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2,294,122

IGNITION CIRCUIT BREAKER

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Fig. 1.

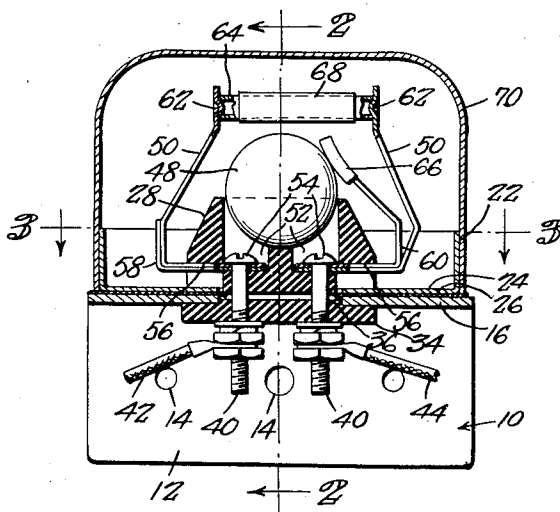


Fig. 2.

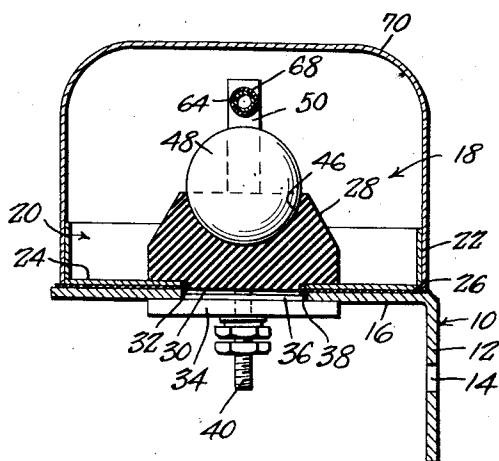
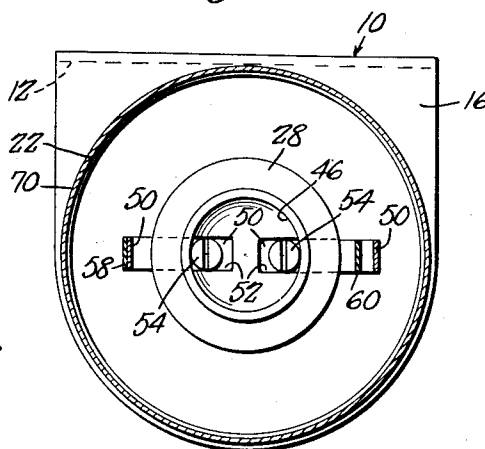


Fig. 3.



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IGNITION CIRCUIT BREAKER

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Application November 17, 1941, Serial No. 419,502

7 Claims. (Cl. 200—52)

My invention relates to automotive vehicle ignition circuits, and has among its objects and advantages the provision of an improved circuit breaker for opening the ignition circuit under abnormal conditions, such as when the vehicle is involved in a collision or turns over.

In the accompanying drawing:

Figure 1 is a vertical sectional view of a circuit breaker in accordance with my invention;

Figure 2 is a sectional view along the line 2—2 of Figure 1; and

Figure 3 is a sectional view along the line 3—3 of Figure 1.

In the embodiment selected for illustration, I make use of an angle bracket 10 having its plate 12 provided with openings 14 through the medium of which the bracket may be bolted to any suitable part on the vehicle. A plate 16 of the angle bracket serves as a mount for the circuit breaker 18, and the bracket is so secured as to support the plate 16 horizontally.

Upon the plate 16 is mounted a dish-like member 20 having an upstanding circular wall 22 and a bottom 24 separated from the plate 16 by insulation 26. Upon the bottom 24 is mounted a body 28 of insulating material, which body is provided with a boss 30 receivable in an opening 32 in the bottom 24. A washer 34 of insulating material is positioned underneath the plate 16 and is provided with a boss 36 fitting in an opening 38 in the plate 16 and coaxially positioned with respect to the opening 32.

