Jan. 5, 1943. W. O. BARNET 2,307,718

CIRCUIT BREAKER

Filed Sept. 6, 1940

Fig 1

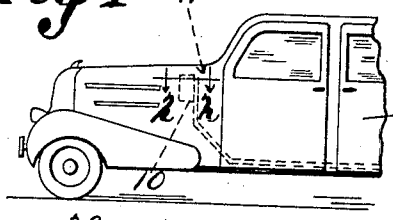


Fig 2

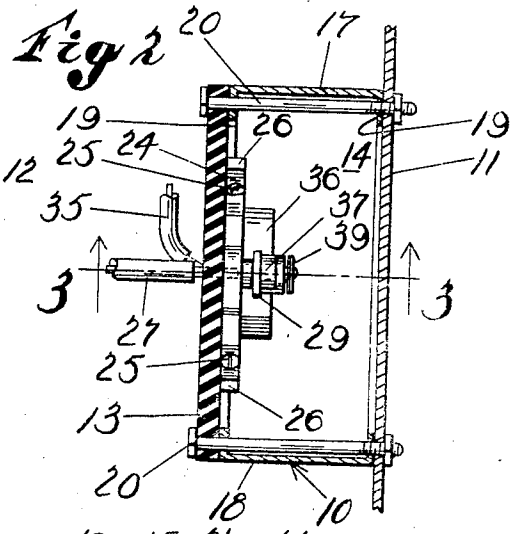
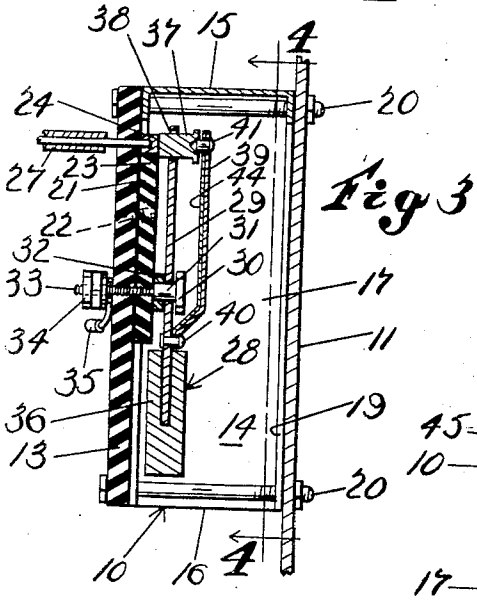


Fig 3



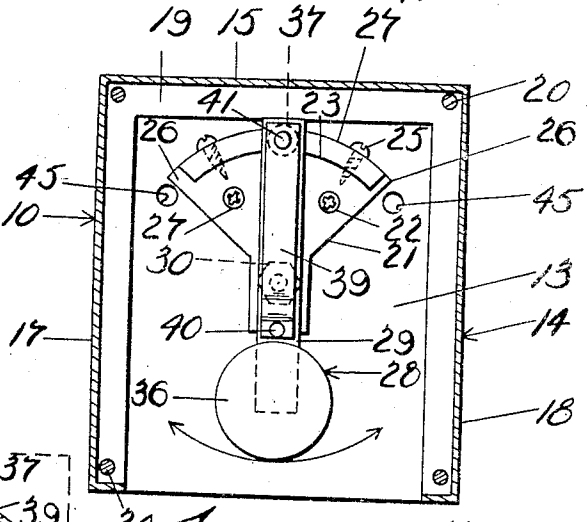
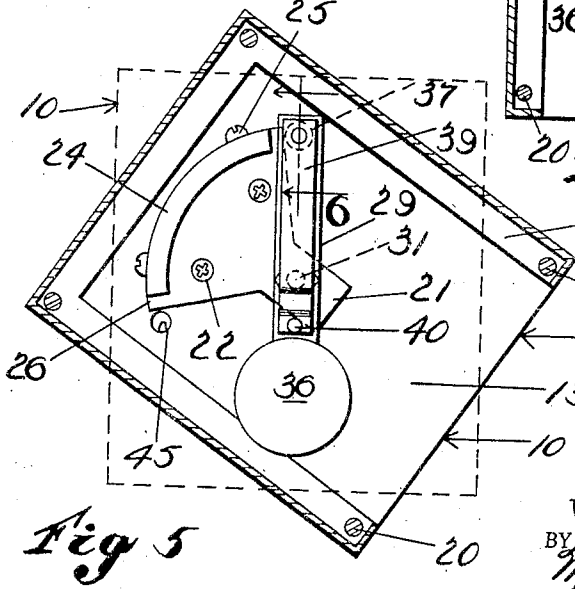


