June 5, 1951 M. L. ROGERS 2,556,042

HOTBOX INDICATOR

Filed May 24, 1947

Fig. 1.

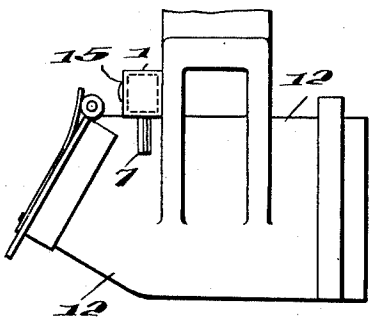


Fig. 2.

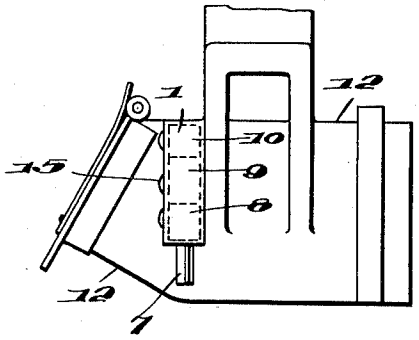


Fig. 3.

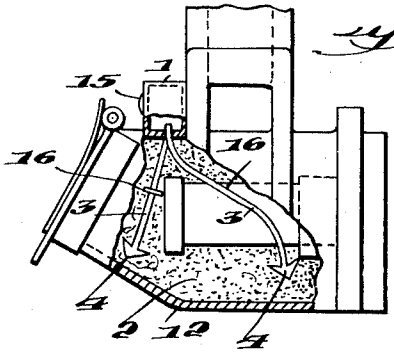


Fig. 5.

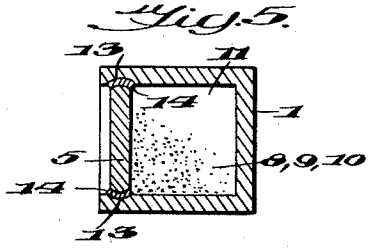
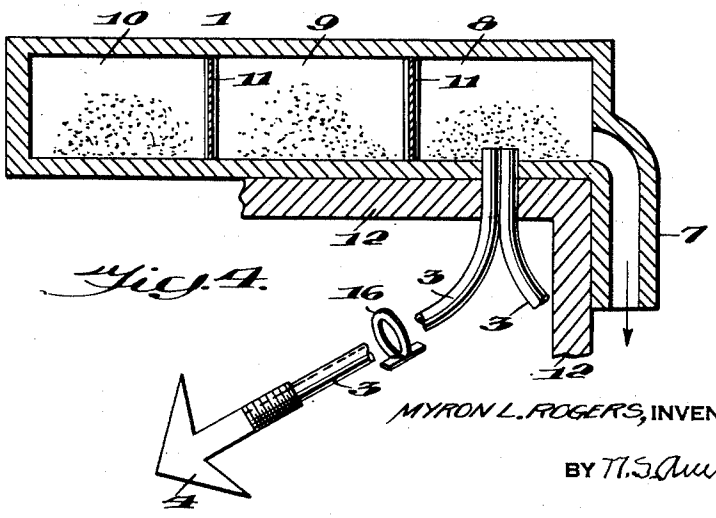




Fig. 6.

Fig. 4.



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HOTBOX INDICATOR

Myron L. Rogers, Westville, Ind.

Application May 24, 1947, Serial No. 750,324

2 Claims. (Cl. 116—114)

1

My invention relates to improvements in hot box indicators for car axles, and it more especially relates to the structure described in the specification and pointed out in the claims.

The purpose of my invention is to provide a hot box indicator for the bearing journals of railway cars; that will give visible indications; that will give an indication of an overheated journal through the presence of odors that are produced by the heat; that uses conventional fuze leads from different parts of the oil saturated waste in the box; that ends the fuzes in the shape of miniature anchors to insure that the end of a fuze will not be detached from the waste through the vibrations of the journal box as the car passes over the rails; that will show the time that has elapsed after the heat has become critical through a separately supplied flame producing agents within a metallic casing that is secured by welding to the top of the journal box, or along its one side; and that through the use of different colored flame powders a blue flame indicates a five-minute period, a yellow flame, a ten-minute period, and a red flame indication, a twenty-minute period of overheated car axles.

With these and other related ends in view I illustrate in the accompanying drawing such instances of adaptation as will show the cooperative structure without limiting myself to the specific details shown thereon and described herein.

Fig. 1 is a side elevation of a journal box with the indicator secured on the top of the box casing.

Fig. 2 is a view similar to Fig. 1 with the indicator placed vertically on the side of the box.

Fig. 3 is a view similar to Fig. 1 but partly in section to show the terminal ends of the fuzes embedded in the oil impregnated waste.

Fig. 4 is an elevation on an enlarged scale of the indicator welded to the cover of the journal box.

Fig. 5 is an enlarged cross section of the indicator casing, and Fig. 6 is a front elevation of insertable glass bulbs.

