Jan. 15, 1974 L. G. TUCKER 3,785,932

SEALING DEVICE FOR COKE OVEN DOOR

Filed Feb. 1, 1972 2 Sheets-Sheet 1

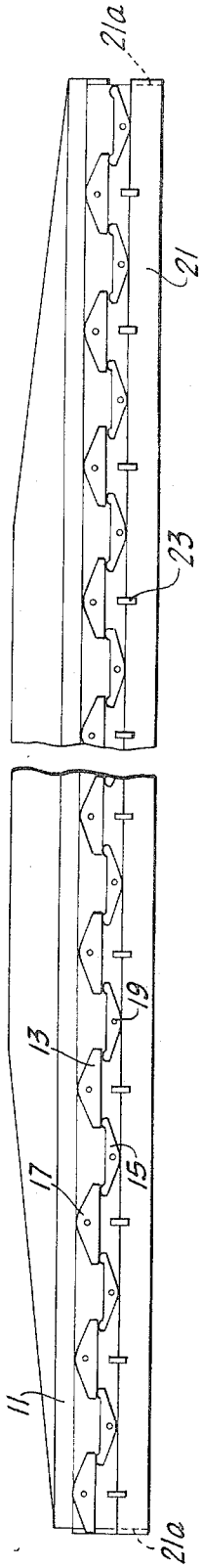

FIG. 1

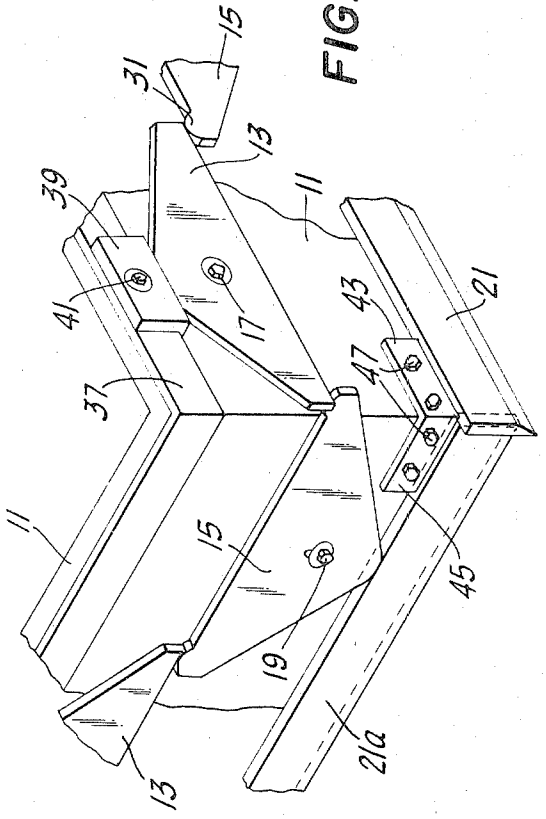

FIG. 5

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SEALING DEVICE FOR COKE OVEN DOOR

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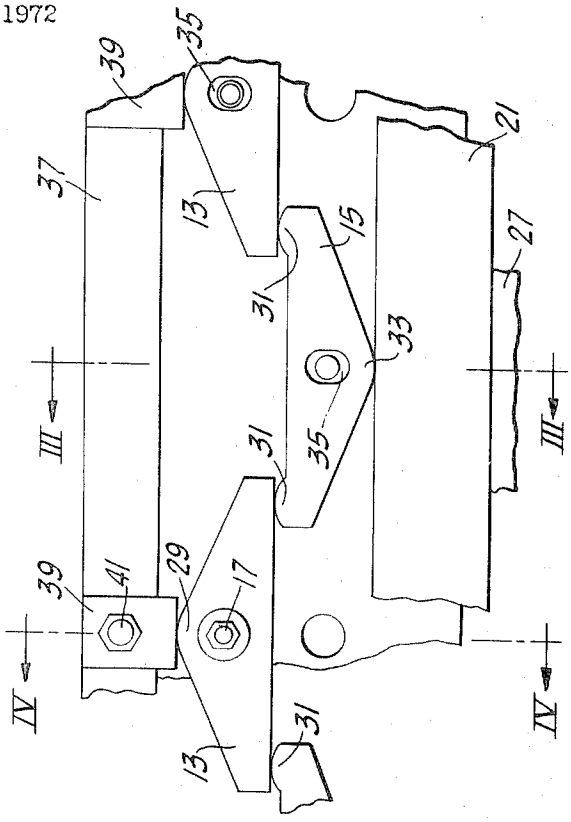