Fig 4

Fig 5



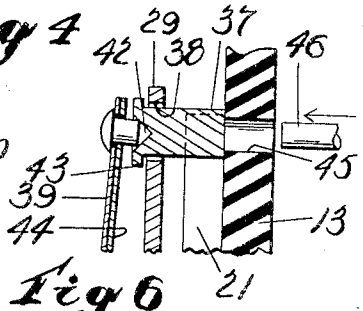


Fig 6

INVENTOR.
William O. Barnet.
BY Murray, Sackhoff & Paddack.
ATT'YS.

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UNITED STATES PATENT OFFICE

2,307,718

CIRCUIT BREAKER

William O. Barnet, Camden, Ohio

Application September 6, 1940, Serial No. 355,647

2 Claims. (Cl. 200—52)

The present invention relates to circuit breakers and is particularly directed to automatic interrupters or breakers responsive to dangerous tilting or overturning of vehicles, or the like, upon which they are positioned, to render ignition circuits of said vehicles inoperative, thus preventing combustion of fuel which generally escapes when said vehicle overturns or is tilted at a dangerous angle.

An object of the invention is to provide an improved circuit breaker mechanism which has a few moving parts and which may be manufactured at low cost.

Another object of the invention is to provide a novel means of locking a breaker mechanism in open circuit position so that said breaker will be effective from the time it is automatically moved to open circuit position until it is manually conditioned to return it to closed circuit position. This function is particularly useful in the event a vehicle overturns and stops in an upright position or where a tilted or overturned vehicle is moved to an upright position a short time after an accident in which the motor has stalled and the ignition switch left "on."

A further object of the invention is to provide a means for conveniently releasing and returning the breaker mechanism to closed circuit position after it has been locked in open circuit position by the inclination of a vehicle upon which it is positioned.

A still further object of the invention is to provide a breaker having a novel combination of parts which permits a good electrical conduction between relatively movable contacts whilst presenting an effective locking means for holding said contacts in open circuit position.

Other objects will be apparent from the following specification and drawing, in which:

Fig. 1 is a side elevation of a conventional motor vehicle showing my circuit breaker positioned thereon.

Fig. 2 is an enlarged cross-sectional view taken on line 2—2 of Fig. 1, making only a fragmentary showing of the motor vehicle.

Fig. 3 is a cross-sectional view of the breaker, with the top of the casing in position, taken on line 3—3 of Fig. 2.

Fig. 4 is a cross-sectional view taken on line 4—4 of Fig. 3 showing in plan the breaker mechanism.

Fig. 5 is a view similar to Fig. 4 illustrating my breaker in "open" circuit position.

Fig. 6 is an enlarged cross-sectional view taken on line 6—6 of Fig. 5.

The embodiment of my invention consists of a circuit breaker 10 which is positioned on a transverse wall, such as the dash 11 of a conventional motor vehicle 12. The circuit breaker has a base plate 13 upon which the breaker mechanism is positioned. The plate is spaced from and mounted on the dash 11 by means of a housing 14 having a top wall 15, and side walls 17 and 18. The top and side walls are provided with edge flanges 19 which have holes formed in the four corners thereof for receiving elongated bolts 20 which pass through the base plate 13, the flanges of the housing, and the dash 11 to fasten the circuit breaker to the dash.

A block 21, made of insulating material, is fastened to the interior side of the base plate by means of wood screws 22 and is provided at its upper end with an arcuate depression 23 for receiving a movable contact bar 24. The bar is fastened to the block by wood screws 25. The arcuate depression in the raised insulating block and the movable contact bar fastened therein forms a pair of spaced shoulders or stops 26 at both ends of said contact bar. The movable contact bar is connected through the base plate 13 to an ignition wire 27 which may be connected to the wire leading from the primary ignition source of electricity for the motor vehicle.

A pendulum 28 has a rod 29 pivoted intermediate its ends to a bolt 30. As shown in Fig. 3, the bolt has a shoulder 31 which freely engages the rod 29 and which abuts the block 21, a washer 32 being provided to space the rod from said block. The bolt has a reduced threaded portion 33 which runs through the block and the base plate and is provided at its outer end with a washer and a pair of lock nuts, generally indicated as 34, a conducting wire 35 being securely held beneath the washer and electrically connecting the rod 29 to the ignition switch lead of the circuit for the motor vehicle. The lower end of the rod is provided with a weight 36.

