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J. M. MEILE

AUTOMATIC CIRCUIT CONTROLLING DEVICE FOR POWER OPERATED VEHICLES

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Fig-1.

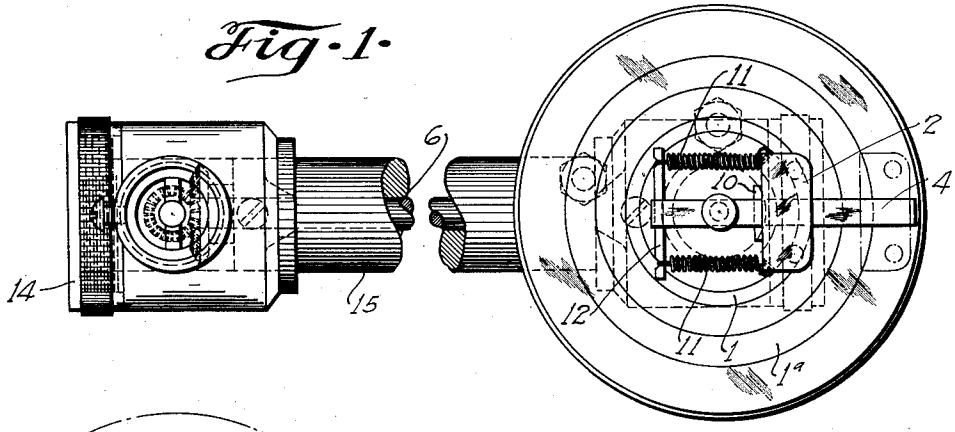
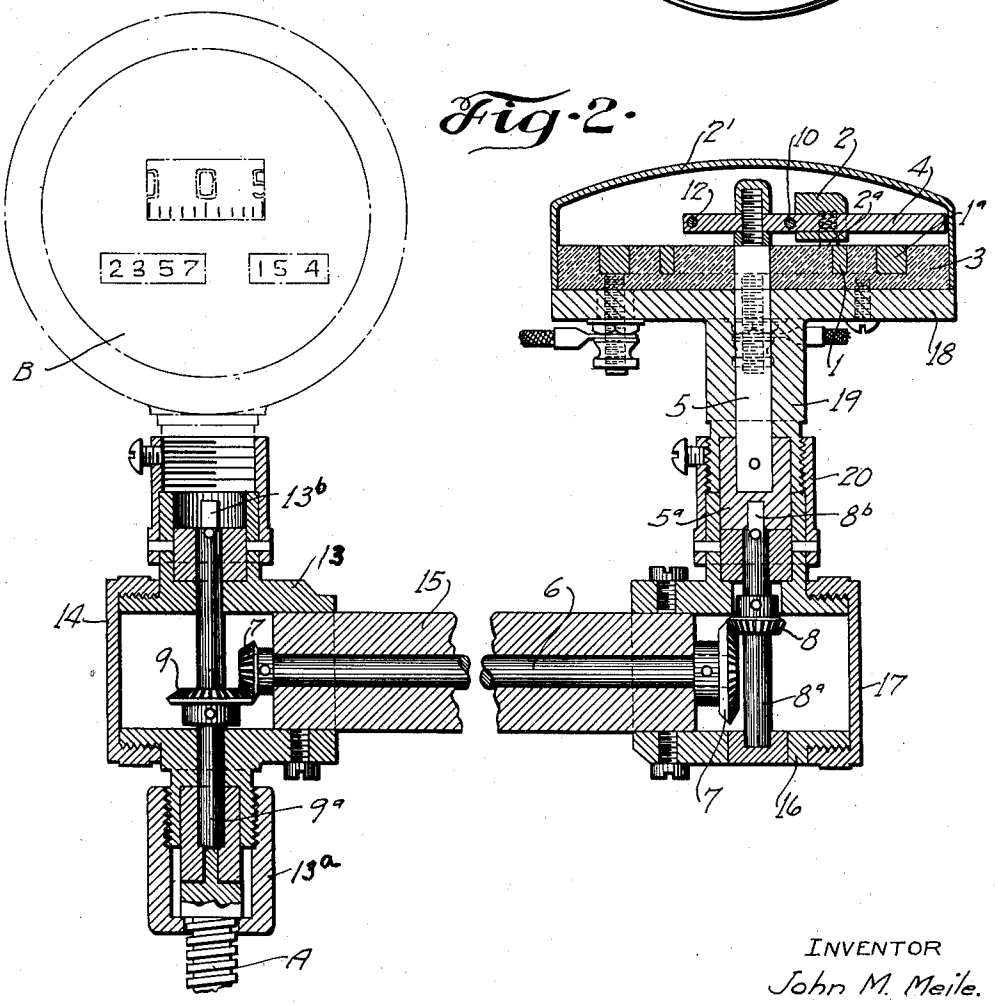


Fig-2.