FIG. 2

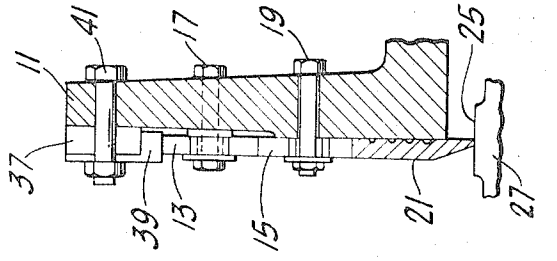

FIG. 3

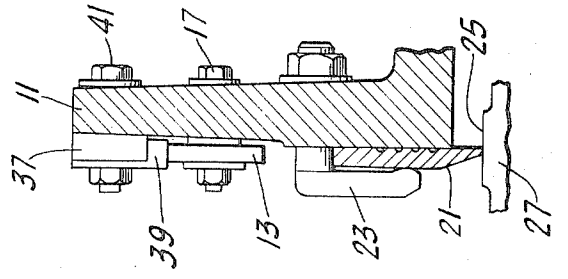

FIG. 4

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SEALING DEVICE FOR COKE OVEN DOOR

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Int. Cl. C10b 25/06
U.S. Cl. 202—248 3 Claims

ABSTRACT OF THE DISCLOSURE

The perimeter of the door frame of a coke oven door is fitted with a sealing knife edge and a plurality of pivotal interacting levers mounted to the door frame. The levers exert uniform forces on the knife edge and the door jam when the door is in the closed position.

BRIEF SUMMARY OF THE INVENTION

A plurality of spaced apart first levers are pivotally mounted to the external surface of a coke oven door frame and a plurality of spaced apart second levers are also pivotally mounted externally to the door frame. The ends of the first levers coact with the ends of the second levers that also coact with a sealing knife edge mounted externally to the door frame. Conventional J-bolts hold the knife edge in place. Stops are provided at the corners of the door frame to keep the knife edge in proper position.

For a further understanding of the invention and for features and advantages thereof, reference may be made to the following description and the drawing which illustrates a preferred embodiment of equipment in accordance with the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a simplified schematic view of one side of a coke oven door equipped with an embodiment of the invention;

FIG. 2 is an enlarged view of a portion of the structure of FIG. 1;

FIG. 3 is a sectional view along line III—III of FIG. 2;

FIG. 4 is a sectional view along line IV—IV of FIG. 2; and

FIG. 5 is a simplified schematic prespective view of one corner portion of the door of FIG. 1.

DETAILED DESCRIPTION

Referring to FIG. 1, a door frame **11** of a conventional coke oven door is provided with a plurality of pivotal, interacting levers **13, 15** that are mounted to the door frame **11** by means of bolt and nut assemblies **17, 19** which are indicated also in FIGS. 3 and 4.

The door frame is also fitted around its entire perimeter with a sealing knife edge **21** that is secured in place by means of a plurality of J-bolts **23** in a conventional manner. The sealing knife edge **21** is disposed to engage a sealing surface **25** of a conventional door jamb **27**, when the coke oven door is in the closed position.

The levers **13** are generally triangular in shape with one apex **29** at the top having an arcuate shape, as shown in FIG. 2. The levers **13** are long enough to overlap the spaced apart ends of the levers **15** mounted below and between levers **13**, as shown in FIGS. 1 and 2.

The end portions of the levers **15** have rounded bosses **31** thereon that coact with the bottom surface of the superimposed levers **13**. The bottom apex **33** of each lever **15** is also rounded as shown and it engages and coacts with the top edge surface of the sealing knife edge **21**.

