUND OF THE INVENTION

In horizontal coke oven batteries, the end jamb brick arrangement, which includes the bricks at the extreme ends of the coking chambers and the bricks at the outer ends of the heating wall end flues, are the portions of the heating wall that are subjected to the most wear and tear and that have to be replaced most often. These end jamb bricks are exposed to ambient temperature and weather conditions each time the coking chamber doors are removed for pushing coke. Sooner or later these end jamb bricks spall and crack and must be replaced.

To be satisfactory, the end jamb brick arrangement must admit of easy removal and replacement of the jamb face bricks without disturbing the other jamb bricks which are under stress from the buckstays. Further, the jamb face bricks should be readily removable and replaceable without exposing any of the heating flues, particularly the end heating flues, to ambient conditions.

Those skilled in the art will recognize how effectively the jamb structure of the present invention accomplishes the desired purposes.

### SUMMARY OF THE INVENTION

A coke oven jamb wall construction includes spaced apart end jamb bricks of equal size and shape, with a plurality of intermediary bricks disposed between. Each end jamb brick coacts with one entire end surface of one intermediary brick and with one-half of the end surfaces of the intermediary bricks in vertically adjacent courses above and below the one intermediary brick, and spaced apart corner bricks with a stretcher brick therebetween, both bricks being cooperative with the end jamb and intermediary bricks.

For a further understanding of the invention and for features and advantages thereof, reference may be made to the following description in conjunction with the drawings which illustrate for the purpose of exemplification one embodiment of the invention.

### BRIEF DESCRIPTION OF THE DRAWING

One embodiment of the invention is illustrated in the drawing wherein:

FIG. 1 is a schematic elevational face view of a coke oven jamb structure in accordance with the invention;

FIG. 2 is a sectional view along line II—II of FIG. 1; and

FIG. 3 is a sectional view along line III—III of FIG. 1.

### DETAILED DESCRIPTION

FIG. 1 illustrates an elevational view of the face of a coke oven jamb structure 11 (with buckstays and bearing plate removed for clarification purposes) which extends from the coke oven floor 13 to the coke oven roof 15. The jamb structure 11, illustrated in FIG. 2 and FIG. 3 also, comprises the ends of a conventional heating wall 12.

The jamb structure 11 comprises alternate courses of refractory brick of differing composition. As viewed in FIG. 3, the end jamb courses of bricks 17, 19 are, preferably, but not necessarily fused silica bricks, while the courses of bricks 21a, 21b, 21c, intermediate the end jamb bricks 17, 19 are, preferably, but not necessarily silica bricks. A steel bearing plate 23 coacts with the faces of the intermediary bricks 21a, 21b, and 21c, and with a buckstay 25 in a conventional manner.

It will be noted that the intermediary bricks 21a, 21b, 21c have conventional cooperative tongue 27 and groove 29 construction in both a vertical and a horizontal plane. The intermediary bricks 21a and 21c are shaped also to conform to a conventional curved steel door jamb 31.

Adjacent the intermediary 21a, 21b, 21c and the end jamb bricks 17, 19, there are a plurality of courses of bricks 33, 35, 37 which comprises the end wall of an end heating flue 39. The bricks 33, 35, 37 are, preferably but not necessarily, silica bricks, and are similar in composition to the bricks 21a, 21b, 21c.

The bricks 33, 37 form the corners of the end heating flue 39 and have conventional tongue construction 41 in the vertical plane, and there is a tongue construction in the horizontal plane, as is clear from FIG. 2.

The intermediary or stretcher bricks 35 have a conventional groove construction 43 to interengage these stretcher bricks with the end jamb bricks 33, 37.

From FIG. 1 it will be noted that each one of the end jamb bricks 17, 19 vertically coacts with an end surface of an intermediary brick in course A, and one-half of an end surface of each brick in course B disposed above course A, and in course C disposed below course A, except at the top and bottom of the coke oven. At the top and bottom of the heating wall 12, the end jamb bricks coact with two and one-half end surfaces of intermediary bricks as shown in FIG. 1.

Both of the end jamb bricks 17, 19 coact with the intermediary bricks 21a, 21c by means of a conventional tongue 45 and groove 47 construction to maintain integrity and stability of the heating wall 12.

The end jamb bricks 17, 19, it will be noted, have the same size and shape throughout, except those end jamb bricks immediately adjacent the oven roof 13 and the oven floor 15, but the same size and shape bricks are used at the top and at the bottom of the heating wall. The intermediary bricks 21a, 21c vary in size; that is to say, in courses B and C these bricks have the same size and shape, but in course A these bricks are smaller than in courses B and C.

