May 19, 1931. W. H. PETERSÉN 1,806,117

CONTACT DEVICE FOR ELECTRIC CIRCUIT BREAKERS

Filed June 12, 1929

Fig. 1.

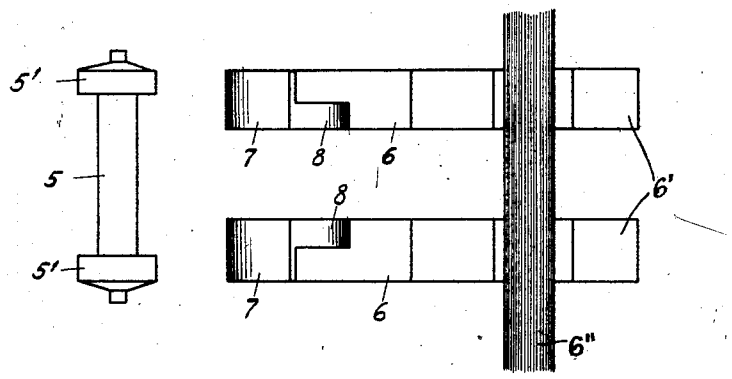


Fig. 3.

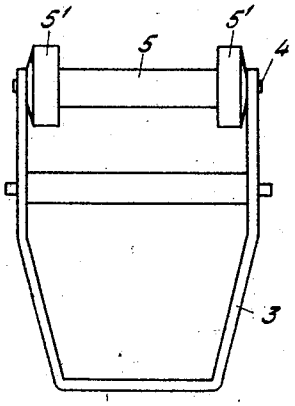
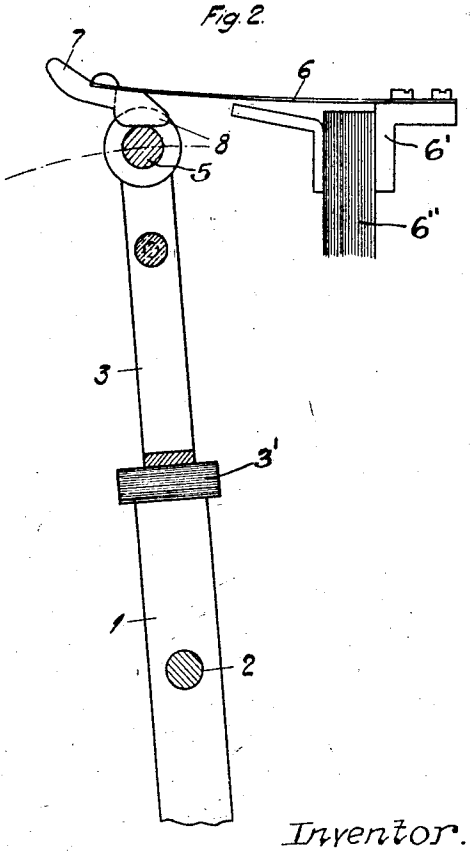


Fig. 2.



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UNITED STATES PATENT OFFICE

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CONTACT DEVICE FOR ELECTRIC CIRCUIT BREAKERS

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In electric circuit-breakers it is generally regarded as desirable that the contacts be so arranged that other portions thereof bear against each other in the final closed position than those which first make contact during the closing and last leave each other during the breaking operation, because the last-mentioned portions generally obtain a rough surface by reason of the burning from the arc. For this purpose, one or both of the co-operating contact members are often mounted resiliently so as to be rotatable to a certain extent and perform a rolling movement against each other during the closing operation. It is true that this arrangement relieves the surfaces roughened by the arcing, of the duty of normally carrying current, but it has generally the inconvenience to cause vibrations during the closing operation which may often cause a worse arcing than that accompanying the breaking. Further the said arcing always affects the same portions of the contacts whereby the irregularities of the surface here will finally be so great that they may have influence on the contact between the normally acting contact surfaces.

The present invention relates to a contact device for circuit-breakers which is free from the aforesaid inconveniences. According to the invention, one of the two co-operating contact members consists of a freely rotatable cylinder and the other of a contact finger bearing against said cylinder and so arranged with respect thereto that the portions normally making contact lie axially distant from the portions which are operative at the contact making and breaking instants.

A form of the invention is illustrated in the accompanying drawings in broken position as seen from beneath in Fig. 1 while Fig. 2 shows the same in side view, partially in section, in closed position, and Fig. 3 shows one of the contact members in end view.

A lever arm 1 rotatable about a pivot pin 2 carries a fork 3 which has bearings 4 for the rotatable contact cylinder 5 and is insulated from the arm 1 at 3′. The cylinder 5 consists of a middle portion of comparatively small diameter and two end portions 5′ of larger diameter. It co-operates with two contact fingers composed of springs 6 and contact pieces carried thereby, each of the latter consisting of an outer portion 7 intended to bear against the enlarged end portion 5′ of the cylinder 5 and an inner thicker portion 8 intended to bear against the thinner portion of the cylinder 5. The springs 6 are secured by means of brackets 6′ to a common insulating member 6″. During the closing operation the thicker portion 5′ of the cylinder first meets the portion 7 of the contact fingers and preferably moves towards the latter under a very acute angle so as to cause no hammering which may be likely to cause vibrations. The cylinder then rolls along the contact piece 7 until its thinner portion meets the inner contact portion 8, also under a very small angle, and makes final contact therewith. At the breaking operation, the parts move in the opposite direction, and the final breaking occurs between the portions 5′ and 7 so as to protect entirely the surfaces of the portions 5 and 8 against burns. The burns on the portion 5′ are distributed along the whole periphery thereof so that many breaks may be performed before the cylinder is so damaged as to need replacing. Such a replacing is moreover easily effected.

Preferably two symmetrically arranged contact fingers 6, 7, 8 are provided to co-operate with each cylinder 5′, as shown in the drawings, so that the current passes from one contact finger over the cylinder 5 to the other contact finger.

I claim as my invention:—

1. Electric contact device comprising a rotatable cylinder and a pair of contact fingers movable relatively to each other, said fingers bearing against said cylinder at the same side and bearing against one portion of said cylinder at the first contact and against another portion of said cylinder axially distant from the former at the final contact.

2. Electric contact device comprising a rotatable cylinder having portions of differ-

ent diameter and a pair of contact fingers having portions of different thickness adapted to bear against said cylinders at the same side thereof.

3. Electric contact device comprising a rotatable cylinder having portions of different diameter and a pair of contact fingers having portions of different thickness bearing against said cylinder at the same side thereof, said cylinder and contact finger being movable towards each other and arranged to make contact first between a cylinder portion of one diameter and a finger portion of one thickness and then between a cylinder portion of another diameter and a finger portion of another thickness.

4. Electric contact device comprising a rotatable conducting cylinder and a pair of contact fingers movable with respect to each other and bearing against said cylinder at the same side thereof, said fingers bearing against one portion of said cylinder at the first contact and against another portion of said cylinder at the final contact, one of said contact fingers serving as inlet and the other as outlet for the electric current.

In testimony whereof I have signed my name to this specification.

WILHELM HENNING PETERSÉN.