Each one of the levers **13, 15** is provided with an oval hole **35** through which the pivot bolts **17, 19** extend,

and these oval holes **35** permit the lever **13, 15** to move up and down freely within limits, as defined by the size of the oval holes **35**.

The upper edge portion of the door frame **11** carries an elongate rectangular bar **37** on the outside, which bar cooperates with short angle-shaped bearing members **39**. Both the elongate rectangular bar **37** and the short angle-shaped bearing members **39** are secured to the door frame **11** by means of conventional bolt, nut and washer assemblies **41**.

The structure shown in FIG. 5 illustrates a pair of stop bars **43, 45** that are bolted as at **47**, to the door frame **11** at each corner of the coke oven door frame. The stop bars **43, 45** are disposed in a position just slightly above, or just contacting the top edge surface of the sealing knife edge **21**. These stop bars **43, 45** are installed where shown to ensure that the sealing knife edge remains in the desired attitude with respect to the door frame **11**, and to prevent the sealing knife edge from becoming canted out of its position or location.

It will be noter further that the sealing knife edge **21** is made in lengths to suit the respective side lengths of the door frame **11**, and that at each corner, one side length of sealing bar overlaps the adjacent abutting end of a side length of bar **21***a*. Preferably, the overlapping sealing knife edge bars **21, 21***a* are welded to make an air-tight seal at the corners of the door frame.

When a coke oven door is properly hung and latched closed, the latches exert a force on the door frame which then also exerts a force on the sealing knife edge that urges it into contact with the door jamb.

Heretofore, spring loaded plunger and other devices have been used to try to urge the sealing knife edge into contact with the door jamb and to make a satisfactory seal therewith. Some of the sealing devices used include thin stainless steel plates, springs, plungers, and adjusting screws which are costly to maintain and which, in many instances, do not exert enough force on the door jamb to make an effective seal.

The pivotal interengaging lever system of the present invention, however, exerts equal pressure at spaced apart locations on the sealing knife edge; such locations being where each rounded apex **33** contacts the upper edge surface of the sealing knife edge. The system of levers is so arranged that the force exerted by each lever is equal to the force exerted by every other lever.

From the foregoing description of one embodiment of the invention, those skilled in the art should recognize many important features and advantages of it, among which the following are particularly significant.

What is claimed is:

1. In a coke oven door having a door frame that has a knife edge sealing strip peripherally surrounding the door frame for engaging a door jamb, and that has means for holding the sealing strip against the door frame, the improvement comprising:

(a) a plurality of spaced-apart first levers pivotally mounted to the external surface of said door frame; and

(b) a plurality of spaced-apart second levers pivotally mounted to the external surface of said door frame with the end portion of each said second lever disposed to engage an end portion of the adjacent first lever; with

(c) each one of said second levers being movable in a plane vertically disposed toward said door jamb and into engagement with said knife edge sealing strip whereby, when said coke oven door is latched closed, said first levers coact with said second levers which coact with said sealing strip, thereby urging it into intimate sealing relation with said door jamb, and

(d) a pair of stops mounted externally to said door frame adjacent each corner thereof in such a way that said stops coact with and keep said sealing strip in a preselected attitude.

2. The improvement of claim **1** wherein:

(a) each one of said first levers is triangular in shape with one apex thereof coacting with said door frame; and wherein

(b) each one of said second levers is triangular in shape with one apex thereof coacting with said sealing strip.

3. In a coke oven door having a door frame that has a knife edge sealing strip peripherally surrounding the door frame for engaging a door jamb, and that has means for holding the sealing strip against the door frame, the improvement comprising:

(a) a plurality of spaced apart first triangular shaped levers pivotally mounted externally to said door frame with one apex of each said lever coacting with said door frame;

(b) a plurality of spaced apart second triangular levers pivotally mounted externally to said door frame with one apex disposed to engage said sealing strip and with the other two apices disposed to engage end portions of adjacent first levers; and

(c) stop means mounted externally to said door frame adjacent each corner thereof in such a way that said stop means coacts with said sealing strip and keeps the same in a preselected attitude.

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NORMAN YUDKOFF, Primary Examiner

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