Terminal screws 40 pass through aligned openings in the body 28 and the washer 34 for clamping the parts securely to the plate 16 and at the same time fixedly securing the member 20. One screw 40 serves as a connection for a wire 42 which is electrically connected with the coil of the ignition system, while the other screw 40 serves as a connection for a wire 44 which is electrically connected with the distributor of the vehicle.

The upper face of the body 28 is provided with a recess 46 for the reception of a free ball 48 which may be dislodged from the recess only upon violent impact, such as when the vehicle is in collision or turns over. The ball 48 lies snugly against the wall face of the recess 46, and the depth of the recess is slightly less than the radius of the ball.

Two spring conductors 50 are in electrical engagement with the respective terminal screws 40, the screws passing through openings in the contacts. Recesses 52 are provided in the body 28 for accommodating the heads 54 of the terminal screws 40, and the heads press the conductors 50 firmly against the bottom faces of the recesses 52, the body 28 being provided with openings 56 for entry of the conductors 50. A stiffening angle 58 is interposed between one of the conductors

50 and the bottom wall of its respective recess 52, while a ball retaining spring 60 is interposed between the other conductor 50 and one wall face of the respective opening 56.

Conductors 50 extend upwardly in converging relationship and are distorted near the upper ends to provide lugs 62 receivable in the ends of a tubular conductor member 64 of such length as to place the conductors 50 under the necessary degree of flexure to support the conductor 64 against displacement under normal operating conditions.

The upper end of the retaining spring 60 is provided with an insulating sleeve 66 pressed against the ball 48 to hold the ball in the recess 46. This spring holds the ball in the recess during normal operating conditions, but when the vehicle is subjected to a collision impact or turns over the ball 48 dislodges from the recess 46 against the tension of the retaining spring 60. The conductor 64 is provided with an insulating sleeve 68 located above the ball 48 and spaced slightly therefrom. Thus when the ball 48 is discharged from the recess, the ball strikes the conductor member 64 and drives it out of engagement with the conductors 50 to break the ignition circuit.

Member 20 serves as a receptacle for the conductor 64 and the ball 48. A cover 70 is provided for frictional engagement with the wall 22 to provide a closure for the member 20 to prevent loss of the ball 48 and the conductor member 64 when dislodged from their respective normal positions. The conductor 50 adjacent the retaining spring 60 is spaced sufficiently far therefrom to provide the necessary clearance for the spring.

Without further elaboration, the foregoing will so fully illustrate my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A vehicle ignition circuit breaker comprising a support, an insulative body carried by said support and provided with a recess in the upper face thereof, spaced ignition circuit conductors fixed with respect to said insulative body and extending upwardly to positions above said insulative body, a conductor member releasably pressed between said first mentioned conductors, a free body lying in said recess underneath said conductor member for engagement therewith to drive the conductor member out of electrical engagement with said first-mentioned conductors when said free body is dislodged from said recess through collision impact or overturning of the vehicle, and a resilient retaining means fixed with respect to said insulative body and engaging said free body to yieldingly hold the free body in said recess

during normal movement and position of the vehicle.

2. A vehicle ignition circuit breaker comprising a support, an insulative body carried by said support and provided with a recess in the upper face thereof, spaced ignition circuit conductors extending upwardly to positions above said insulative body, a conductor member releasably pressed between said first mentioned conductors, a free body lying in said recess underneath said conductor member for engagement therewith to drive the conductor member out of electrical engagement with said first-mentioned conductors when said free body is dislodged from said recess through collision impact or overturning of the vehicle, a resilient retaining means fixed with respect to said insulative body and engaging said free body to yieldingly hold the free body in said recess during normal movement and position of the vehicle, and circuit terminal screws securing said first-mentioned conductors to said insulative body.

