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COAL-FEEDER STOPPAGE INDICATOR

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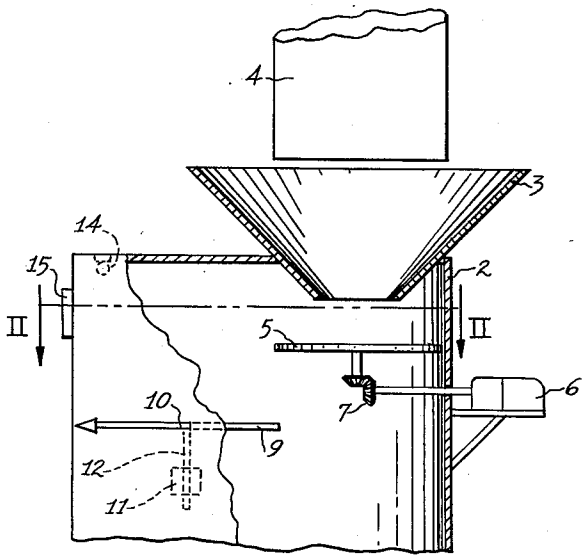


Fig. 1

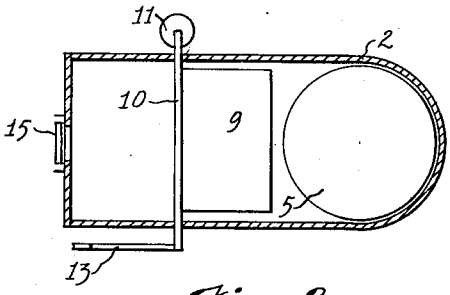


Fig. 2

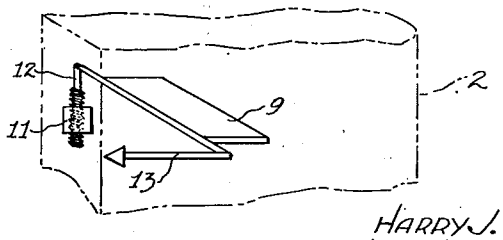


Fig. 3

INVENTORS
HARRY J. BURROWS AND
MICHAEL M. BLONCHEK
BY
Oberlin & Limbach

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COAL-FEEDER STOPPAGE INDICATOR

Harry J. Burrows, North Royalton, and Michael M. Blonchek, Cleveland, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio, a corporation of Ohio

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4 Claims. (Cl. 198—40)

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In steam boiler plants, a common arrangement involves a feed chute for coal leading to a pulverizer and stoker or to a stoker. Such arrangement encounters trouble by reason of blockage in the chute, and where the system is on an automatic or semi-automatic basis, the interrupting of feed jeopardizes the steam supply. In accordance with the present invention, a reliable and positive indicator may be had which at all times shows the feed condition to the furnace, and otherwise undetected stoppage in the chute may be obviated. Other objects and advantages will appear from the following description.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is a part elevational, part sectional view of a construction in accordance with the invention;

Fig. 2 is a transverse section of the same taken on a plane substantially indicated by line II—II, Fig. 1; and

Fig. 3 is a perspective view of the detector and indicator unit, the fragmentary dotted outline of the chute showing its relationship.

In general, the construction involves a feed chute with a motor-driven feed table, and a detector and indicator unit in the path of the fed coal. Thus, a feed chute 2 with supply hopper 3 and supply pipe 4 contains a rotary table 5 driven by a motor 6 through bevel gearing 7, whereby the rotating table frees the coal piling upon it from the hopper 3, and by the table rotation drops the coal in a stream downwardly through the chute. In the path of such falling stream is a detector swing plate 9 secured to a transverse shaft 10 which is mounted in the chute walls. By such arrangement the detector plate 9 is capable of freely swinging on the shaft axis. The swing plate is balanced to a normally horizontal position by suitable means such as a counter-weight 11. Conveniently, this may involve a screw-threaded stem 12 secured to the outside end of the shaft 10 at a right angle to the plate 9. The counter-weight 11 thus may be adjusted in position on the screw-threaded stem 12 to set the plate 9 in normal horizontal position, but allowing it to be easily swung downward to

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a vertical position by a falling stream of material. Secured to the other end of the shaft 10 outside the chute is an indicator pointer 13, this being also in horizontal plane extending oppositely from the swing plate. When no material is falling on the plate from the feed table 5, the indicator pointer 13 is directed horizontally, but when material is feeding from the table 5, by falling upon the plate 9, it swings the plate down vertically, and its position is shown on the outside by the upwardly-pointing arrow 13.

Lamp bulb 14 in the upper part of the chute, and a sight glass 15 in the wall permits a view of the interior.

As seen from the foregoing, with a normal flow from the hopper 3 and the feed table 5, the down-falling stream deflects the detector plate 9 to vertical position, and the arrow 13 so indicates on the outside. But, when a stoppage occurs, as with wet coal or other cause, the detector plate 9 swings back to its normal horizontal position, and the arrow 13 so indicates on the outside, and the operator may immediately take steps to re-start the flow before a stop in steam generation can occur.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

We therefore particularly point out and distinctly claim as our invention:

1. In apparatus of the character described, a coal supply hopper, a chute therebelow, the combination of a rotary feeder table in the chute under said hopper, a swing-plate below said table in the path of table discharge and pivoted on a horizontal shaft, an adjustable counter-weight connected to the shaft of said plate to maintain it in horizontal position, and indicating means consisting of an indicator pointer externally of the chute connected to said plate showing the plate position.

2. In apparatus of the character described, a downwardly-extending chute, the combination of a feeder table rotary on a vertical axis in said chute, a swing-plate below said table in the path of table discharge and pivoted on a horizontal shaft, a counter-weight lever on said shaft maintaining said plate in horizontal position, and indicating means consisting of an indicator pointer externally of the chute connected to said plate showing the plate position.

3. In apparatus of the character described, a downwardly-extending chute, the combination

of a swing plate in said chute secured to a horizontal shaft, a screw-threaded stem secured to one end of said shaft at a right angle to said plate, a counter-weight adjustably threaded on said stem, and indicating means consisting of an indicator pointer carried by one end of said shaft exposed in view outside the chute showing the plate's position.

4. In apparatus of the character described, a downwardly-extended chute, and the combination of a horizontal shaft therein and a plate with its edge fixed to said shaft and means fixed to an end of said shaft tending to maintain the shaft with its plate oriented in horizontal position and plate-position indicating means consisting of an indicator fixed to an end of said shaft exposed in view outside the chute.

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