The upper end of the rod 29 carries a resilient stationary contact 37 which is cylindrical in form. The stationary contact is freely held in a guide hole 38 (Figs. 3 and 6) adjacent the top edge of the rod, said stationary contact being urged against the movable contact bar 24 by means of a leaf spring 39. The spring is fastened at its lower end to the rod by means of a rivet 40 whilst the upper end of said spring has a rivet 41 which passes therethrough and is in electrical engagement with a cavity 42 formed in the outer shouldered portion 43 of the stationary contact (Fig. 6). The spring has against its inner side an elec-

trical conducting strip **44** which is in engagement with the rivet **41** and is held at its lower end in electrical contact with the rod **29** by the rivet **40**.

When the breaker mechanism is in closed circuit position indicated in Figs. 2–4, the electrical circuit through said breaker is as follows: wire **27**, contact bar **24**, resilient contact **37**, rivet **41**, conductor strip **44**, rod **29**, bolt **30**, wire **35**. When the motor vehicle, upon which my circuit breaker is positioned, is tilted to an angle indicated in full lines in Fig. 5, the pendulum will remain in a vertical position and the contact bar will be rotated relative thereto until the resilient contact **37** moves off the bar and beyond the shoulder **26**. In the latter position the spring will move the contact **37** against the base plate **13** (Fig. 6) behind the shoulder or stop **26** on the block. The contact will therefore be locked in the said position out of contact with the movable bar **24**, thus insuring against accidental closing of the circuit by a contact between the bar **24** and the stationary contact **27**.

The means for releasing or unlocking the stationary contact and returning it to closed circuit position comprises a pair of holes **45** which are disposed adjacent the shoulders **26** and over which the stationary contact **37** comes to rest when the breaker mechanism is in open circuit position, as indicated in Figs. 5 and 6. In this position, after the vehicle on which the mechanism is positioned is returned to an upright position, a tool **46** is inserted in the hole and urged against the contact **37** until its lower edge is in transverse alignment with the shoulder **26**. The weight will then be free to return the rod to a vertical position, thus moving the contact **37** onto the movable contact bar **24**.

What is claimed is:

1. In a circuit breaker for ignition circuits the combination of a base, a raised insulating block fastened to the base and having an arcuate depression in the upper edge thereof to form a pair of spaced shoulders in said edge, an arcuate contact bar mounted in the depression between the shoulders, said bar constituting with the shoulders a smooth surface on the front wall of the block, a pendulum rod pivoted intermediate its ends to the block and having an annular guide hole formed through its upper end, a weight carried by the lower end of the rod, a cylindrical contact freely mounted in the guide hole and engaged at its central portion by the rod, a shoulder and a central depression formed at the outer end of the cylindrical contact, a leaf spring fastened at its lower end to the rod adjacent its pivot and having at its free end an extended means for seating in the depression formed in the contact, said spring being normally adapted to urge the inner end of the cylindrical contact against the bar, and upon tilting of the base to urge said contact to an open circuit position in which said contact is locked against the outer edge of one of the shoulders.

2. In a circuit breaker for ignition circuits the combination of a base, a raised insulating block fastened to the base and having an arcuate depression in the upper edge thereof to form a pair of spaced shoulders in said edge, an arcuate contact bar mounted in the depression between the shoulders, said bar constituting with the shoulders a smooth surface on the front wall of the block, a pendulum rod pivoted intermediate its ends to the block and having an annular guide hole formed through its upper end, a weight carried by the lower end of the rod, a cylindrical contact freely mounted in the guide hole and engaged at its central portion by the rod, a shoulder and a central depression formed at the outer end of the cylindrical contact, a bimetal leaf spring fastened at its lower end to the rod adjacent its pivot point and comprising a spring metal portion and an electrically conducting portion, said latter portion being in contact with the rod at the point of contact between said spring and rod, a rivet for fastening the portions together at their upper free ends and having an extension thereon for seating in the depression formed in the contact, said spring being normally adapted to urge the inner end of the cylindrical contact against the bar, and upon tilting of the base to urge said contact to an open circuit position in which said contact is locked against the outer edge of one of the shoulders.

WILLIAM O. BARNET.