Feb. 22, 1927. 1,618,322

C. C. BETTENHAUSEN

AUTOMATIC FIRE ALARM

Filed June 30, 1925

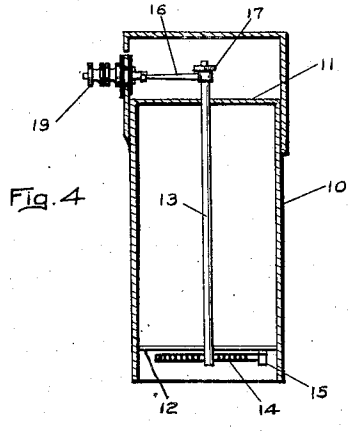


Fig. 4

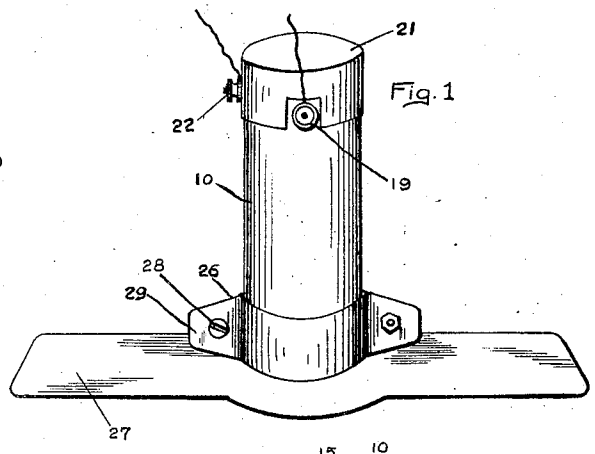


Fig. 1

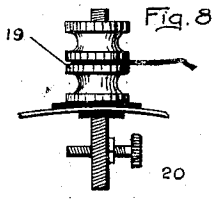


Fig. 8

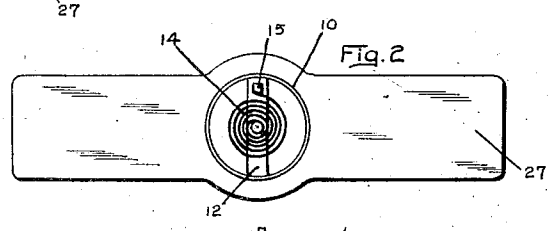


Fig. 2

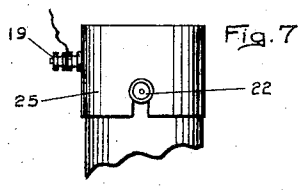


Fig. 7

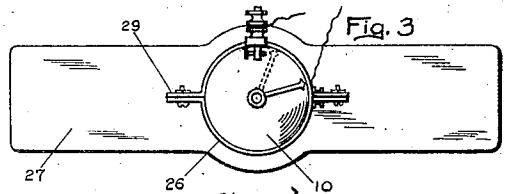


Fig. 3

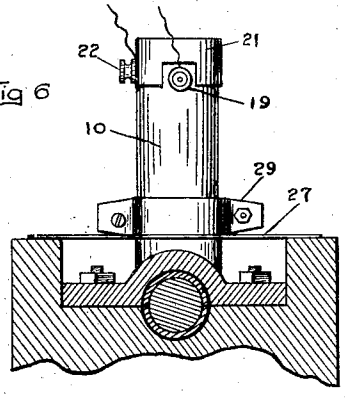


Fig 6

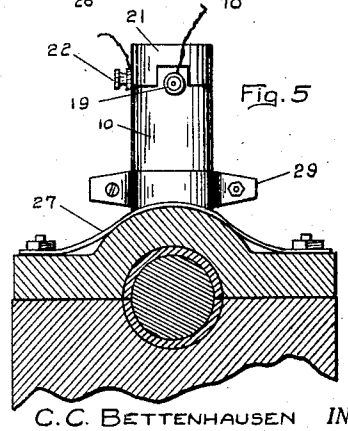


Fig. 5

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UNITED STATES PATENT OFFICE.

CHARLES C. BETTENHAUSEN, OF PRINCETON, NEBRASKA.

AUTOMATIC FIRE ALARM.

Application filed June 30, 1925. Serial No. 40,601.

My invention relates to automatic fire alarms and particularly to the type of fire alarms which are designed to give warning of overheated bearings. The object of my invention is the provision of a fire alarm which is adapted to be quickly and easily applied to bearings of any and all types, which is reliable in action, which is simple in construction and which can be made and sold at a relatively low figure. Other objects will be brought out in the following description.

Referring now to the drawings,

Figure 1 is a view in perspective of the fire alarm.

Figure 2 is a plan view of the bottom side of the fire alarm.

Figure 3 is a plan view looking down upon the fire alarm, the cover of the case being removed to disclose the contact arrangement.

Figure 4 is a median vertical sectional view showing the operative mechanism of the fire alarm.

Figure 5 is a plan view showing how the fire alarm may be secured to a bearing having a convex surface.

Figure 6 is a similar view showing the application of the alarm to a sunken bearing.

Figure 7 is a plan view of the cap and of the portion of the body member, showing the relation of the cap to one of the binding posts.

Figure 8 is a view showing the details of one of the binding posts and the contact member.

