Feb. 14, 1939. P. C. STEINHOUR 2,147,220

CIRCUIT CLOSER FOR STOKER ALARMS

Filed May 11, 1938

Fig. 1.

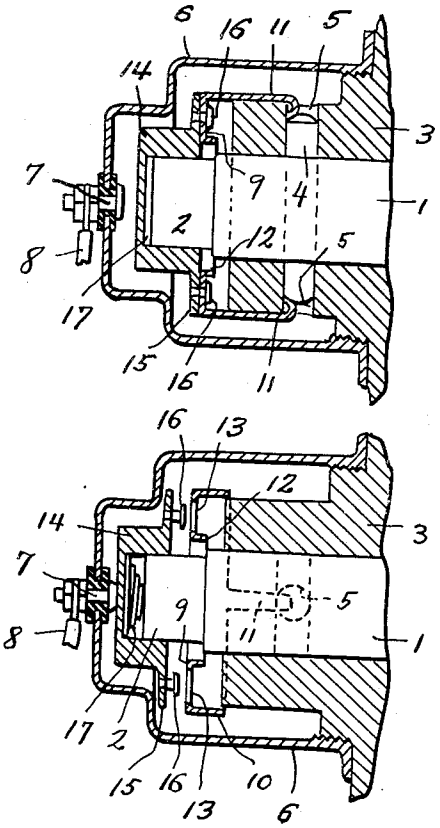
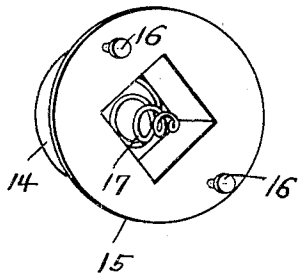



Fig. 2.

Fig. 3.



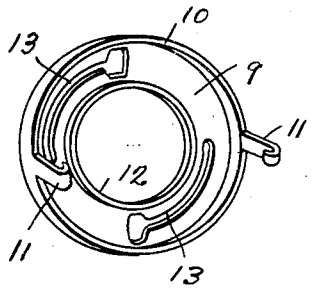




Fig. 4.

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## CIRCUIT CLOSER FOR STOKER ALARMS

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Application May 11, 1938, Serial No. 207,393

3 Claims. (Cl. 200—52)

The present invention relates to new and useful improvements in circuit closers for electric stoker alarms and has for its primary object to provide, in a manner as hereinafter set forth, a device of this character embodying novel means for closing the alarm circuit in the event of shear pin failure with consequent stoppage of the coal feed.

Another very important object of the invention is to provide an electric alarm circuit closer for automatic coal stokers which may be expeditiously installed for operation without the necessity of materially altering the stoker.

Other objects of the invention are to provide a circuit closer of the aforementioned character which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in longitudinal section through an embodiment of the invention.

Figure 2 is a view similar to Fig. 1 but showing the invention after the pin has been broken and the circuit closed.

Figure 3 is a detail view in perspective of the spring actuated contact member.

Figure 4 is a detail view in perspective of the member on which the element shown in Fig. 3 is mounted.

Referring now to the drawing in detail, it will be seen that the reference numeral 1 designates one of the usual shafts of the stoker, said shaft being provided with a square end portion 2. Mounted on the shaft 1 is a drive collar 3. Mountedly diametrically in the shaft 1 is a shear pin 4 the projecting end portions of which are engaged in openings 5 which are provided therefor in the drive collar 3, thus connecting the shaft 1 to said collar 3 for actuation thereby. Threadedly mounted on the drive collar 3 is a removable protecting cap 6. Mounted in the outer end of the cap 6 and insulated therefrom is a contact screw 7. A conductor wire 8 is connected to the contact screw 7.