3. A vehicle ignition circuit breaker comprising a support, an insulative body carried by said support and provided with a recess in the upper face thereof, spaced ignition circuit conductors fixed with respect to said insulative body and extending upwardly to positions above said insulative body, a conductor member releasably pressed between said first-mentioned conductors, a free body lying in said recess underneath said conductor member for engagement therewith to drive the conductor member out of electrical engagement with said first-mentioned conductors when said free body is dislodged from said recess through collision impact or overturning of the vehicle, a resilient retaining means fixed with respect to said insulative body and engaging said free body to yieldingly hold the free body in said recess during normal movement and position of the vehicle, and a receptacle means for the dislodged conductor member and free body.

4. A vehicle ignition circuit breaker comprising a support, an insulative body carried by said support and provided with a recess in the upper face thereof, spaced ignition circuit conductors extending upwardly to positions above said insulative body, a conductor member releasably pressed between said first-mentioned conductors, a free body lying in said recess underneath said conductor member for engagement therewith to drive the conductor member out of electrical engagement with said first-mentioned conductors when said free body is dislodged from said recess through collision impact or overturning of the vehicle, a resilient retaining means engaging said free body to yieldingly hold the body in said recess during normal movement and position of the vehicle, circuit terminal screws securing said first-mentioned conductors and said resilient retaining means to said insulative body, and a receptacle having a detachable cover for the dislodged free conductor and free body.

5. A vehicle ignition circuit breaker comprising a bracket having a horizontal flange provided with an opening, a dish-like receptacle mounted on said flange and insulated therefrom, said receptacle having an opening coaxially positioned with respect to said first opening, an insulative body mounted inside said receptacle and having a recess in its upper face, spring conductors extending upwardly to positions

above said insulative body, terminal screw means connected with said spring conductors and extending through said openings, an insulative washer lying underneath said flange and provided with openings for the reception of said terminal screw means, a conductor member pressed between said spring conductors above said insulative body, and a free ball lying in said recess underneath said conductor member for engagement therewith to drive the conductor member out of electrical engagement with said spring conductors when said free ball is dislodged from said recess through collision impact or overturning of the vehicle.

6. A vehicle ignition circuit breaker comprising a bracket having a horizontal flange provided with an opening, a dish-like receptacle mounted on said flange and insulated therefrom, said receptacle having an opening coaxially positioned with respect to said first opening, an insulative body mounted inside said receptacle and having a recess in its upper face, spring conductors extending upwardly to positions above said insulative body, terminal screw means connected with said spring conductors and extending through said openings, an insulative washer lying underneath said flange and provided with openings for the reception of said terminal screw means, a conductor member pressed between said spring conductors above said insulative body, a free ball lying in said recess underneath said conductor member for engagement therewith to drive the conductor member out of electrical engagement with said spring conductors when said free ball is dislodged from said recess through collision impact or overturning of the vehicle, and a spring engageable with said free ball to yieldingly hold the ball in said recess during normal operation of the vehicle, said terminal screw means fixedly securing said spring conductors and said spring to said insulative body.

7. A vehicle ignition circuit breaker comprising a bracket having a horizontal flange provided with an opening, a dish-like receptacle mounted on said flange and insulated therefrom, said receptacle having an opening coaxially positioned with respect to said first opening, an insulative body mounted inside said receptacle and having a recess in its upper face, spring conductors extending upwardly to positions above said insulative body, terminal screw means connected with said spring conductors and extending through said openings, an insulative washer lying underneath said flange and provided with openings for the reception of said terminal screw means, a conductor member releasably pressed between said spring conductors above said insulative body, a free ball lying in said recess underneath said conductor member for engagement therewith to drive the conductor member out of electrical engagement with said spring conductors when said free ball is dislodged from said recess through collision impact or overturning of the vehicle, a spring engageable with said free ball to yieldingly hold the ball in said recess during normal operation of the vehicle, and insulation on said spring engaging said free ball and on said conductor member engageable by the free ball, said terminal screw means fixedly securing said spring conductors and said spring to said insulative body.

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