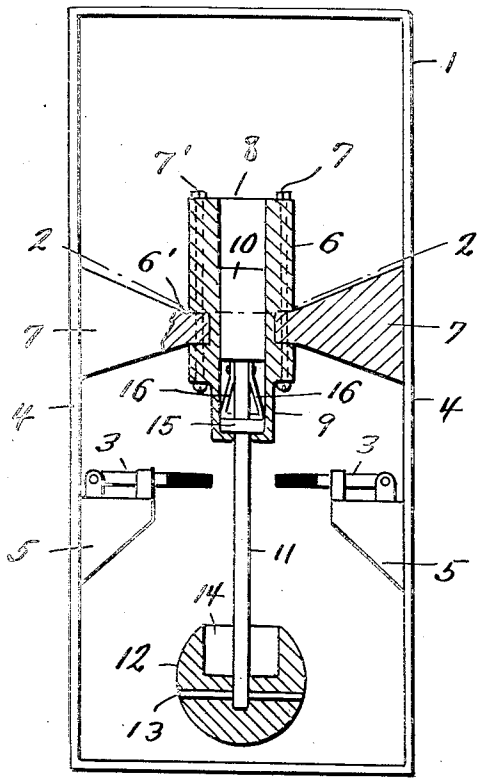
Aug. 22, 1939. H. AYERS 2,170,584

CIRCUIT BREAKER

Filed Feb. 2, 1938 2 Sheets-Sheet 1

Fig. 1.



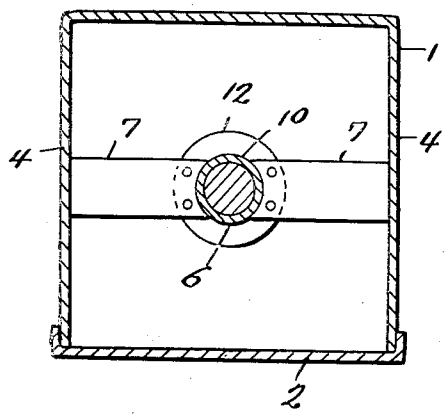


Fig. 2.

Inventor

Herbert Ayers

By Clarence A. O'Brien

Hyman Berman

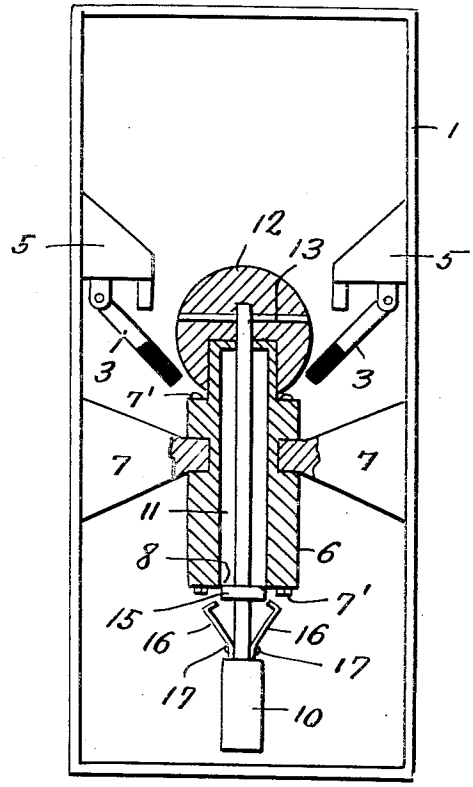
Attorneys

Aug. 22, 1939. H. AYERS 2,170,584

CIRCUIT BREAKER

Filed Feb. 2, 1938 2 Sheets-Sheet 2

Fig. 3.



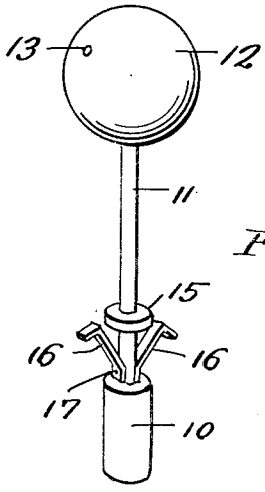


Fig. 4.

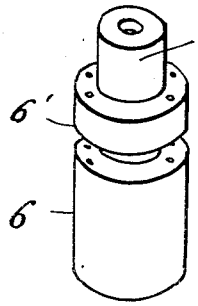


Fig. 5.

Inventor

Herbert Ayers

By Clarence O'Brien

Hyman Berman

Attorneys

Patented Aug. 22, 1939

2,170,584

UNITED STATES PATENT OFFICE

2,170,584

CIRCUIT BREAKER

Herbert Ayers, El Paso, Tex.

Application February 2, 1938, Serial No. 188,379

2 Claims. (Cl. 200—52)

My invention relates to circuit breakers for use in the ignition circuit of an automobile engine to break said circuit, in the event the machine overturns, and thereby obviate the fire and explosion hazards incident to overturning of such machines.

Generally stated, the invention has for its principal object the provision of a circuit breaker for use in the capacity above indicated and which, as compared with present day devices designed for similar use, is simplified in construction, more positive and reliable in operation, may be readily installed in present-day automobiles, and is comparatively inexpensive to manufacture.

To the accomplishment of the foregoing, and subordinate objects presently appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawings, set forth in detail in the succeeding description, and defined in the claims appended hereto.