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AUTOMATIC CIRCUIT-CONTROLLING DEVICE FOR POWER-OPERATED VEHICLES.

Application filed February 28, 1921. Serial No. 448,680.

To all whom it may concern:

Be it known that I, JOHN M. MEILE, a citizen of the United States, residing at East St. Louis, Illinois, have invented a certain new and useful Improvement in Automatic Circuit-Controlling Devices for Power-Operated Vehicles, of which the following as a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a circuit controlling device for power operated vehicles that will automatically open, close or shunt an electric circuit or a plurality of electric circuits according to variations in the speed of the vehicle on which the device is used.

The main object of my invention is to provide an efficient automatic circuit controlling device of the character referred to that is compact, easy to install and of simple design and inexpensive construction.

To this end I have devised a controlling device which in its simplest form consists of a stationary contact arranged in an electric circuit, a co-operating movable contact and means for causing said movable contact to move automatically into and out of engagement with said stationary contact so as to change the condition of said circuit as the speed of the vehicle varies. Such a controlling device can be used for various purposes, but it is particularly adapted for automatically cutting out the ignition mechanism of a power operated vehicle when the vehicle exceeds a certain predetermined speed, due to the fact that the speed of the vehicle, and not the speed of the engine of the vehicle, is what effects a change in the condition of the controlled circuit. Accordingly, when it is used on a power operated truck, it is possible to operate the engine of the truck at a very high speed, as is necessary when the truck becomes stuck, in a mud hole, without danger of cutting out the ignition mechanism, a thing that is not possible with speed regulating devices of the kind heretofore in use which were so constructed that the ignition mechanism would be rendered inoperative or cut out of commission when the engine exceeded a certain speed. It is also particularly adapted for automatically controlling an electrically-operated traffic directing signal of the kind illustrated in my pending application Serial No. 448,679, filed February 28, 1921.

Figure 1 of the drawings is a top plan view of an automatic circuit controlling device constructed in accordance with my invention; and

Figure 2 is a vertical sectional view of said device.

Referring to the drawings which illustrate the preferred form of my invention, A designates a moving part of a power-operated vehicle whose speed varies as the speed of the vehicle varies. In the form of my invention herein illustrated the part A consists of the speedometer shaft of the vehicle, but I wish it to be understood that my broad idea is not restricted to a circuit controlling device operated by the speedometer shaft of the vehicle on which the device is used.

My improved device comprises a stationary contact 1 that forms part of an electric circuit which it is desired to open and close automatically as the speed of the vehicle varies, a co-operating movable contact 2 that is grounded and a means operated by the moving part A of the vehicle for causing the movable contact 2 to move into and out of engagement with the stationary contact 1 automatically, according to variations in the speed of the vehicle. The device may comprise one or more additional stationary contacts 1^a arranged in an independent circuit, or a plurality of independent circuits which it is desired to control automatically. In the form of my invention herein illustrated the stationary contacts 1 and 1^a consist of ring-shaped members of electrical conducting material arranged one within the other in a block of insulating material 3 and provided with binding posts, as shown in Figure 2, for electrically connecting said contacts to the circuits of which they form a part. The movable contact 2 is slidingly mounted on a horizontally-disposed arm 4 that projects laterally from the upper end of a vertically-disposed shaft 5 which passes upwardly through the block of insulating material 3, and said shaft 5 is operatively connected with the speedometer shaft A of the vehicle by means of a horizontally-disposed drive shaft 6 provided at its opposite ends with beveled gears 7 that mesh with a beveled gear 8 connected to a short shaft 8^a to which the shaft 5 is joined, and a beveled gear 9 connected to a short shaft 9^a to which the speedometer shaft A is joined. The movable contact 2 is nor-

mally held in engagement with a stop 10 on the arm 4 by any suitable means, such, for example, as springs 11 secured to a cross piece 12 on said arm, as shown in Figure 1. When the shaft 5 rotates the movable contact 2 on the arm 4 on said shaft moves outwardly, due to centrifugal force, thereby causing said contact 2 to move automatically into and out of engagement with the stationary contacts 1 and 1^a, and thus automatically open and close the circuits in which the contacts 1 and 1^a are arranged. For example, the device can be so constructed that when the vehicle is traveling at a comparatively slow speed the contact 2 will occupy such a position that it bears upon the contact 1, thus maintaining the circuit in which the contact 1 is arranged in a certain condition, for example, closed. When the speed of the vehicle is increased beyond a certain point the contact 2 moves outwardly farther on the arm 4, due, of course, to the greater centrifugal force produced by the increase in the speed of the shaft 5, thereby causing the contact 2 to move out of engagement with the contact 1 and automatically open the controlled circuit. If the speed of the vehicle is increased still further, the contact 2 moves outwardly into engagement with the contact 1^a, thus closing the circuit in which the contact 1^a is arranged. When the speed of the vehicle is decreased the contact 2 will move inwardly on the arm 4, thus opening the circuit in which the contact 1^a is arranged when the contact 2 leaves the contact 1^a and closing the circuit in which the contact 1 is arranged when the contact 2 engages said contact 1.