Mounted on the end portion of the drive collar 3 is a plate 9 of suitable metal. The plate 9 is in the form of a flat ring having on its outer periphery a ange 10. Resilient hooks or latches 11 project longitudinally from the flange 10 for engagement in the shear pin openings 5 for mounting the plate 9 on the drive collar 3. The plate 9 encircles the shaft 1 and the inner periphery of said plate is provided with a comparatively short flange 12. As shown to advantage in Fig. 4 of the drawing, the plate 9 has formed therein a pair of arcuate keyhole slots 13 the purpose of which will be presently set forth. It will thus be seen that the plate 9 is mounted on the drive collar 3 for rotation therewith.

Mounted for longitudinally sliding movement on the square end portion 2 of the shaft 1 is a socket member 14 of suitable metal. The socket member 14 is provided with an integral flange 15 on which headed pins 16 are mounted. The headed pins 16 are engageable in the arcuate keyhole slots 13 for connecting the socket member 14 to the plate 9 out of engagement with the contact 7. A helical spring 17 is mounted in the socket member 14 and engaged with the end of the shaft 1 for engaging said socket member with the contact 7 for completing the circuit in which the signal device, such as a bell, buzzer, light, etc., is interposed.

It is thought that the operation of the invention will be readily apparent from a consideration of the foregoing. When the collar 3 is driving the shaft 1 in the usual manner the members 9 and 14 rotate with said shaft and collar, the pins 16 holding said member 14 out of engagement with the contact 7 against the tension of the spring 17. This is shown in Fig. 1 of the drawing. However, should the pin 4 break the shaft 1 stops turning while the drive collar 3 continues to rotate. When this occurs the rotating plate 9 turns relative to the now stationary member 14 until the headed pins 16 enter the enlarged end portions of the keyhole slots 13 thereby releasing said member 14 and permitting it to be moved outwardly on the equare end portion 2 of the shaft 1 into engagement with the contact 7. This, of course, energizes the alarm. The device may also be electrically connected with the usual motor which drives the stoker for stopping said motor when the shear pin 4 fails.

It is believed that the many advantages of a stoker alarm circuit closer constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which

will fall within the scope of the invention as claimed.

What is claimed is:—

1. In a stoker including a shaft, a drive collar, a shear pin connecting the shaft to said drive collar for actuation thereby, and a cap mounted on the drive collar, an alarm circuit closer comprising a member mounted on the drive collar for rotation therewith, said member having a plurality of keyhole slots therein, a socket member slidably mounted on the shaft but connected thereto for rotation therewith, a contact mounted on the cap, a spring mounted in the socket member for engaging said socket member with the contact, and headed elements on the socket member engaged in the keyhold slots of the first named member for releasably securing said socket member out of engagement with the contact against the tension of the spring.

2. In a stoker including a shaft, a drive collar mounted on said shaft having openings therein, a shear pin mounted in the shaft and engaged in the openings for connecting the shaft to the collar for actuation thereby, and a cap mounted on the collar, an alarm circuit closer comprising a contact mounted on the cap, a member including hooks engaged in the openings of the drive collar for mounting said member on said drive collar for rotation therewith, said member having a plurality of arcuate keyhole slots therein, a metallic member slidable on the shaft but secured thereto against relative rotation, a spring for engaging the second named member with the contact, and headed elements on said second named member engagable in the keyhole slots of the first named member for releasably securing second named member thereto out of engagement with the contact.

3. In a stoker including a shaft comprising a square end portion, a drive collar mounted on the shaft and having openings therein, a shear pin mounted on the shaft and engaged in the openings for connecting said shaft to said collar for actuation thereby, and a cap mounted on the collar, an alarm circuit closer comprising a contact mounted on the cap and insulated therefrom, a metallic plate encircling the shaft in the cap, said plate having a plurality of arcuate keyhole slots therein, said plate including a peripheral flange, resilient hooks projecting from said flange and engaged in the openings of the drive collar for mounting the plate on said drive collar for rotation therewith, a socket member slidably but non-rotatably mounted on the square end portion of the shaft and engageable with the contact, resilient means for engaging the socket member with the contact, and headed elements on the socket member engaged in the keyhole slots for releasably securing said socket member out of engagement with the contact.

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