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MONITORING SYSTEM FOR INDUCTIVE SIGNAL DEVICES

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FIG. 1

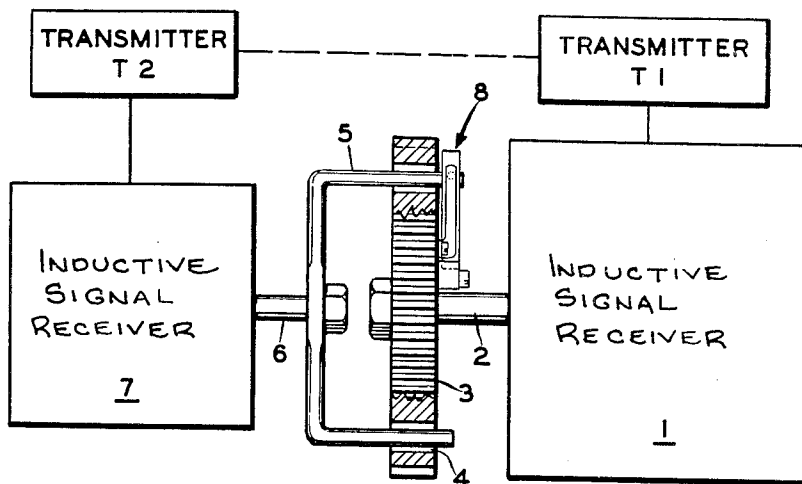
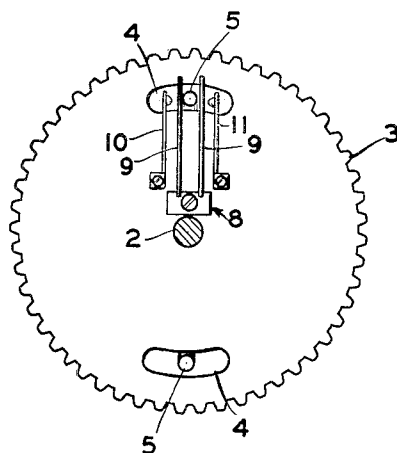


FIG. 2



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MONITORING SYSTEM FOR INDUCTIVE SIGNALING DEVICES

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9 Claims. (Cl. 340-268)

The present invention relates to electrical systems and more particularly to electrical systems in which the rotors of inductive signal devices are mechanically slaved together.

When an inductive signal tie system is used in critical applications it is desirable that some means be incorporated that will give an indication of electrical failure in the system. Conventional warning systems are not adapted to provide an indication due to the changing state of the system in normal operation.

The present invention provides a monitoring inductive signal device having its rotor mechanically connected to the rotor of the working inductive signal device through yieldable means that will give an indication of a difference in torque between the two devices. The inductive signal devices are connected statorwise to their respective inductive signal transmitters. The inductive signal transmitters are slaved rotorwise.

It is an object of the present invention to provide an improved electrical system.

Another object of the invention is to provide a fail-safe system for inductive signal devices.

Another object of the invention is to provide a novel means for indicating a failure in a mechanically slaved inductive signal device system.

The above and other objects and features of the invention will appear more fully hereinafter from a consideration of the following description taken in connection with the accompanying drawing wherein one embodiment of the invention is illustrated by way of example.

In the drawing:

Figure 1 is a diagrammatical presentation of two inductive signal devices mechanically slaved together.

Figure 2 is an end view of the slaved connection illustrated in Figure 1.

In the drawing an inductive signal receiver 1 is illustrated as having an output shaft 2 upon which is mounted a gear 3. The gear 3 may be connected to a feed back system (not shown). The gear 3 is provided with circumferential slots 4 adapted to receive a yoke 5 carried by shaft 6 of another inductive signal receiver 7. It is understood that the devices 1 and 7 are energized from respective signal transmitters T1 and T2 which are slaved together rotorwise or in any other conventional manner.

