

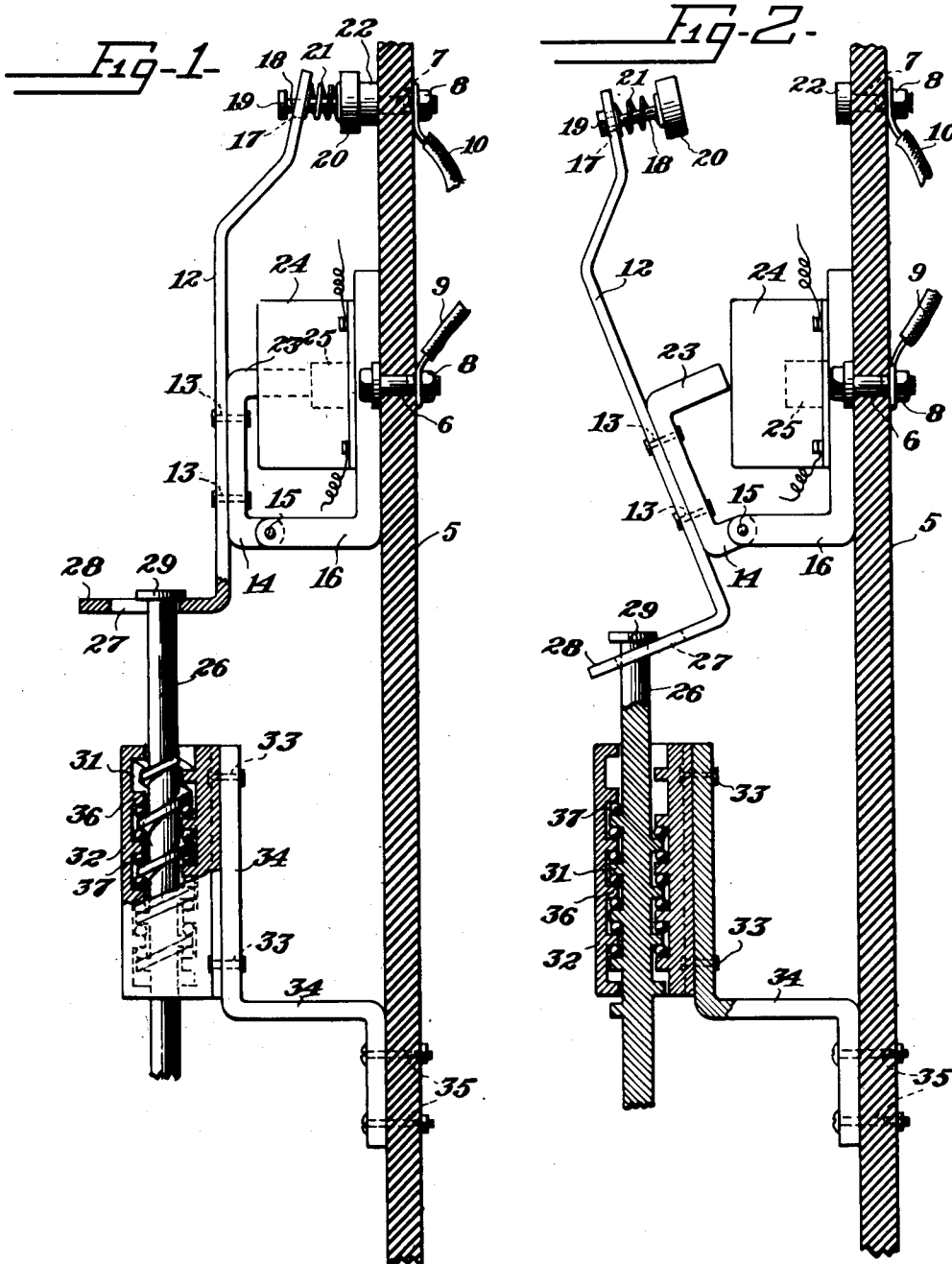
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TIME LAG DEVICE

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TIME LAG DEVICE

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This invention relates to time lag devices useful in many arts but hereinafter shown as applied to the electrical art, to delay the closing of a circuit until a predetermined time after a certain incident or event has occurred.

