July 5, 1932. W. FRIEDEMANN 1,865,438

SAFETY DEVICE FOR STOKERS

Filed Jan. 26, 1931

Fig. 1.

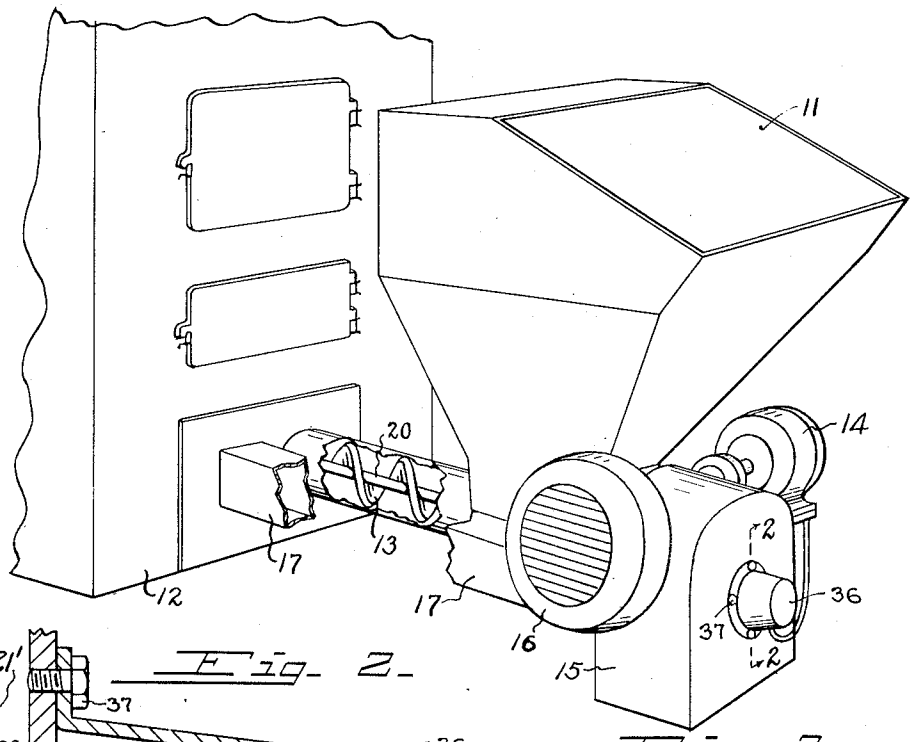


Fig. 2.

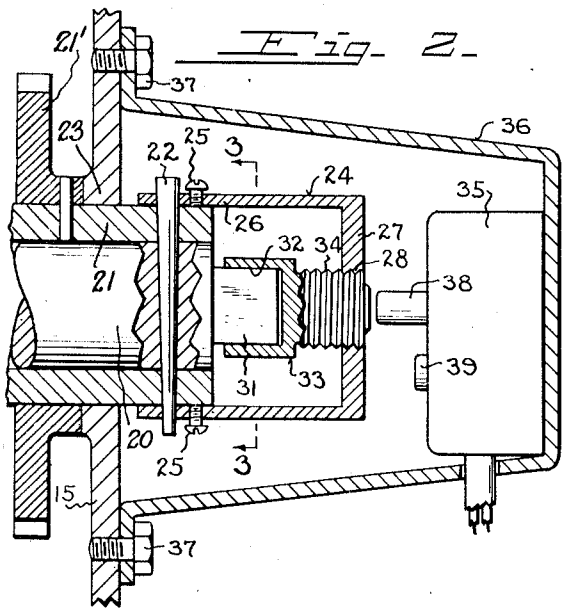
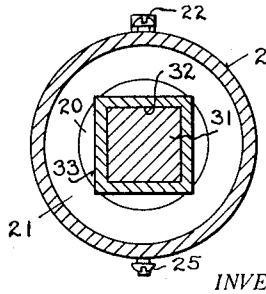


Fig. 3.



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SAFETY DEVICE FOR STOKERS

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My invention relates to a safety device for use in conjunction with a stoker mechanism, wherein the fuel is fed to the furnace by means of a conveyor and usually such mechanism includes a fan to create a forced draft in the furnace. The safety device which forms the subject matter of this invention is connected to the conveyor shaft, whereby if an obstruction such as foreign matter in the fuel, or the fuel itself, causes the conveyor to stop a switch will be operated to break the electrical circuit and cause the fan and motor to stop.

