May 10, 1932. N. A. HICKOK 1,857,637

AUTOMATIC CIRCUIT BREAKER

Filed March 13, 1929

Fig. 1.

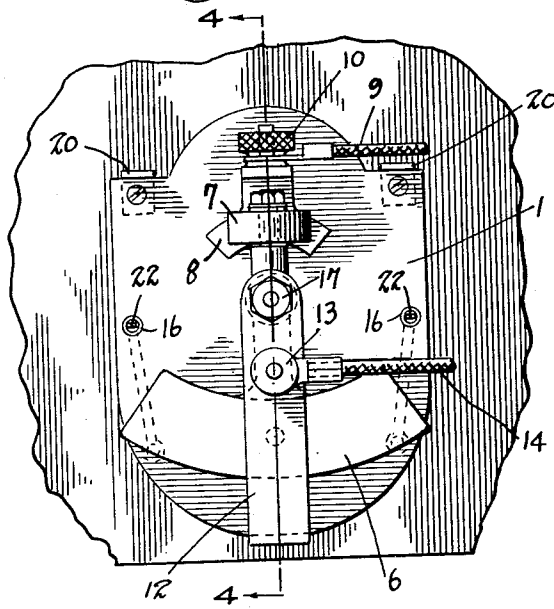


Fig. 2.

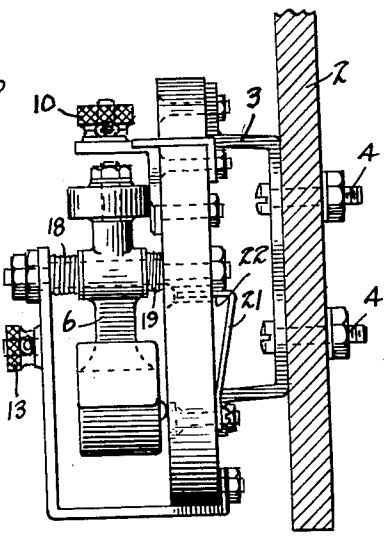


Fig. 3.

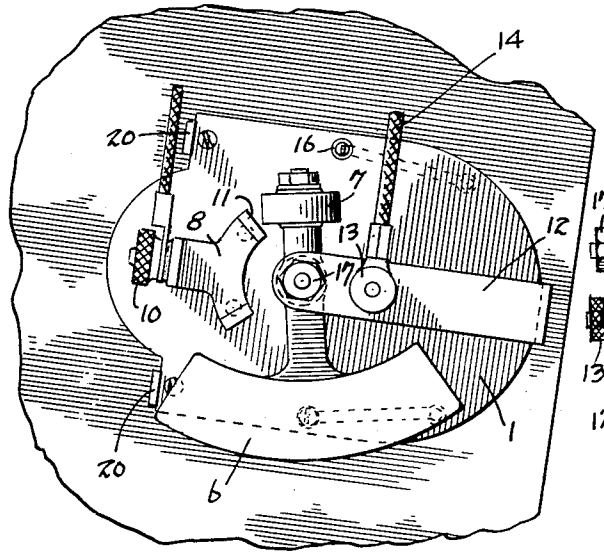
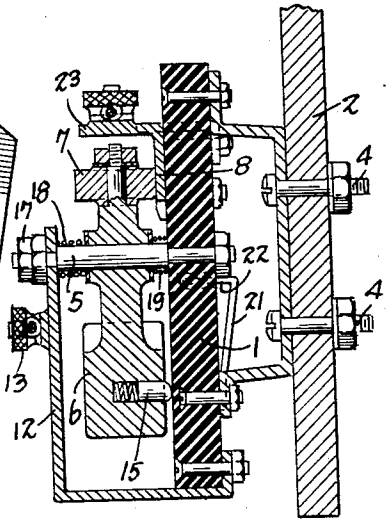


Fig. 4.



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Patented May 10, 1932

1,857,637

UNITED STATES PATENT OFFICE

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AUTOMATIC CIRCUIT BREAKER

Application filed March 13, 1929. Serial No. 346,667.

My invention relates to improvements in automatic circuit breakers, and it consists in the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide an automatic circuit breaker that is especially designed for automobiles and to be used for breaking the ignition circuit as soon as a car overturns. Many automobile fires have been caused by gasoline or oil being ignited by a spark from the ignition circuit. A device for breaking the circuit automatically as soon as a car overturns will prevent such fires.

A further object of my invention is to provide a device of the type described which will keep the circuit closed during the ordinary tilting of the car when rounding banked curves but which will act instantly when the car turns through an arc of approximately seventy degreees or more. The device when once actuated will stay locked in open position even though the car should turn over a number of times. The device may be placed on the underside of the instrument board and may be used as an ignition lock.

A further object of my invention is to provide a device of the type described which is extremely simple in construction and which is durable and efficient for the purpose intended.

Other objects and advantages will appear as the specification proceeds, and the novel features will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, in which

Figure 1 is a front elevation of the device;

Figure 2 is a side elevation:

Figure 3 is a view similar to Figure 1, but showing the switch in open position; and

Figure 4 is a vertical section along line 4—4 of Figure 1.