Mounted on the gear 3 is a switch mechanism 8 which comprises a pair of spring members 9 and contact members 10 and 11. The spring members 9 and the contact members 10 and 11 may be connected in a suitable electrical circuit (not shown) that could perform various alarm and transfer functions upon a failure occurring in the electrical system of one of the devices which would cause a difference in torque between the rotors of the two receivers. This would cause the yoke 5 to move in the slots 4 in a direction depending upon which device was lagging to actuate one or the other of the arms 9 into engagement with the contacts 10 or 11. If the devices are operating properly, there will be no tendency for one to pull the other and the yoke 5 will remain centered with

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respect to the spring members 9 and will not engage contacts 10 or 11. Hence it can be seen that any difference in torque will cause actuation of the switch mechanism 8 and thereby give an indication of failure.

Although only one embodiment of the invention has been illustrated and described, various changes in the form and relative arrangement of the parts which will now appear to those skilled in the art may be made without departing from the scope of the invention.

What is claimed is:

1. A monitoring system for a signal system having a signal transmitter and a signal receiver energized thereby, comprising a second signal transmitter, said transmitters including rotors slaved together, and a second signal receiver energized by the second transmitter, said receivers each including a rotor, and a yieldable driving coupling connecting the receiver rotors, arranged for deflection by differences in torque in the receiver rotors.

2. The combination as set forth in claim 1 and including electrical contact means actuated by the deflection in said yieldable coupling exceeding a predetermined amount.

3. A device for indicating a difference in torque between the rotors of two inductive transmitters, comprising a gear having a plurality of circumferential slots therein connected for rotation by one of said rotors, a yoke member connected for rotation by the other of said members and having fingers extending through said slots, spring means carried by said gear for centering at least one of said fingers in said slots, and contact means adapted to cooperate with said spring means upon a difference in torque between said rotors deflecting said spring means.

4. A device for indicating a difference in torque between two inductive signal devices normally energized to have the same speed of rotation, comprising a pair of contact members normally in an open position and both carried by one of said devices, one of said members including a spring movable into contact with the other member, and means including a yoke member carried by the other of said devices and bearing against said spring, for moving the spring to bring said spring contact members to a closed position by yoke pressure corresponding to the difference in torque between said devices exceeding the resistance of said spring to movement to said closed position.

5. In a signal system including a pair of inductive signal devices, each having a rotor, said devices being normally energized to produce substantially the same rate of rotation of the rotors, a monitoring system, comprising a member having an opening and mounted on the rotor of one of said devices, a first pair of spaced spring contact elements secured to said member and extending across said opening, a yoke mounted on the rotor of the other device and provided with a finger extending through said opening and positioned between said first pair of spring contact elements, a second pair of contact elements secured to said member, arranged on opposite sides of said first pair of contact elements and normally out of engagement therewith, arranged for deflection of one of the first pair of contact members into engagement with one of the second pair of contact members to close a circuit when the finger is deflected by a difference in torque between said rotors.

6. A monitoring system for a signal system having a transmitter provided with a rotor, comprising a first receiver energized by the transmitter and including a rotor, a second transmitter including a rotor slaved to said first transmitter rotor, a second receiver energized by the second transmitter and including a rotor, a yieldable element mounted on one receiver rotor, and actuating means mounted on the other receiver rotor and engaging said

yieldable element, for deflecting the yieldable element when said receiver rotors revolve at different speeds.

7. A monitoring system for a signal system, comprising two electrically actuated devices, each including a rotor, said rotors being positioned in opposed coaxial relationship, a spring element and a spaced contact element mounted on one rotor and an actuating means mounted on the other rotor and engaging the spring element, for deflecting the spring element into engagement with the contact element when said rotors revolve out of synchronism.

8. A monitoring system for a signal system including two electrically actuated devices, each provided with a rotor, said rotors being positioned in opposed coaxial relationship, comprising a spring element and spaced contact elements on opposite sides of the spring element mounted on one rotor, and an actuating element mounted on the other rotor and engaging the spring element, arranged to deflect the spring element into engagement with either of the contact elements when the rotors revolve out of synchronism.

9. A monitoring system for a signal system, comprising two electrically actuated devices, each including a rotor, the rotors being arranged in opposed coaxial relation, a first member mounted on one rotor and having an arcuate coaxial slot, a spring element mounted on said member and extending across the slot, a contact element mounted on the member and spaced from the spring element, and an actuating element mounted on the other rotor, extending through said slot into engagement with a spring element, arranged to deflect the spring element into engagement with the contact element when said rotors revolve out of synchronism and to abut the ends of the slot to limit relative movement of said rotors.

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