The object of my invention is to provide means at the end of the driven shaft, which will move away from said shaft upon stoppage of the shaft and operate a switch for breaking the electrical circuit. A further object is to provide a connection between the driving member and driven member which will shear under an undue strain. Still further objects reside in the novel construction of parts which will become apparent as the description progresses.

The invention will be further readily understood from the following description and claims and from the drawing in which latter:

Fig. 1 is a perspective view of a stoker mechanism partly broken away.

Fig. 2 is a longitudinal section of the safety device taken in the plane of the line 2—2 of Fig. 1, and partly broken away.

Fig. 3 is a cross-section of the same, taken on the line 3—3 of Fig. 2.

I have shown my invention in connection with a stoker mechanism of conventional design, which includes a hopper 11, wherein the fuel is stored and fed to the furnace 12 by means of a worm conveyor 13. An electric motor 14 is mounted adjacent to the stoker for imparting rotation to the conveyor through suitable gears located in a gear box 15. It is the usual practice in furnaces using a stoker mechanism to have a fan mounted thereon to create a forced draft for the furnace. The fan is mounted on the drive shaft in axial line with the motor and is contained in a housing 16 and forces air through a conduit 17 to the furnace.

The conveyor is on a shaft 20, which receives its rotation through a sleeve 21. The sleeve 21 receives its rotation from the motor 14 through suitable gears meshing with the the gear 21′ fixed to the sleeve 21. A taper pin 22 extends through the sleeve and shaft forming a driving connection between the sleeve and shaft. The gear box 15 has a bearing 23 about the sleeve. A cap 24 is secured to the sleeve by having the taper pin extending therethrough and held in position by screws 25 threaded into the wall 26 of the cap and bearing against the sleeve. The outer wall 27 of the cap has a central threaded portion 28.

The conveyor shaft 20 is provided with a squared extension 31 arranged to be received in a squared socket 32 of a movable member 33. The member 33 has a threaded shank 34 for cooperation with the threaded portion 28 of the cap.

A suitable safety switch 35 is mounted in a housing 36 secured to the gear box as by bolts 37. The switch exemplified comprises a pair of push buttons 38 and 39 for control of the switch. The button 38, when pushed in breaks the circuit and the button 39, when pushed in closes the circuit. The button 38 is in axial line with the movable member 33.

In the event the conveyor is stopped due to an obstruction or for any reason, its operation is impeded, the taper pin 22 will shear causing the sleeve to rotate about the shaft. Such rotation will be imparted to the cap 24. The movable member 33 being held stationary and the cap rotating will cause the movable member to move outwardly, due to its threaded connection with the cap contacting and depressing the push button 38 for breaking the circuit and stopping the motor, which will also stop the fan and cause the forced draft to the furnace to cease, whereby the fire in the furnace will burn slowly.

The stokers now in use have the shearing pin therein, but upon shearing the motor and fan continue to operate. The draft caused by the fan will soon burn up the fuel and then will blow cold air into the furnace and cause the rooms being heated to cool very rapidly. With my device the fan and motor are stopped

as soon as the conveyor ceases to operate which permits the fire to burn slowly.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination of a driving member and a driven member, a shearing connection between said members, a cap secured to said driving member, a member rotatively secured to said driven member, a connection between said cap and said last named member whereby upon shearing of said shearing member said last named member will move endwise for operating a switch.

2. The combination of a driving member and a driven member, a shearing connection between said members, a member provided with a threaded end rotatively secured to said driven member, a cap secured to said driving member provided with threads for engagement with said threaded member, whereby stoppage of rotation of said driven member will cause said threaded member to move outwardly.

3. The combination of a driving sleeve, a driven shaft within said sleeve, a shearing connection between said sleeve and shaft, a telescoping extension on said shaft, a cap on said sleeve having threaded connection with said telescoping extension, whereby cessation of rotation of said shaft will cause outward movement of said extension.

4. The combination of a driving sleeve, a driven shaft within said sleeve, a switch mounted in axial line with said shaft, a shearing connection between said sleeve and shaft, a telescoping extension on said shaft, a cap on said sleeve having threaded connection with said telescoping extension, whereby cessation of rotation of said shaft will cause outward movement of said extension for operating said switch.

5. The combination of a driving member, a driven member, a switch mounted in proximity with said members, a shearing connection between said members, a telescoping extension on one of said members, means for causing outward movement of said telescoping extension, upon cessation of rotation of one of said members for operating said switch.

In testimony whereof, I have hereunto signed my name.

WILLIAM FRIEDEMANN.