Dec. 23, 1952 C. V. CHERMENDY 2,623,131

CIRCUIT BREAKER

Filed Oct. 4, 1949

FIG. 1

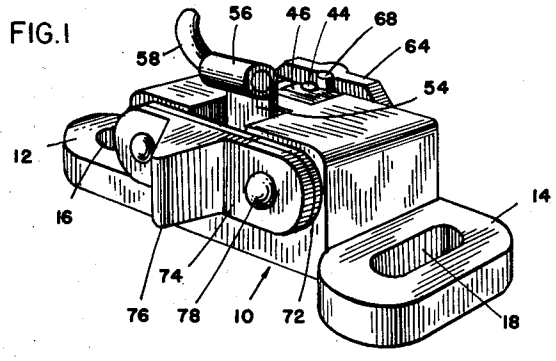


FIG. 2

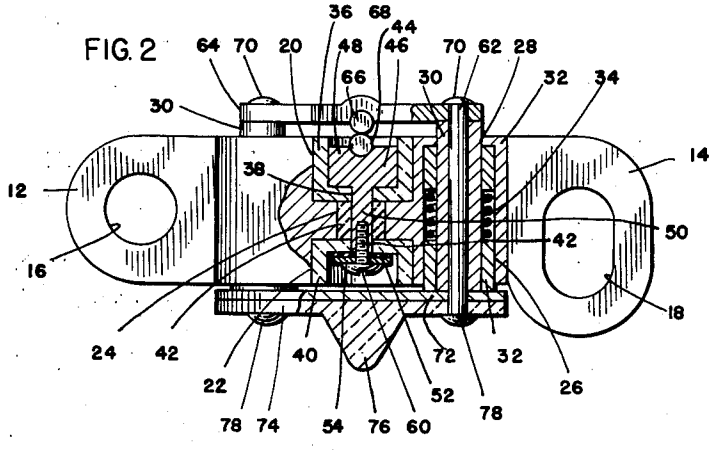
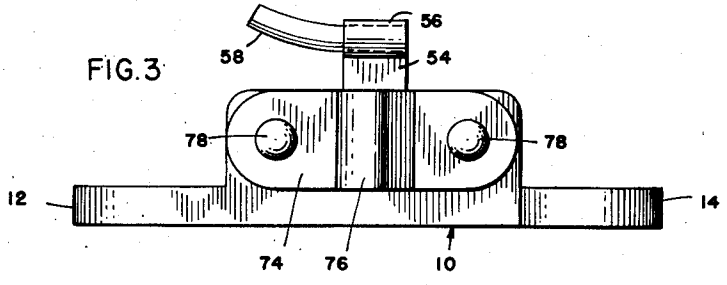


FIG. 3



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CIRCUIT BREAKER

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2 Claims. (Cl. 200—30)

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This invention relates in general to a circuit breaker and is more particularly described as an ignition breaker of the type commonly used in automobiles.

In automobile circuit breakers, it is almost impossible to set and to maintain the breaker points in alignment and to prevent them from becoming pitted or wearing unevenly due to the rapid and continuous breaking of the circuit. The circuit breaker for automobiles is commonly mounted upon a vibrating arm which requires the accurate setting and adjustment because of the length of throw of the arm and is further objectionable due to the large number of vibrating parts.

The present invention provides an ignition breaker of a different type which may be substituted for the breaker arms and fixed breaker points in the present type of equipment, and it is designed to be used as a replacement therefor.

An important object of the invention is in the provision of a circuit breaker which makes a line contact instead of a point contact.

A further object of the invention is to provide a circuit breaker in which the contact cam is in alignment with the line breaker points and a parallel mounting for the movable contact bar comprises bearings spaced apart and at each side of the line points and the contact cam.

A further object of the invention is to provide an improved, simple and small ignition breaker which has cast insulation adapted to be assembled upon a mounting base and to provide a unitary ignition breaker.

Other objects of the invention will appear in the specification and will be apparent from the accompanying drawing in which,

Fig. 1 is a perspective view of an ignition breaker in accordance with this invention;

Fig. 2 is a sectional view through the central portion of the breaker; and

Fig. 3 is a side elevation from the cam face of the breaker.

Circuit breakers of the type now commonly used in automobiles comprise a pivoted metal breaker arm with a breaker contact at the free end and a projection for engaging an operating cam located intermediate the ends of the arm. The arm contact makes and breaks an electric circuit with an adjustable fixed contact mounted separately from the breaker arm and due to the engagement of the automobile ignition cam with the projection on the breaker arm.

In the present invention, the fixed and movable contact members are mounted upon the

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same block, one of the members being insulated from the block and the entire block may be substituted for the contact arm and the adjustable fixed member of the type commonly used. Thus the same ignition breaker cam as now commonly used is operated to engage the projection of the present device to effect the circuit breaking operation.

Referring now more particularly to the drawings, a mounting block 10 has reduced ears 12 and 14 at opposite ends, one with a perforation 16 and the other with a slot 18 by means of which the block may be mounted and adjusted.

