Aug. 21, 1928. 1,681,756

W. G. WHITLOW

CIRCUIT BREAKER

Filed May 1, 1926

Fig. 1.

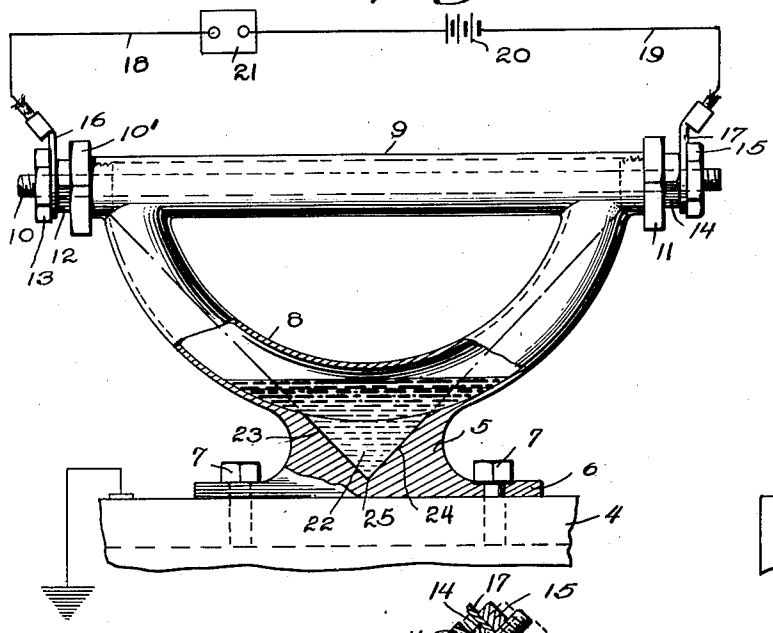


Fig. 2.

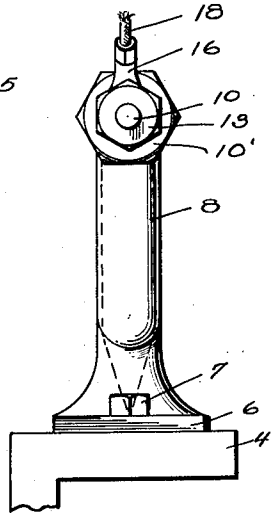
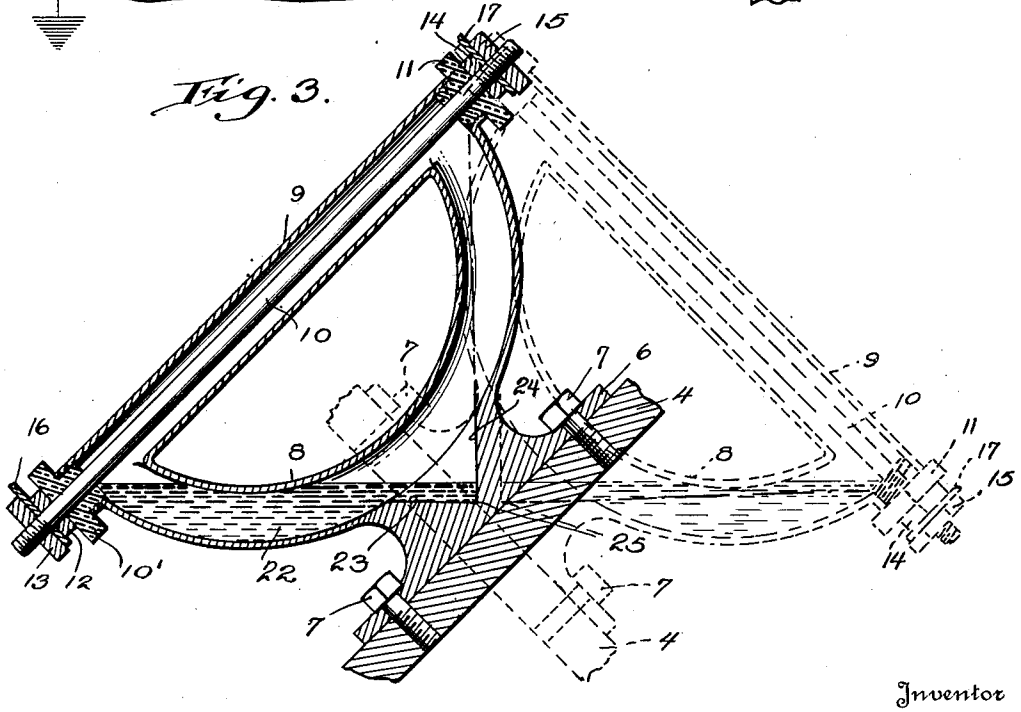


Fig. 3.



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CIRCUIT BREAKER.