The invention has for one of its objects the provision of a mechanical device for producing a time lag instead of the usual electrical devices and train of gears heretofore respectively employed.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawing which forms part of the application, with the understanding, however, that the improvement is capable of extended application and is not confined to the exact showing of the drawing nor to the precise construction described and, therefore, such changes and modifications may be made therefrom as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claim.

In the drawing:

Fig. 1 is an elevational view, partly in section, of my time lag device associated with the electrical apparatus, the electrical apparatus being shown in this figure in closed position; and

Fig. 2 is a view similar to Fig. 1, the electrical apparatus in this view being shown in open position.

Referring to the drawing for a more detailed description thereof, the numeral 5 indicates a panel with insulating material through which pass bolts 6 and 7, said bolts being in contact with and adapted to hold in cooperation with nuts 8, conductors 9 and 10, respectively, said conductors being part of an electrical circuit. Means for closing the mentioned electrical circuit comprises an arm 12 secured by means of rivets 13 to a lever 14 pivotally connected at 15 to a bracket 16 held to the panel 5 by means of the bolt 6. The arm 12 has an aperture 17 adjacent its upper end through which aperture passes a bolt 18 provided with a retaining head 19 at one end and provided at its other end with a contactor 20, the mentioned

bolt 19 being encircled between the contactor 20 and the arm 12 by a helical coil 21 adapted to expand lengthwise, the aperture 17 being of greater diameter than the bolt 18 to allow for the movement of the bolt. The contactor 20 is adapted to contact with another contactor 22 carried by the bolt 7. When the contactor 20 touches the contactor 22 the mentioned electrical circuit is closed, said circuit including the conductor 9, the bolt 6, the bracket 16, the lever 14, the arm 12, the bolt 18, the contactors 20 and 22, the bolt 7 and the conductor 10. The portion 23 of the lever 14 constitutes a movable core for a solenoid 24 which, when energized, draws or pulls in the core 23 and the arm 12 which is connected to said core, the core being pulled in sufficiently to allow the contactors 20 and 22 to touch each other. The solenoid 24 may be provided with a stationary core 25 so that when the solenoid is energized the stationary core will insist on pulling in the movable core 23.

In order to delay the closing of the mentioned electrical circuit until a predetermined time after the solenoid 24 is energized I provide a time lag device comprising a movable bolt 26, the upper end of which passes through an elongated slot 27 formed in the end portion 28 of the arm 12, said portion 28 being bent at right angles to the main or intermediate section of the arm 12. The slot 27 is narrower than the retaining head 29 provided at the top of the bolt 26 so that the mentioned head has a bearing surface on the mentioned portion 28, said elongated slot 27 being longer than the diameter of the bolt 26 to allow movement of the portion 28 relative to the bolt, it being understood that the arm 12 swings from the pivot 15. The bolt 26 is provided with external threads 31 of wide pitch and said bolt is encircled by a nut 32 fixedly mounted by means of rivets 33 to a bracket 34 mounted on the panel 5 by means of bolts 35. The nut 32 is interiorly threaded and the threads correspond in pitch to the threads 31 of the bolt 26, the threads of the nut being designated by the numeral 36. The pitch of the threads on the bolt and the nut is such as to allow the bolt to

turn in the nut when a longitudinal pull is exerted on the bolt. The threads of the mentioned bolt and nut are preferably not in contact with each other but separated by means of ball bearings 37 in order to minimize the friction between the bolt and the nut.

When the solenoid 24 is energized, the core 23 is pulled into the solenoid and the arm 12 moves toward the panel 5; the contactors 20 and 22, however, do not immediately contact with each other on account of the retarding action of the bolt 26. That is to say, the bolt 26 must be pulled upwardly a certain distance before the contactors 20 and 22 can touch each other, it being understood that the time lag or delay caused by the bolt 26 is due to the rotational motion which it is necessary for the bolt 26 to have.

What is claimed as new is:

The combination of a vertically swinging pivotally supported member adapted for controlling an electric switch, an outturned slotted ear on said member, a bracket fixedly mounted below said member and having a vertical extension directed toward said member, an internally threaded nut carried by said bracket, a threaded bolt engaged in said nut and passed upwardly through the slotted ear, the threads of said bolt and nut being of wide pitch, anti-friction bearings interfitted with the threads of the nut and bolt, and a head on the bolt for positively connecting it with the slotted ear.

In testimony whereof I hereby affix my signature.

HARRIS L. LAVEN.

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