Extending vertically through the block at opposite sides are slots 20 and 22 which may be rectangular and connected through the block by a perforation 24. Extending transversely through the block are end recesses 26 each having a shouldered portion 28 at one end for mounting a pair of bearing sleeves 30, the sleeves being of a diameter to slide within the shoulders 28, and the recesses 26 being slightly larger than the sleeves to receive bushing sleeves 32, preferably of self-oiling material such as oilite between the sleeves 30 and the recesses 26. Between each pair of bushings 32 for each sleeve is a compressed coil spring 34 tending to separate the bushings.

Seated in the slot 20 is an insulating bushing 36 preferably formed or cast to fit in the slot and having a central hole 38 to register with the perforation 24 in the block.

Seated in the slot 22 is a similar insulation 40 having a central hole 42 to register with the perforation 24. Seated in the perforation 24 of the block is a short sleeve 42 of insulating material which connects the insulation 36 and 40 and registers with the perforations thereof.

A fixed circular contact bar 44 of tungsten or other suitable contact material is connected to a contact block 46 by being soldered or otherwise connected in a recess 48 thereof and the contact bar is of a length substantially the thickness of the block 10. The block 46 is seated in the insulation 36 and extending inwardly from the face of the block 46 is a stem 50 which extends through the perforations of the insulations 36 and 40 and through the sleeve 42 and surrounding the outer end of the stem is a washer 52. The end of the stem extends through a perforation in a plate 54 which extends upwardly in the slot of the insulation 40 with a curled portion 56 outside of the block at its upper end forming an eye for receiving the end of a conductor 58 which

is attached to and insulated from the block of the breaker.

A bolt head or nut 60 is inserted into the stem 50 within the recess of the insulation 40 for tightly binding the plate 54 and the washer against the insulation and thereby binding all of the insulation pieces, the contact block 46 and the contact bar 44 tightly in assembled position.

Extending through each of the sleeves 30 are rivet rods 62. Connecting the two opposite rods at one end is a contact plate 64 having an intermediate recess 66 for seating a contact bar 68 therein, this contact bar being preferably made of tungsen or other suitable contact material of substantially the same length as the contact bar 44 and positioned in exact alignment for contact therewith. The contact bar 64 is held upon the rivet 62 by a head 70 at the end of each rivet.

At the other ends of the rivet 62 is a backing plate 72 through which the rods extend and a bumper plate 74 having a central bumper projection 76 adapted to be engaged by the cam lobe of an ignition breaker. This bumper block may be of any suitable material, but preferably it is of a tough, hard, fibrous composition which resists abrasion and wear such as nylon which is also an insulating material and may be used for the insulation pieces 36, 40 and 42. The plates 72 and 74 are assembled upon the ends of the rivet rods 62 against the ends of the sleeves 30 by riveting over the ends of the rods to form heads 78.

The sleeves and rivet rods are of proper length to provide a space between the inner side of the plate 72 and the adjacent surface of the block sufficient to separate the contact bars 44 and 68 when the projection 76 is engaged by a cam, thereby compressing the springs 34, and as soon as the cam passes the projection, the springs return the contacts to their line engagement.

With this construction, the breaker is small, campact, very strong, and the parts are held in such alignment that it is practically impossible to cause inefficient or inaccurate setting or insulation without breaking up the assembly itself. A finished breaker of this design may be only a fraction of the length shown and a complete operative breaker is of the order of about an inch in length.

The mounting of the movable contact bar in opposite parallel bearings prevents uneven wear and insures a proper spark without undue pitting of the surfaces because the contact is not limited to a point, and the line contact is maintained.

While the preferred construction has been described in some detail, it should be regarded by way of example and illustration rather than as a limitation or restriction of the invention as various changes in the construction, combination and arrangement of the parts may be made without departing from the spirit and scope of the invention.

I claim:

1. In an ignition breaker, a mounting block having end attachment means, opposite side slots immediate the ends, a hole connecting the slots, and transverse parallel side holes at the ends beyond the slots, insulation in the slots and connecting hole, a bar contact seated in the insulation in one side slot, a conductor terminal in the insulation in the other side slot and projecting at the top of the block, and means extending through the connecting hole securing the contact bar and the terminal tightly in place; parallel mounting means extending through the transverse holes, a plate connected at its ends to the ends of the mounting means at one side of the block, a movable contact bar connected intermediate the ends of the plate to engage the bar contact in a line engagement, a bumper connected to the ends of the mounting means at the other side of the block movable to separate the contact bars, and spring means within the block and engaging the connected bumper and plate tending to maintain the contact bars in line engagement.

2. In an ignition breaker, a mounting block, transverse holes near the ends each with a reducing shoulder at one side, an insulated contact bar fixed at one side of the block between the holes at the shouldered side, a plate having a movable contact bar attached between its ends adapted to make a line engagement with the insulated contact bar, a bumper at the other side of the block having a cam engaging projection between its ends, a rivet bar and a sleeve connecting each of the ends of the plate and the bumper through each end hole of the block, the sleeve extending through the shouldered diameter of the hole and providing therewith a recess around the sleeve within the block, a coil spring around the sleeve in the said recess, and a short sleeve at each end of the coil spring in the recess, one bearing against the reducing shoulder and the other bearing against the bumper, the springs thereby tending to hold the contact bars in line engagement and opposing their separation by movement of the bumper.

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