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2,489,498

STOKER SAFETY CONTROL DEVICE

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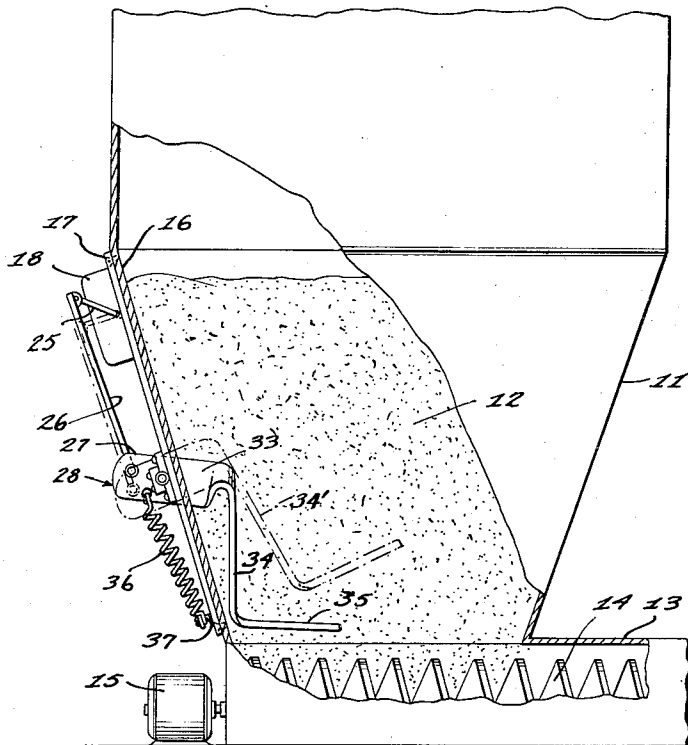


Fig. 1

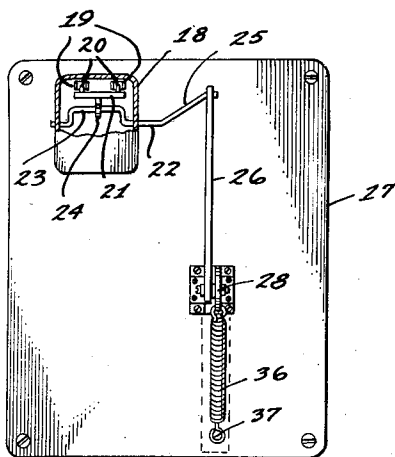


Fig. 2

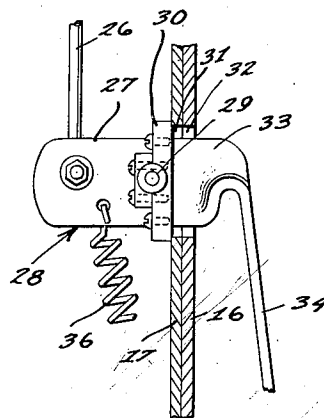


Fig. 3

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STOKER SAFETY CONTROL DEVICE

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1 Claim. (Cl. 198—37)

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This invention relates to stoker control devices, and more particularly to a device for de-energizing the motor of a coal stoker when the supply of coal is exhausted.

A main object of the invention is to provide a novel and improved stoker control device which is simple in structure, easy to install, and dependable in operation.

A further object of the invention is to provide an improved automatic switch device for controlling the motor of a coal stoker to stop the stoker mechanism responsive to the exhaustion of the fuel supply, said device involving merely a few inexpensive parts, being rugged in construction and requiring no manual adjustment.

Further objects and advantages of the invention will become apparent from the following description and claim, and from the accompanying drawings, wherein:

Figure 1 is a fragmentary elevational view, partly in cross-section, of a coal stoker provided with a control device construction in accordance with the present invention.

Figure 2 is a side view of the control device employed in Figure 1.

Figure 3 is an enlarged cross-sectional detail view showing the pivotal connection of the control switch operating lever employed in the device shown in Figures 1 and 2.

Referring to the drawings, 11 designates a coal feed hopper through which pulverized coal or the like, shown at 12 is fed by gravity to a conveyor conduit 13 in which is journaled a conveyor screw 14. Screw 14 is driven by an electric motor 15. Mounted on a side wall 16 of hopper 11 is a plate 17 and mounted on said plate is a switch housing 18. Suitably mounted in housing 18 are stationary switch contacts 19, 19 and engageable therewith are contact elements 20, 20 carried by an insulating bar 21. The respective pairs of contact elements 19, 19 and 20, 20 are each included in the line wires, not shown, leading to motor 15, and when the elements 20 are separated from the elements 19 the motor 15 is de-energized.

Pivoted transversely in the side walls of housing 18 is a crank rod 22 having a crank portion 23 which is rigidly connected to bar 21 at 24. Rod 22 has an arm portion 25 which is connected by a link 26 to one arm 27 of a lever member 28. Lever member 28 is pivotally connected by a pivot pin 29 to a bracket 30 secured to plate 17. Underneath the bracket 30, plate 17 and wall 16 are formed with registering apertures 31 and 32, and extending into the hopper through said apertures is an arm 33 of lever 28, said arm 33 being

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formed with a depending extension 34 at the end of which is a right-angled bend 35. As shown in Figure 1, extension 34 may rotate in a vertical plane normal to wall 16 inside said hopper. A coiled spring 36 connects arm 27 to a bolt 37 at the lower portion of plate 17, whereby arm 33 and extension 34 are biased to a rotated position shown in dotted view at 34' in Figure 1. In said dotted line position, link 26 is retracted downwardly and the respective switch contacts 19 and 20 are separated. When the fuel 12 is gravitating downwardly in the hopper 11, the extension 34 and bend 35 are rotated to their full line position, as viewed in Figure 1, and in this position the contacts 19 and 20 are closed, permitting the stoker feed mechanism to operate normally. When the supply of fuel above extension 34 and bend 35 becomes exhausted, the arm 33 is released, whereby the spring 36 rotates lever 28 to the dotted line position of Figure 1, thereby de-energizing the motor 15 at the switch contacts 19 and 20.

It will be thus apparent that the stoker mechanism will automatically stop its operation when the supply of fuel in hopper 11 becomes depleted, thus preventing unnecessary wear of the bearings and other movable parts of the mechanism, wear on the motor, and reducing fire hazards which would otherwise be present by the continuous operation of said motor.

While a specific embodiment of an automatic stoker control device has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claim.

What is claimed is:

40 In a coal stoker having a hopper, a screw conveyor at the bottom of said hopper, an electric motor operatively connected to said screw conveyor and a control switch for said motor mounted on the upper end of said hopper, said hopper formed with an aperture through a wall thereof adjacent the bottom, an L-shaped flat lever, one arm of said lever having vertical flat sides extending through said aperture, a pivot engaging said one arm intermediate the length thereof, a depending arm on one end of said one arm having the flat surfaces thereof perpendicular to the sides of said first arm within said hopper, an inwardly directed end on said flat arm having an upwardly facing flat side, a link pivoted between the free outer end of said one arm and said

switch, and a spring biasing said upwardly facing arm upwardly, the weight of coal on said latter arm rocking said lever for closing said switch, said spring biasing said lever to switch opening position when the coal is removed from the upwardly facing flat arm.

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