In said drawings:

Figure 1 is a view in front elevation of a circuit breaker embodying my improvements, the cover of the casing being removed,

Figure 2 is a view in transverse section taken on the line 2—2 of Figure 1 looking downwardly,

Figure 3 is a view similar to Figure 1 but showing the device inverted, as, for instance, when the automobile overturns,

Figure 4 is a view in perspective of the switch operating means, and

Figure 5 is a similar view of the cylinder forming a part of the switch operating means.

Referring to the drawings by numerals, in the illustrated embodiment thereof my improved circuit breaker comprises a box-like casing 1, preferably rectangular, and formed of suitable metal and designed to be attached to a fixed part of the automobile adjacent to the usual ignition battery in upstanding position. The casing 1 is closed by a suitable cover plate 2. Since the precise means for attaching the casing 1 is immaterial to the present invention no devices for that purpose have been illustrated in the drawings. Within the casing 1 is a pair of knife switches 3 secured to opposite side walls 4 of said casing intermediate the ends of the latter and by brackets 5 of insulation material. The switches 3 are designed to be connected, in any suitable manner, in the lines of connection to the positive and negative poles of the battery respectively. As will be seen, from an inspection of Figure 3, the switches 3 are designed when inverted to open downwardly. Above the switches 3, that is in the normal position of the parts, is a cylinder 6 the axis of which intersects the common plane of the switches 3 and which is secured to the opposite side walls 4 by means of brackets 7. The cylinder 6 has an open upper end 8 and a reduced lower end 9, for a purpose presently seen, and is preferably rabbeted as at 6' to fit over the brackets 7 whereby bolts 7' may be extended through the wall of the cylinder 6 and said brackets 7 as shown in Figure 1. By the described means for attaching the cylinder 6 and brackets 7 together the walls of the cylinder 6 are braced by the bolts 7'.

Within the cylinder 6 is a piston 10 longitudinally slidable therein and having a piston rod 11 extending therefrom through the lower end of said cylinder between the switches 3 and beyond the same. A ball 12 is fixed to the extended end of the rod 11 by a pin 13. Ball 12 has a chambered side 14 adapted to fit over the reduced end 9 of the cylinder 6 under certain conditions presently explained. The rod 11 is provided adjacent the piston 10 with a stop collar 15 engaging the lower end of said cylinder to establish the normal position of the rod 11, piston 10, and ball 12. A pair of resilient outwardly reacting locking fingers 16 are secured, as at 17, to the rod 11 upon opposite sides thereof, respectively, intermediate said piston 10 and collar 15, said fingers being normally held in inwardly flexed position by the walls of the cylinder 6.

Referring to the operation. When the automobile overturns the described devices are inverted. The piston 10, rod 11, and ball 12 drop under the influence of gravity in degrees sufficient for the ball 12 to engage the switches 3 and operate the same to opening position as illustrated in Figure 3. The degree of movement of these parts is limited by engagement of the ball 12 with the reduced end 9 of the cylinder 6, the chambered side 14 of said ball telescoping over said end 9 to center the parts. In said limit of movement of the piston 10, rod 11 and ball 12 the latter is positioned to block return of the switches 3 to closing position and locked in such position by the locking fingers 16 which, in said position of the parts, have been projected out of the open end of the cylinder 6 and have swung outwardly, thereby blocking, by contact with said end of the cylinder 6, return of the piston 10, rod 11 and ball 12 to normal position until said fingers have been flexed inwardly to enter said cylinder. Upon such manipulation of the fingers 16 the parts may be returned to normal position in a manner which will be clear.

The foregoing description will, it is believed,

suffice to impart a clear understanding of my invention without further explanation.

Manifestly, my invention, as described, is susceptible of modification both in relation of parts and details of construction without departing from the inventive concept and right is herein reserved to all such modifications falling within the scope of the subjoined claims.

What I claim is:

1. In a device of the class described for breaking the ignition circuit of an overturned automobile, a casing adapted to be attached to a fixed part of the automobile to be inverted thereby when the automobile overturns, a pair of switches secured to opposite sides of said casing, respectively, in opposed spaced apart relation to be inverted by said casing and operative downwardly in the inverted position thereof to opening position, a cylinder secured in said casing to opposite side walls thereof, and means mounted in said cylinder intermediate the switches of said pair to be inverted therewith and operative under the influence of gravity in the inverted position thereof to operate said switches to opening position, said means including a piston slidable in said cylinder, a rod extending from the piston, and cylinder between said switches and having an end extending beyond the latter, and a ball fast on said end of the rod.

2. In a device of the class described for breaking the ignition circuit of an overturned automobile, a casing adapted to be attached to a fixed part of the automobile to be inverted thereby when the automobile overturns, a pair of switches secured to opposite sides of said casing, respectively in opposed spaced apart relation to be inverted by said casing and operative downwardly in the inverted position thereof to opening position, a cylinder secured in said casing to opposite side walls thereof, and means mounted in said cylinder intermediate the switches of said pair to be inverted therewith and operative under the influence of gravity in the inverted position thereof to operate said switches to opening position, said means including a piston slidable in said cylinder, a rod extending from the piston and cylinder between said switches and having an end extending beyond the latter, and a ball fast on said end of the rod and cooperating with one end of the cylinder to limit gravitational movement of said means, and a locking device for said means rendered effective in the limits of gravitational movement of the latter to lock the same against reverse movement.

HERBERT AYERS.