April 25, 1944. H. PERRET 2,347,331

ARC EXTINGUISHING CIRCUIT BREAKER

Filed April 3, 1942

Fig. 1

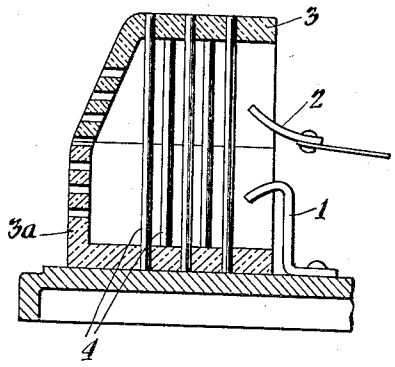


Fig. 2

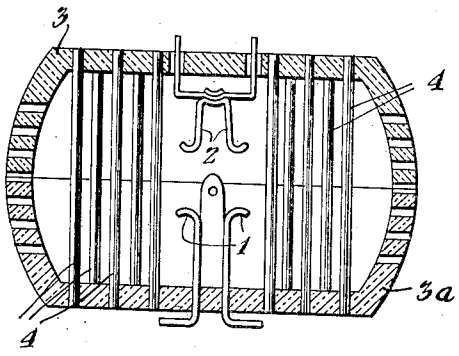


Fig. 3

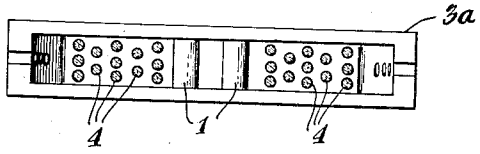


Fig. 4

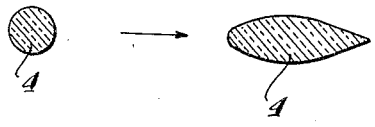
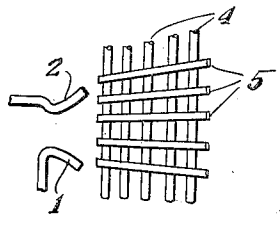


Fig. 5



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UNITED STATES PATENT OFFICE

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ARC-EXTINGUISHING CIRCUIT BREAKER

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Application April 3, 1942, Serial No. 437,472
In Switzerland April 9, 1941

3 Claims. (Cl. 200—144)

The progressive development of small automatic circuit-breakers resulted in a considerable increase of the arc rupturing or dissipating capacity. To increase this capacity further, walls of non-conducting material, arranged parallel to the arc-dispersion plane have been set into the blow-out chamber and due to their cold surfaces withdraw the heat of the arcs without hindering their dispersion. From this it has been ascertained that the intense cooling of the arc results in its blowing-out. The blowing-out of the arc should take place in an extremely short time, thus minimizing the heat from penetrating inside such inset walls, for which reason the thickness of the latter is of no great consequence.

According to the present invention an increased surface is obtained by arranging a plurality of rods of non-conducting material in the blow-out chamber. In said chamber these rods are set preferably in planes extending parallel to the plane of arc-dispersion. Furthermore, metallic plates extending across the plane of arc-dispersion may protrude from the rods.

The nature of the invention will be understood from the following specification taken with the accompanying drawing in which several embodiments are diagrammatically illustrated.

Figure 1 shows diagrammatically a blow-out chamber for arc-dispersion in one direction;

Figure 2 is an elevation of a chamber for arc-dispersion towards two opposite directions; and

Figure 3 a sectional view thereto.

Figure 4 shows different cross-sections of a rod, and

Figure 5 is a combined arrangement.

Of the circuit-breaker itself only those parts are indicated which are absolutely necessary for the understanding of the invention.

According to Figure 1 the stationary contact is designated 1 and the movable contact 2 and the blow-out chamber 3 of a small automatic breaker.

The blow-out chamber 3 consists of non-conducting, preferably ceramic material. In chamber 3, the rods—also of non-conducting or ceramic material—are set in planes extending parallel to the plane of arc-dispersion; the rods being thereby arranged in staggered rows.

The arc produced on opening the contacts 1 and 2 spreads out into the depth of the blow-out chamber, i. e., towards the left, being there split up through the rods 4, whereby the heat of the arcs is withdrawn and their extinction consequently accelerated.

In the example of embodiment as per Figures 2 and 3, two contacting points are provided through the central arrangement of two stationary contacts 1 and one forked movable contact 2.

The blow-out chamber comprises two pocket-like parts 3 and 3a assembled to form a case consisting of non-conducting, preferably ceramic, material. In said parts 3 and 3a rows of rods 4 of non-conducting, preferably ceramic material, are arranged on both sides of the contacts 1 and 2, also again in planes parallel to the plane of arc-dispersion. On opening the contacts, the dispersing arcs are split up into further sparks through the mentioned rods which withdraw the heat on account of their great cooling surface, thus promoting extinction.

The cross-section of the rods may be circular as shown in Figure 4 left-hand, or also of any shape, for instance stream-lined as per Figure 4, and according to their number and diameter this may result in an increase of 50 to 100 percent of the cooling surface for the arc or arcs compared with the known inset walls.

The rods 4 may also be applied in combination with conventional magnetic plates in such circuit breakers. According to Figure 5 five such plates can be seen which are arranged fanwise and crosswise to the plane of arc-dispersion. The rods 4 of non-conducting material supports these plates 5, thus promoting the rapid cooling of the arc already split up by the said plates.

Although some forms of the invention have been shown and described by way of illustration, it will be understood that it may still be constructed in various other embodiments within the scope of the appended claims.

I claim:

1. A blow-out chamber for small magnetic arc extinguishing circuit breakers in which parallel rods of non-conducting material are arranged and support metallic plates extending into the path of the arc-dispersion.

2. A blow-out chamber for small circuit breakers as set forth in claim 1 in which the rods are parallel to the plane of arc-dispersion and the plates extend across said plane.

3. A blow-out chamber for small circuit breakers as set forth in claim 1 in which the chamber is perforated and the rods are embedded in the walls of the chamber with the rods parallel to the plane of arc-dispersion and the plates extend across said plane.

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