Likewise, the intermediary bricks 35 in all courses, have the same size and shape; the corner bricks 33, 37 of the end flue, however, are of different size in adjacent courses.

Now, then, when repairs are necessary to the jamb bricks 17, 19, it is a simple matter to dig out one or more of these bricks and replace them with new bricks. Those skilled in the art will recognize that the removal of one or more jamb bricks does not expose the end heating flue to atmosphere, and that the buckstay continues to coact with the intermediary bricks as usual so that the holding power of the buckstays is not changed in any way.

Further, one skilled in the art will recognize the economic advantage of having all of the end jamb bricks, except those at the top and bottom, of the same size and shape. Further, one skilled in the art will recognize that it

is only necessary to provide two different end jamb brick shapes; one shape being of the type used at the top and bottom of the heating wall, and the other type being those used between the top and bottom brick shapes.

What is claimed is:

1. In a horizontal coke oven battery having vertically arranged heating flues in heating walls separating coking chambers, the improved door jamb structure forming the ends of said heating wall on opposite sides of said coke battery, comprising:
  - (a) spaced apart end jamb bricks of equal size and shape arranged vertically in horizontal courses, with a portion of each end jamb brick forming a part of the coking chamber;
  - (b) a plurality of bricks disposed in horizontal courses intermediate said end jamb bricks, with
  - (c) said end jamb bricks being coactive with the entire end surface of an intermediary brick in one horizontal course and with one-half of the end surface of an intermediary brick in each vertically adjacent course of bricks above and below said intermediary brick;
  - (d) lateral stretcher bricks vertically arranged and positioned contiguous to said intermediary bricks and defining a portion of the end wall of the end flue in said heating wall; and
  - (e) a pair of spaced apart corner bricks, each being contiguous with an end of said lateral stretcher brick and with one of said end jamb bricks and forming a portion of the end wall and the side walls of said end heating flue.
2. The invention of claim 1 wherein:
  - (a) said end jamb bricks and said intermediary bricks have horizontally extending mutually cooperative tongues and grooves.
3. The invention of claim 1 wherein:
  - (a) said end jamb bricks have a horizontally extending tongue that coacts with a horizontally extending groove in a contiguous intermediary brick; and
  - (b) said end jamb bricks have a groove in an opposite horizontally extending surface that coacts with a tongue of a contiguous intermediary brick.
4. The invention of claim 1 wherein:
  - (a) the intermediary bricks in each horizontal course of bricks have mutually coactive tongues and grooves, and
  - (b) the intermediary bricks in vertically adjacent courses have mutually coactive tongues and grooves.
5. The invention of claim 4 including:
  - (a) a bearing plate disposed between said intermediary bricks, and
  - (b) a buckstay exerting lateral pressure against said jamb structure.
6. On a horizontal coke oven battery having vertically arranged heating flues in heating walls separating coking chambers, the improved door jamb structure forming the ends of said heating wall on opposite sides of said coke battery, comprising:
  - (a) spaced apart end jamb bricks of equal size and shape arranged vertically in horizontal courses, with

- a portion of each end jamb brick forming a part of the coking chamber;
- (b) a plurality of bricks disposed in horizontal courses intermediate said end jamb bricks, with
  - (c) said end jamb bricks in the courses intermediate the courses of such bricks at the bottom and the top of said heating wall being coactive with the entire end surface of an intermediary brick in one horizontal course and with one-half of the end surface of an intermediary brick in each vertically adjacent course of bricks above and below said intermediary brick, with the end jamb bricks in the courses at the top and bottom of said heating wall each being coactive with the entire end surface of two contiguous bricks and with one-half the end surface of a brick in the next adjacent course;
  - (d) lateral stretcher bricks vertically arranged and positioned contiguous to said intermediary bricks and defining a portion of the end wall of the end flue in said heating wall; and
  - (e) a pair of spaced apart corner bricks, each being contiguous with an end of said lateral stretcher brick and with one of said end jamb bricks and forming a portion of the end wall and the side walls of said end heating flue.
7. The invention of claim 6 wherein:
- (a) said end jamb bricks and said intermediary bricks have horizontally extending mutually cooperative tongues and grooves.
8. The invention of claim 6 wherein:
- (a) said end jamb bricks have a horizontally extending tongue that coacts with a horizontally extending groove in a contiguous intermediary brick; and
  - (b) said end jamb bricks have a groove in an opposite horizontally extending surface that coacts with a tongue of a contiguous intermediary brick.
9. The invention of claim 6 wherein:
- (a) the intermediary bricks in each horizontal course of bricks have mutually coactive tongues and grooves, and
  - (b) the intermediary bricks in vertically adjacent courses have mutually coactive tongues and grooves.

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U.S. Cl. X.R.,

202—267; 52—570