United States Patent

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[73] Assignee Koppers Company, Inc.

[54] ASCENSION-PIPE-LID-OPENING MECHANISM
3 Claims, 2 Drawing Figs.

[52] U.S. Cl. 220/36
[51] Int. Cl. B65d 43/16, B65d 51/10
[50] Field of Search 220/36, 38, 33

[56] References Cited

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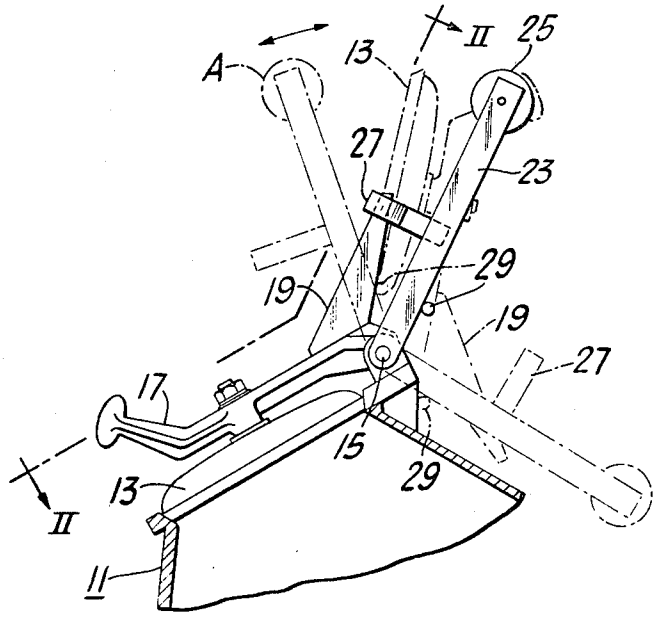
ABSTRACT: The lid of an ascension pipe elbow is provided with a hinge lug and a counterweighted arm. The arm engages the lug and first breaks the tar seal around the cover and then pivots the cover to its full-open position. When the cover is closed, the counterweighted arm also tends to keep the cover in the closed position.



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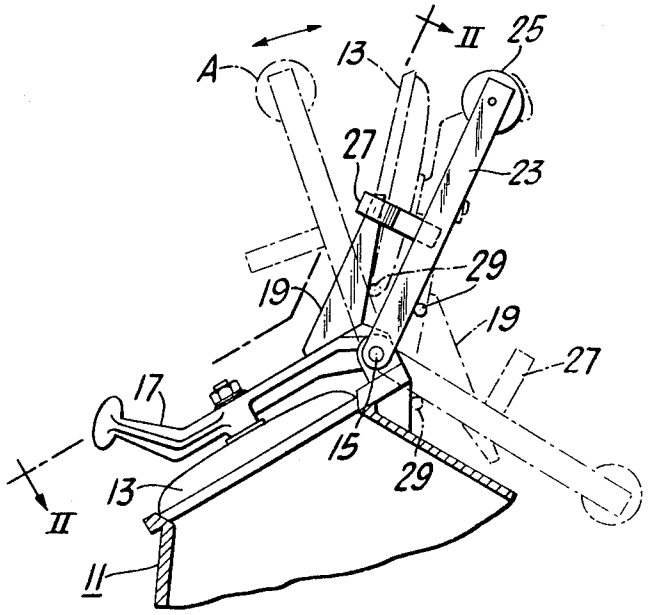

FIG. 1

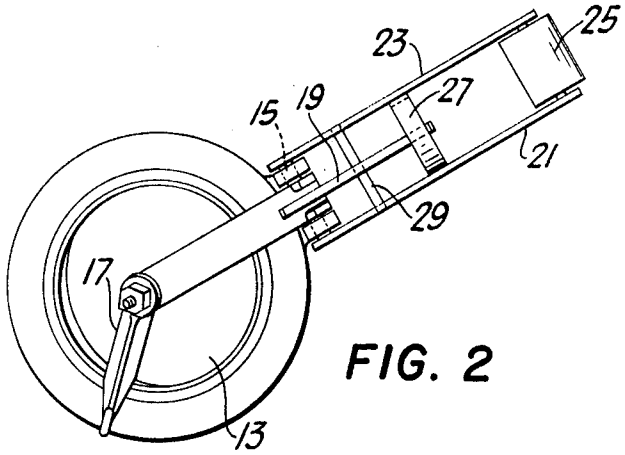

FIG. 2

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ASCENSION-PIPE-LID-OPENING MECHANISM

BACKGROUND OF THE INVENTION

Each coking chamber of a horizontal coke oven battery is provided with a single, or sometimes two standpipes or offtakes to carry away the volatile products liberated from the coal during the coking process. Each standpipe or offtake connects with a gas-collecting main through a gooseneck elbow. The elbow has an access opening for the admittance of a cleaning tool, and such opening is closed by a hinged elbow cover. When the elbow cover is open, the coking chamber is vented to the atmosphere.