In producing my hot box indicator I may vary its construction as demanded by the exigencies of varying conditions without departing from the broad spirit of the invention.

The indicator 1 is attached to the top of a journal box 12 as shown in Fig. 1 or secured on the side of the box as shown in Fig. 2. The indicator casing may be of any desired thickness of cast iron or other ferrous material. There is an opening through the top of the journal box which registers with an opening in the bottom of the indicator casing. These openings serve to lead in the fuzes 3 which are permanently held in the opening by packing with asbestos or otherwise.

2

The fuzes 3 terminate in arrow or anchor heads 4. These heads are embedded in the oil saturated waste 2 in engagement with the car axle. The front face of the indicator is transparent through the use of heat resisting glass 5. There is a smoke outlet 7.

The casing 1 of the indicator encloses three compartments separated by paper partitions 11 thus producing a space 8 for blue flame-producing powder and a space 10 for a red flame-producing powder 9 for yellow flame producing powder or agent.

The operation of my indicator is very simple. Excessive heat produced by the car axle in the journal box is transmitted through the fuzes 3 to the inside of the indicator casing where the heat is transferred to the flame-producing agents.

To supplement the visual indication through the use of flame-producing means the smoke from the burning powder passes out through an opening 7 to the outside air where the odor of the smoke will also indicate the presence of a hot box.

The indicator is protected against all kinds of weather. The glass front may be made removable in any desired manner. The opening through the journal box for the fuzes will be closed on its margins where the casing of the indicator is welded to it. The recurrence of hot journal boxes is more spectacular on long passenger trains and this traffic, in the case of hot boxes, causes more damaging delays to large numbers of travelers than comparative damages in freight traffic.

The glass 5 may be easily removed through the formation of grooves 13 on the inside of the top and bottom portions of the casing 1 corresponding to rounded edges of the glass. Between the glass and the casing soft rubber 14 is used to seal the edges against rain.

It is of course understood that instead of the glass 5 any form of heat-resisting plastic or other material may be used.

The time limits of five, ten and twenty minute periods for the duration of flame from the flame producing powders is of course variable and may be changed as desired.

The glass front 5 of Fig. 5 may be substituted by separate screw-in bulbs 15 suggested in Fig. 6.

In order that the fuses 3 will be kept free from the rotating car axle, ring-type fuse holders 16 may be used where needed. The flat portion of these holders would be welded to the inside of the casing 12 so as to always keep the fuses 3 out of contact with the axle.

When screw-in bulbs 15 of Pyrex or other glass are used the front face of the casing 1 will be a part of the entire casing as a substitute for the glass 5 and the bulbs 15 may have screw-in bases similar to ordinary incandescent lamps protected by any kind of gasket to prevent rain entering the inside of the casing.

The practical utility of the different flame-producing powders in the compartments 8 for the blue, 9 for the yellow, and 10 for the red is to produce what may be called time signals that serve an important utilitarian safety purpose. These visual signals are a definite indication to railway operatives or even to casual observers that there exists a dangerous condition. The powder in compartment 8 will indicate that the danger has been in existence for the shortest period of time and that in the compartment 9 will indicate that the danger has existed for a longer time and the red signal in compartment 10 will indicate the longest duration of the danger. The heat transference from compartment to compartment, also, traverses the metal walls of the container.

The conductor 3 will transfer the initial heat from compartment to compartment through the wall of the container 1, thus serving as an alerting safety factor that comes into action automatically and by reason of the different time factors an observer will instantly know how serious the danger is. A single indicator would give no evidence whatever of how long the danger has existed. This is an important utility of great practical value.

If it should be found desirable to standardise the relation of the flame producing powders to each other and obviate the necessity of handling separate powders in the casing they may be assembled in a waterproof covered tube placed in the same relation as the separate powders shown in the drawing on Fig. 4. In which case the same and identical results are produced in an adapted

fusee unit in the casing connected to the fuse 3, instead of the separate heat responsive powders shown in Figure 5. In the event that the users may wish to standardise the use of the different flame producing powders they may be assembled as stated following the practice of a single color red fusee that is used in present day railway practice.

What I claim is:

1. In journal box indicators a closed casing having a restricted opening a transparent weather-proof cover along one side thereof for observation within said casing, inflammable partitions within the casing to divide it into compartments, separate time-consuming flame producing agents of different characteristics selectively arranged in said compartments, a car axle journal box, means for securing said casing to the box, a car axle terminating within said box, and a fuse means in operative contact with said box and reaching within said casing to ignite a selected one of said agents when a predetermined temperature is reached in said journal box whereby a flame signal of successively distinguishing characteristics is emitted from said restricted opening.

2. In a car axle journal box, a car axle terminating within the box, oil impregnated waste in said box and in engagement with the axle, a closed casing secured to the journal box having a restricted opening and containing a heat responsive flame producing means and a heat transferring fuse having a portion thereof in operative relation to the waste in said box and another portion in operative relation to the flame producing means in the casing.

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