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OVERHEATED JOURNAL BOX DETECTION SYSTEM COMPRISING
RADIOACTIVE SOURCE AND DETECTOR
Filed Dec. 27, 1956

3,090,859

FIG. 1

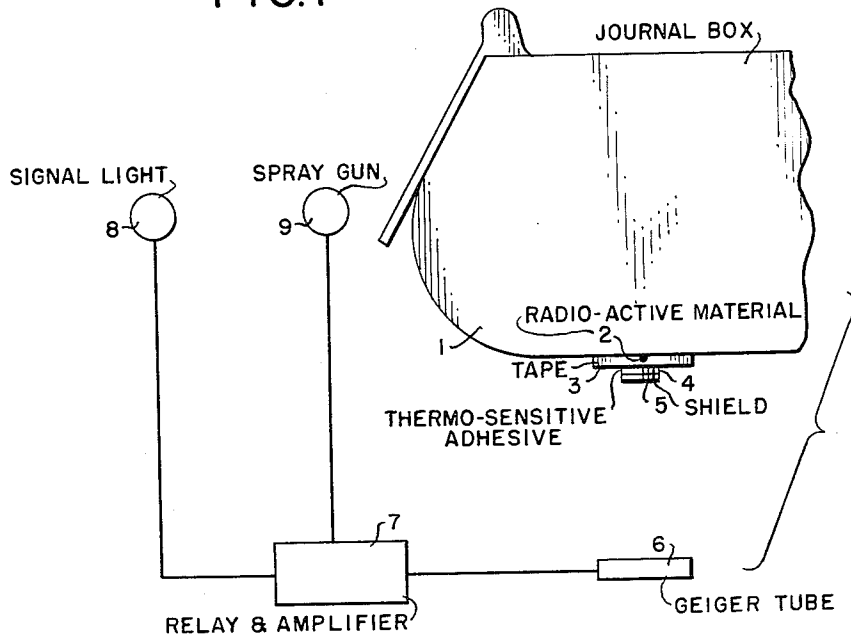
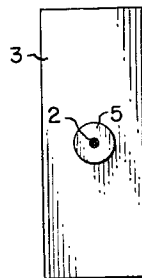


FIG. 2



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OVERHEATED JOURNAL BOX DETECTION SYSTEM COMPRISING RADIOACTIVE SOURCE AND DETECTOR
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1 Claim. (Cl. 246-169)

The chief aim of my invention is to solve the difficult and expensive railroad hot box problem at the minimum cost to railroads. This patent will efficiently permit the train crews to locate potential hot boxes in an eighty-five car train containing six hundred and eighty journal boxes.

This invention relates to an inexpensive and reliable thermo-sensitive device for detecting hot journal boxes of freight and passenger railcars. This device is attached only to the outside or a part of the railcar journal box and not attached to or part of any other part, such as, the wedge, crown, or journal, of the journal bearing mechanism. Furthermore this device can contain radio-active material with a protruding shield that is removable by insipient heat transferred through the metal journal box from the journal and bearing. A positive indication of each journal mechanism is obtained through heat transfer to the journal box and this device which effect may be observed by a Geiger counter by removal of a lead shield.

The following description of the invention refers to FIGURE 1, which is a longitudinal view of a railcar journal box. FIGURE 2 is a bottom view of the device as it appears attached to the journal. To the railcar journal box 1 is attached a radio-active material 2, secured by a tape 3. An adhesive 4 bonds a protruding material or shield 5 to the tape 3 and thus to the journal box 1. A Geiger counter 6 is horizontally positioned under the path of motion of the journal boxes and is connected to a suitable amplifier and relay 7, the latter being connected to a signal light 8 and to a suitably located paint sprayer 9.

This device is applied to all journal boxes 1 of either

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the sleeve or roller bearing journal mechanisms. The radio-active material 2 can be of the beta or gamma type ore, refined, by-product, or irradiated material. Tape 3 is of high temperature material with a permanent adhesive backing attaching it to the journal box. A thermo-sensitive adhesive 4, selected to fuse at a desired temperature less than 400° F., such as polyethylene, micro-crystalline wax, or other similar polymeric material provides a temperature-sensitive bonding of the shield 5 to the assembly.

The operation of the device schematically illustrated in the drawing will readily be understood from the above description. The shield 5 is released and drops from under the radioactive source 2 in response to reaching by the journal box of the fusion temperature of the adhesive 4. When a train of railroad cars having journal boxes equipped in this fashion is run over the Geiger counter 6, the actuation of the signal light 8 indicates the presence of a journal box which is or has been at a high temperature, i.e., a "hot box," the faulty journal box being marked by the paint sprayer 9.

Having thus described my invention, I claim:

In a railroad car, a journal box, a body of radioactive material on the under portion of the journal box, a shield adapted to absorb emanations from the radioactive material, and an adhesive having a fusion temperature of less than 400° F. between the shield and the journal box securing the shield under the radioactive material, whereby abnormal heating of the journal box may be detected by a radioactivity detector beneath its path.

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