The elbow cover is usually a massive structure and one or two workmen are required usually to pivot it from the closed to the open position. Such work is laborious and it is carried out in an environment of heat and dust which makes such work onerous and time consuming. In many instances, the elbow lid becomes "sealed" shut due to the accumulation of tar, and the like substances, around the elbow cover. To open such a "sealed" cover manually requires considerable additional effort.

How the present invention overcomes the foregoing difficulty will be apparent to those skilled in the art from the following description of one embodiment of the invention.

SUMMARY OF THE INVENTION

The cover for an ascension pipe elbow is provided with a lug and an arm is pivotally mounted adjacent the cover so that, when the arm pivots, a U-shaped strap on the arm cooperates with the lug to pivot the cover to the open position. A counterweight is fitted to the arm to balance the weight of the cover.

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

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. **1** is a schematic elevational view of a standpipe elbow that includes the present invention; and

FIG. **2** is a view along line II–II of FIG. **1**.

DETAILED DESCRIPTION

Referring to FIG. **1**, a conventional standpipe, or an ascension pipe **11** is fitted with a cover **13** that is hinged at pin **15** in a usual manner so that the cover can pivot clockwise, as viewed in FIG. **1**.

The cover **13** is provided with a handle **17** that is fitted with an upwardly and outwardly projecting lifting lug **19**, having a triangular shape about as shown in FIG. **1**.

The hinge pin **15** carries a bifurcated arm **21** having two parallel side members **23** that are connected together at the outer end by a cylindrical-shaped counterweight **25**, and that are further connected together at about midlength by a U-shaped strap **27**. The U-shaped strap **27** is so located that when the arm **21** pivots about the pivot pin **15**, the lifting lug **19** cooperates with the U-shaped strap **27**, as suggested in FIG. **1**.

When the elbow lid **13** is in the closed position, the bifurcated arm **21** is in a first position, A, suggested by the dotted outline in FIG. **1**. Now, when it is desired to open the elbow lid **13**, a workman pivots the bifurcated arm **21** clockwise, as viewed in FIG. **1**, so that the U-shaped strap **27** coacts with the lifting lug **19**. The clockwise movement of the counterweighted arm **21** then exerts a force on the lug **19** that urges the elbow cover **13** to pivot clockwise.

If the elbow cover **13** is sealed internally by tarry deposits and the like around the opening of the elbow, the impact force produced by the counterweighted arm coacting with the lifting lug breaks the tar seal. Thereafter, the cover and arm pivot clockwise to the open position.

It will be noted that a bar stop **29** is provided on the bifurcated arm that engages the elbow structure when the cover is open and prevents the arm from pivoting too far, and that engages the lug when the cover is closed so that the arm will not pivot too far.

When the cover is closed, the lifting lug engages the U-shaped strap portion of the bifurcated arm and pivots the arm counterclockwise; the bifurcated arm pivoting beyond a vertical position to the original starting position. The counterweight, being located then to the left of a vertical axis through the pivot pin **15**, tends to keep the cover closed.

Those skilled in the art will recognize that in the invention described herein there are many significant feature and advantages among which are:

That the bifurcated arm, when pivoted, produces an impact force on the elbow cover that cracks and breaks any tarry seal that may hold the cover in position;

That the cover is counterweighted wherefore it is readily and easily opened by a single workman; and

That the counterweighted arm, in the original position with the cover closed, keeps and maintains the cover in a closed position because of the location of the counterweight with relation to the pivot about which the arm moves.

What I claim is:

1. In a coke oven battery wherein coking ovens are provided with an ascension pipe and elbow, and wherein the elbow is provided with an opening and a pivotally mounted cover, the combination with said cover of:

a. a lug fitted to said cover;

b. an arm pivotally mounted adjacent said cover and having means cooperative with said lug for pivoting said cover from a closed position to an open position; and

c. a counterweight mounted to said arm for balancing the weight of said cover.

2. The invention of claim **1** including:

a. a means mounted to said arm for limiting the travel of said arm when said cover opens; and

b. means mounted to said arm for limiting the travel of said arm when said cover closes to a position so that said arm tends to maintain said cover in the closed position.

3. The invention of claim **1** including:

a. A U-shaped strap that coacts with said lug to pivot said cover.