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The present invention relates to improvements in circuit breakers and refers more particularly to a circuit breaker for automotive purposes and the like, in which the ignition circuit of the internal combustion engine of tractors may be interrupted when the tractor, in the course of going over rough ground, becomes tilted at a dangerous angle.

Another object of the invention is to provide a device of simplified form and construction in which faithfulness of operation will be secured at minimum cost and in which the device will admit of ready installment upon existing engine constructions.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a front elevation, with parts shown in section, of an improved circuit breaker constructed according to the present invention.

Figure 2 is an end view of the same, and

Figure 3 is a vertical section showing in full and dotted lines opposite tilted positions of the device.

Referring more particularly to the drawings 4 designates a portion of a tractor or other vehicle frame or part secured to such frame and 5 designates the pedestal of the improved attachment having the perforated flange 6 through which the attaching bolts or screws 7 pass. These bolts or screws are secured in the frame part 4 whereby the device is rigidly attached to the tractor and is caused to tilt with the tractor in passing over inclinations in the ground.

The pedestal 5 carries a curved hollow tube 8 the lower intermediate portion of which is central of the pedestal 5 and the upper ends of which connect with a horiozntal tube 9 through which extends the conductor rod 10. Both the tubes 8 and 9 and the conductor rod 10 are of metal but the conductor rod is insulated from the tube 9 by the insulating bushings 10′ and 11 which form closures for the ends of the tube 9, the ends of such tube 9 being threaded to receive the threaded shanks of the bushings 10′ and 11. The outer ends of the rod 10 are threaded to receive the binding nuts 12, 13, 14 and 15 between which the terminals 16 and 17 of the leads or conductor wires 18 and 19 are secured. These conductor wires connect the rod 10 in a circuit with a battery or other source of electrical energy 20 and a coil 21. The circuit represented in Figure 1 is intended to be the ignition circuit of the internal combustion engine of the vehicle upon which the device is carried.

The base or pedestal 5 is provided with the central internal socket or recess 22 of substantially V-shape having the inclined walls 23 and 24 converging downwardly to the apex point 25 at the base of the socket. The wider upper portion of the socket opens into the intermediate portion of the curved tube 8 and a body of mercury up to a suitable level is placed in this tube and in the cavity or recess.

In the operation of the invention, the ignition circuit is normally closed during operation of the vehicle through the conductor rod 10. When the U or curved tube is tilted, however to such position, as indicated in Figure 3, that the mercury, or other metallic or conducting fluid, flows around in the U-shaped tube and enters the end of the tube 9 to such degree that it comes in contact with the end of the conducting rod 10, then the coil will be short circuited and the engine stopped.

The angle at which this short circuiting will occur can be regulated by the mass or quantity of the mercury placed in the tube or by the depth or formation of the cavity 22 as by changing the angle of the walls 22 and 24 and varying the angle of repose. It will be seen that, in the instance shown, the projected lines of the walls 23 and 24 of the cavity are substantially tangents to the inner upper portion of the U tube and such projected lines extend up to the insulating bushings 10′ and 11. When tilted to the position indicated in Figure 3 the upper curved wall of the U tube will dip below the new surface level of the liquid and cause displacement at the upper end portions of the liquid body insuring the contact of the mercury with the conducting rod 10.

Figure 3 shows in full lines the position taken by the device when the tractor is tilted in going for instance up hill, while in dotted lines the similar inclined or angular position is indicated in descending a hill. The ar-

rangement will act to close off the motor circuit in either event.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:—

1. A circuit breaker comprising a U-shaped tube having a V-shaped cavity at its central portion extending on the convex side thereof, a base for the tube extending about said cavity whereby the tube is secured to a fixed support, a horizontal tube extending across from one end to the other of the U-tube and communicating at its end with the end portions of the U-tube, perforated insulating bushings in the ends of the horizontal tube, a metallic conductor rod carried through the perforated bushings and extending centrally through the horizontal tube, a circuit connected to the ends of the rod, and a metallic liquid body in the U-tube.

2. A circuit breaker comprising a substantially U-shaped tube having a cavity at its central portion extending downwardly therefrom and communicating with the interior of the tube, a body of metallic liquid in the tube and cavity, a horizontal tube extending across from one end to the other of the U-tube and communicating at its ends with the end portions of the U-tube, a metallic conductor rod extending through said horizontal tube and insulated therefrom, and an external circuit connected with the ends of said rod.

3. A circuit breaker comprising a curved tube having its intermediate portion disposed downwardly and provided with a depressed cavity, a floating body of mercury mounted in said tube and cavity, a horizontal tube communicating at its ends with the end portions of the curved tube, a metallic conductor rod extending through said horizontal tube and accessible to the body of liquid mercury on tilting of the curved tube, and an external circuit connected to said metallic conductor rod.

In testimony whereof I affix my signature.

WALTER G. WHITLOW.