The device is so constructed that it can be easily connected to and disconnected from the speedometer shaft of a power operated vehicle so as to facilitate the installation or removal of the device. In the form of my invention herein illustrated the short, vertically-disposed shaft 9^a which drives the horizontal shaft 6 is journaled in a bearing 13 and is provided at its lower end with a coupling 13^a of such construction that it can be slipped into engagement with the conventional speedometer shaft A. At the upper end of the shaft 9^a is a lug or non-circular-shaped projection 13^b, by means of which said shaft 9^a can be connected to the head or actuating device of a conventional speedometer B, indicated in broken lines in Figure 2. The bearing member 13 is hollow so that it can be packed with a lubricant and the lubricant space in said member is closed by a removable cap 14. Projecting laterally from the bearing member 13 is a horizontally-disposed support 15 in which the shaft 6 is journaled, and said support 15 is provided at one end with a bearing member 16 in which the short, vertical shaft 8^a is journaled, said bearing member 16 also being provided with a hollow space closed by a removable cap 17 and adapted to be filled with a lubricant. The insulating member 3 in which the stationary contacts 1 and 1^a are imbedded is preferably carried by a horizontally-disposed plate 18 provided on its under side with an extension 19 that is detachably connected to the bearing 16 by means of a sleeve 20, the shaft 5 being journaled in the depending portion 19 of the plate 18 and provided at its lower end with a coupling member 5^a equipped with a slot for receiving a lug or non-circular-shaped projection 8^b on the upper end of the shaft 8^a, thereby permitting the part 18 of the device and the stationary and movable contacts to be easily disconnected as a unit from the driving shaft 6. The movable contact 2 is preferably provided with one or more spring-pressed plungers 2^a that slide upon the top face of the insulating block 3, and thus establish electrical connection between said contact and the stationary contacts 1 and 1^a, and said insulating block and the arm 4 on which the movable contact slides are covered by a removable cap 2′ that can be retained in position in any preferred manner.

An automatic circuit controlling device of the construction above described is of inexpensive construction and of such simple design that it is not liable to get out of order when in use; it can be applied easily to a power operated vehicle by simply arranging the bearing member 13 between the speedometer shaft of the vehicle and the head or actuating device of the speedometer, and it forms a very efficient automatic controlling means for a traffic directing indicator or for the ignition mechanism of a truck or other vehicle in which it is desired to prevent the vehicle from being run above a certain speed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a circuit controlling device for power operated vehicles, comprising a horizontally-disposed circular-shaped stationary contact arranged in a circuit that is to be controlled, a rotating shaft arranged in concentric relation with said contact, a laterally-projecting support on said shaft arranged above said contact, a movable contact slidingly mounted on said support and adapted to co-operate with said stationary contact, and a resilient means that tends to resist the outward movement of said movable contact on said arm.

2. A circuit controlling device for power operated vehicles, comprising a horizontally-disposed ring-shaped stationary contact forming part of a controlled electric circuit

and arranged in a block of insulating material, a rotatable vertical shaft passing through said block and provided with a laterally-projecting arm that overhangs said block, a movable contact slidingly mounted on said arm and adapted to engage said stationary contact, and a resilient means that exerts pressure on said movable contact and thus counteracts the force which tends to cause said movable contact to move outwardly on said arm when said shaft is in operation.

3. A circuit controlling device for power operated vehicles, comprising a horizontally-disposed supporting plate, a block of insulating material mounted on the top side of said plate and provided with a stationary contact, a vertically-disposed, rotatable shaft projecting upwardly through said plate and insulating material, a laterally-projecting arm on said shaft, a movable contact slidingly mounted on said arm, a resilient means which tends to hold said movable contact in proximity to said shaft, and an operating mechanism for said shaft comprising a part adapted to be interposed between the speedometer head and the speedometer shaft of the vehicle, and means for transmitting movement from said part to said shaft.

4. A circuit controlling device for power operated vehicles, comprising a stationary contact, a rotatable shaft provided with an arm, a spring controlled, movable contact slidingly mounted on said arm and arranged to move into and out of engagement with said stationary contact, and an operating mechanism for said shaft comprising a horizontally-disposed shaft, gears for connecting said horizontally-disposed shaft to the speedometer shaft of the vehicle and to said rotatable shaft, and bearings provided with hollow spaces in which a lubricating medium can be placed to lubricate said gears.

JOHN M. MEILE.