The body member 10 is in the form of an elongated cylinder having a closed top 11. Spaced slightly from the lower open end of the body member is the horizontal support 12. The shaft 13 is positioned centrally in the body member 10 and has its bearings in the top 11 and in the support 12. The thermostatic member 14, which in the present instance is in the form of a coil spring, is firmly secured to the shaft 13 and loosely secured to a pin 15 projecting from the support 12. The thermostatic member 14 surrounds the shaft 13 and is slightly spaced from the support 12. It is preferably placed on the under side of the support so as to position it as closely as possible to the bearing, as it is desirable to space the thermostatic member from its support in order to prevent binding. At the upper extremity of the shaft 13 is a pointer 16 which is secured so as to rotate with the shaft. The pointer may be secured to the shaft in a manner common with clock hands and is preferably held in position by means of a nut 17 on the upper end of the shaft. It will be observed that as changes in temperature affect the thermostatic member, the shaft 13 and the pointer 16 will be rotated.

At one side of the body member 10 is an upwardly projecting strip 18 which serves as a support for the binding post 19. This binding post must be completely insulated from the strip 18 by means of suitable insulating washers on the two sides and within the strip. On its inner end the binding post 19 is provided with a conducting extension having therein a contact screw 20 as shown in Figure 8. The construction is such that a rise in temperature will cause the pointer 16 to move toward the contact screw 20. The contact screw 20 thus provides a means for adjusting the parts for any desired predetermined maximum temperature.

In order to protect the contact parts from injury as well as fron chaff and other foreign matter the cap 21 serves as a cover. The cover 21 is the usual slip cover but it is provided with a pair of notches for clearing the binding posts 19 and 22. It is important, however, that the cover be prevented from coming into contact with the binding post 19 and thus rendering the signal inoperative through a short circuit. The notch for the binding post 19 is therefore made amply large for clearing the binding post but the notch engaging the binding post 22 is only sufficiently large to pass over the post, as shown in Figure 7. It is therefore impossible through carelessness or accident to apply the cap 21 in such a way as to short circuit the fire alarm.

The great difficulty with fire alarm devices of this kind has been the problem of applying the devices effectively to the bearings. In some kinds this has been done by drilling holes into the bearings, while in other cases the alarm mechanism has been so loosely attached that the vibration of the shaft would eventually jar it loose. The securing means which I employ comprises a clamping member 26 having a base 27, the two parts having been formed either from a single piece of sheet metal or from two pieces which

are united by welding or soldering. The collar portion 26 is just sufficiently large to permit the body member 10 to slide freely therein. This collar member may, however, be tightened against the body member 10 at any desired position of adjustment by means of the bolts or screws 28 passing through apertures in the ears 29. While the clamping members may be formed out of any desirable material, the use of a resilient material such as sheet steel is to be preferred because it will furnish the necessary binding action in the clamp 26 and at the same time will permit of considerable bending of the part 27 such as may be necessary for adapting the device to some types of bearings.

In use, the clamping member is secured to the journal box or other suitable support near the bearing, the base 27 being bendable into any desired form to conform to the shape of the support. The clamping member may be secured to its support by means of bolts or screws as suggested in Figure 5. The body member 10 is fitted to the bearing by cutting out segments from its lower edge so as to position the thermostatic member as closely as possible to the bearing. The body member is then thrust down through the clamping member until its lower edge is in intimate contact with the bearing, after which it is firmly secured in position by tightening the screws or bolts 28. Lastly an electrical circuit is established through the binding posts 19 and 22 and through a bell, pilot light or other suitable signal or alarm.

The signal device as above described was designed primarily to meet the need for a fire alarm in mills and elevators. The bearings in these places frequently overheat and require constant inspection to prevent disastrous fires. These bearings are however of difficult access and the result is that much is left to chance. Such structures are often consumed by fire and the insurance rates are necessarily high because of the fire hazard. With my device this hazard may be all but eliminated at an almost insignificant cost. The installation is a simple matter, so that it is possible to connect every bearing with a signal alarm in the office in such a manner as to give instant warning of the overheating of any bearing and to identify the particular bearing at the same time, so that the proper steps may be taken in time to cool the bearing and to extinguish the blaze.

Having thus described my invention in terms which will be readily understood by others skilled in the art to which it pertains, what I claim as new and desire to secure by Letters Patent of the United States is:—

A casing which is adapted to receive a thermal switch, and means for securing said casing in contact with a bearing, said casing being elongated and tubular and being open at its contact end and closed at its opposite end, a slip cover for the closed end of said casing, stops on said casing for limiting the inward movement of said slip cover to thereby form a chamber between the closed end of said casing and said slip cover for receiving a switch mechanism, said securing means comprising a flexible base which is adapted to be secured to a suitable support in proximity to the bearing and a circular collar secured to said base, said collar being in the form of two semicircular parts with radially projecting ears at their extremities and being adapted to slidably receive said casing whereby said casing may be adjusted into intimate contact with the bearing, each pair of said ears being provided with registering apertures for the reception of a bolt for drawing together the two parts of the collar to thereby clamp the said casing in said collar in any desired position of adjustment.

In witness whereof I affix my signature.

CHARLES C. BETTENHAUSEN.