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A. P. YOUNG ET AL
ELECTRIC CONTACT BREAKER

1,870,032

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Fig. 1.

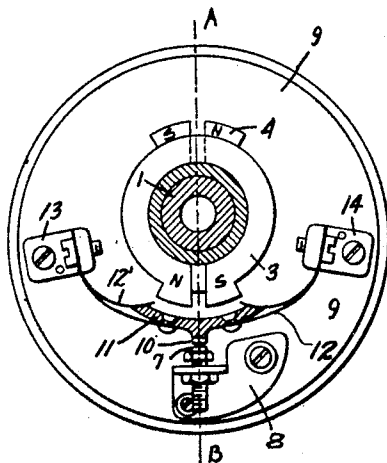
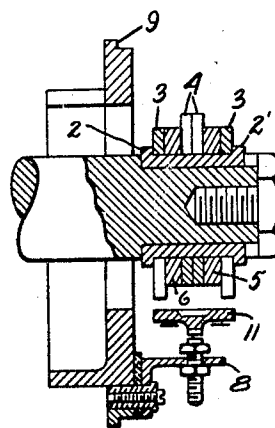


Fig. 2.



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UNITED STATES PATENT OFFICE

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ELECTRIC CONTACT BREAKER

Application filed October 24, 1929, Serial No. 402,171, and in Great Britain November 10, 1928.

This invention relates to electric contact breakers such as are used in connection with magneto electric machines or with coil ignition apparatus for internal combustion engines. The contact breakers used with such apparatus have usually been operated mechanically and the object of this invention is to provide a magnetically operated contact breaker which is inexpensive to manufacture and which will be efficient in operation.

The various features of novelty which characterize our invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of our invention, reference may be had to the following description taken in connection with the accompanying drawing, in which Fig. 1 is an end elevation of an electrical contact breaker embodying our invention, and Fig. 2 is a longitudinal section on the line A—B of Fig. 1.

Referring to the drawing, a driving member or spindle 1 has mounted thereon sets of permanent magnets 3 and 4. A moving contact 10 carried by a soft inner armature 11 is resiliently mounted on a spring 12 in proximity to the path of the magnet pole pieces. A fixed contact 7 is adapted to be engaged by the movable contact when the controlling force or bias of the spring 12 overcomes the pull of the magnets.

Firmly secured to the driving spindle 1 is a sleeve 2 of non-magnetic material and threaded on this sleeve are two sets of permanent magnets 3 and 4, set 4 being centrally spaced between elements of set 3. These magnets are of approximately circular or split-ring form and have radially projecting pole pieces at their adjacent ends, marked N and S in Fig. 1. These magnets may be stamped from sheet metal if desired. Each magnet set is so grouped on the spindle that its pull is centrally balanced with regard to the width of the armature. In the arrangement shown, which provides for two breaks

per revolution of the spindle, the two sets of magnets have their pole ends set diametrically opposite and the magnets are separated by spacing washers 5 and 6 of non-magnetic material. After the magnets and spacing washers have been assembled on the sleeve, the part of the sleeve at 2' is pressed up, as by spinning, this being a convenient method of holding the assemblage together.

The adjustably fixed contact 7 is held in a bracket 8 secured to the contact breaker base but insulated therefrom. The moving contact 10 is secured to an arc shaped soft iron strip 11 which is held by a curved spring 12, so as to normally hold the two contacts in engagement. The ends of the spring are held by posts 13 and 14 secured to the base 9 at opposite sides of the fixed contact. As the magnet poles pass the face of the soft iron strip, they attract it against the force of the spring.

Suitable stops prevent the soft iron armature strip from coming into actual contact with the magnet poles, a convenient arrangement being two stout springs 12', which may be made integral with springs 12, secured to the posts 13 and 14, and which bear on chamfered edges of the armature strip when the contacts have separated by a predetermined amount. Such additional springs could be made either of fairly heavy gauge phosphor bronze or tempered steel and adjusted on assembly to prevent the armature from actually touching the magnet poles.

More than one pair of contacts may be secured to the contact base 9 and the magnets may be so arranged as to open them simultaneously or in succession.

What we claim as new and desire to secure by Letters Patent of the United States, is:

A contact breaker comprising a spindle, a set of permanent magnets having radially projecting poles at their adjacent extremities and mounted on said spindle, a fixed contact, an arc-shaped armature, a contact carried

thereby, and a bent flat spring, said arma-
ture being held by the midportion of said
spring, said spring being secured to sup-
ports at opposite sides of said fixed contact,
5 said fixed contact adapted to be engaged by
the movable contact when the controlling
force of the spring overcomes said magnet.

In witness whereof, we have hereto set our
hands this 4th day of October, 1929.

10 ARTHUR PRIMROSE YOUNG.
LEONARD GRIFFITHS.

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