In carrying out my invention, I provide an insulating base 1 of the shape shown in Figure 1. This base may be secured to the underside of an instrument board 2 (see Figure 2) by means of a bracket 3 and bolts 4. It is obvious that the device may be placed in any other part of the automobile if desired.

A shaft 5 (see Figure 4) is carried by the base 1 and rotatably supports a counterweight 6 of the shape shown in Figure 3. The weight carries a roller 7 that is ridable over an arcuate track 8 made of a conducting material. A wire 9 is electrically connected with the track 8 by a binding post 10.

The track has cam-shaped ends 11 (see Figure 3) that permit the roller 7 to ride off from the track when the base 1 is swung into the position shown.

The outer end of the shaft 5 is supported by a spring arm 12 (see Figure 4) that in turn is carried by the base 1. A binding post 13 is carried by the spring arm and has a wire 14 secured thereto.

The weight 6 is held in either of its extreme positions by a spring-pressed pin 15 (see Figure 4) that is adapted to enter either one of two openings 16 in the base 1. The pin is strong enough to prevent movement of the weight with respect to the base after the pin has once been received in either of the openings 16, and this is true regardless of how many times the base 1 is rocked or rotated.

The weight 6 is adjusted upon the shaft 5 by means of lock nuts 17 and springs 18 and 19. The spring 19 is weaker than the spring 18. This permits the weight to be axially adjusted on the shaft 5 for causing the wheel 7 to contact with the track 8.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

The ordinary swaying of the car traveling over the highway will merely cause a slight movement of the weight 6 with respect to the base 1. This movement is not sufficient to swing the wheel 7 clear of the track 8, and therefore the ignition circuit will not be opened.

Should the automobile turn over because of an accident, the weight 6 will swing into the position shown in Figure 3. At this point the weight will strike a stop 20 carried by the base, and the pin 15 will enter the registering opening 16. The weight is prevented from further movement in either direction even though the car should turn over a number of times.

When the weight is in the position shown in Figure 3, the wheel 7 is free of the track 8

and the ignition circuit is broken. This will stop any further running of the engine, and will prevent fires from taking place even though the gasoline should run out.

In releasing the weight 6, it is necessary to press upon a spring 21 (see Figure 4) that is carried by the base 1 and has a bent portion 22 extending into the opening 16. The portion 22 normally extends only a partial distance into the opening 16. A pressing of the spring will cause the portion 22 to dislodge the pin 15, and the weight 6 will now be free to swing back into normal position. This will cause the wheel 7 to contact with the track 8 and to electrically connect the wire 9 with the wire 14.

The device may be used as an ignition lock, because the driver can manually swing the weight 6 so as to be held in either one of its two extreme positions. It will be some time before an unauthorized person will discover where the break in the ignition circuit is if they ever do find out, and this will have a tendency to make them leave the car alone. It should be noted that the stops 20 prevent the weight 6 from swinging down into contact with the projection 23 carried by the track 8 (see Figure 4). In this way the weight cannot make an electrical connection between the wires 9 and 14.

Although I have shown and described one embodiment of my invention, it is to be understood that the same is susceptible of various changes, and I reserve the right to employ such changes as may come within the scope of the invention as claimed.

I claim:

1. An automatic ignition circuit breaker for automobiles comprising a base, a weighted member swingably carried by the base and having a roller thereon, a smooth face conductor having cammed ends contacting with the roller during the normal swinging of the latter, said member when swung through a predetermined angular distance in either direction clearing the conductor and breaking the circuit, and means for locking the member against return movement and thus completing the circuit again during further revolving of the base.

2. An automatic circuit breaker comprising a base, a switch arm swingably carried thereby, a weight for holding said arm in a vertical position, an arcuate conductor strip of a predetermined length contacted by said arm during the normal rocking of the base, said weight swinging said arm free of said strip when the base is turned through a predetermined angular distance in either direction, and means for locking said arm in open position.

3. An automatic circuit breaker comprising a base, a switch arm swingably carried thereby, a weight for holding said arm in a vertical position, an arcuate conductor strip of a predetermined length contacted by said arm during the normal rocking of the base, said weight swinging said arm free of said strip when the base is turned through a predetermined angular distance in either direction, and means for locking said arm in open position, said means being manually releasable for permitting the switch arm to return to closed position.

4. An automatic circuit breaker comprising a base disposed substantially in a vertical position, a switch arm swingably carried by said base and being movable in a vertical plane, a weight for holding said arm in a vertical position, a conductor strip of a predetermined length contacting with the arm for permitting a slight movement thereof without breaking the circuit, stops carried by said base for limiting the movement of said arm beyond a predetermined position in either direction after the arm has opened the circuit, and means for holding the arm in open position.

5. An automatic circuit breaker comprising a base disposed substantially in a vertical position, a switch arm swingably carried by said base and being swingable in a vertical plane, a weight for holding said arm in a vertical position, a conductor strip of a predetermined length contacting with the arm for permitting a slight movement thereof without breaking the circuit, stops carried by said base for limiting the movement of said arm beyond a predetermined position in either direction after the arm has opened the circuit, and means for holding the arm in open position, said means being manually releasable for permitting the arm to again swing into closed position.

NOAH A. HICKOK.