June 10, 1924. 1,497,424

C. AALBORG

CIRCUIT INTERRUPTER

Filed Jan. 16, 1919

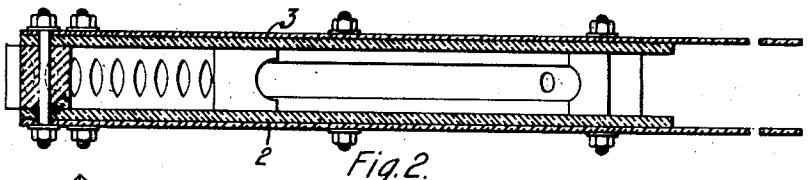


Fig. 2.

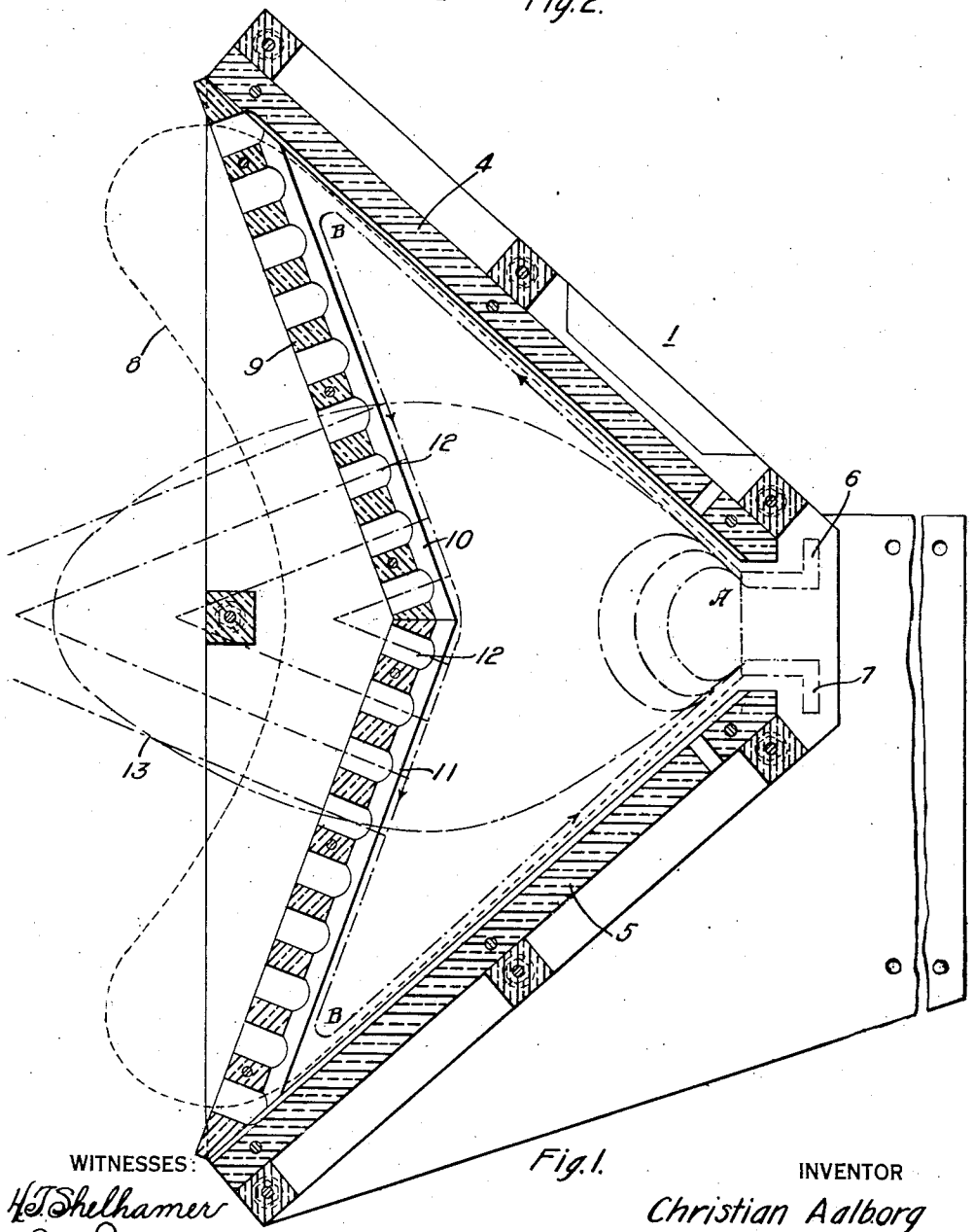


Fig. 1.

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UNITED STATES PATENT OFFICE.

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CIRCUIT INTERRUPTER.

Application filed January 16, 1919. Serial No. 271,476.

To all whom it may concern:

Be it known that I, CHRISTIAN AALBORG, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Circuit Interrupters, of which the following is a specification.

My invention relates to circuit interrupters and particularly to arc-blow-out devices therefor.

The object of my invention is to provide an arc-blow-out device for a circuit interrupter that shall have means for so centering the arc between the top and bottom walls thereof as to prevent injury thereto.

In practicing my invention, I provide an arc chute for an interrupter having a front wall of substantially V-shape. A plurality of openings are provided in the front wall and the two legs of the same are disposed at such angle with respect to each other that the arc is diverted away from the top and bottom edges of the arc-chute opening.

In the accompanying drawings, Fig. 1 is a side view, partially in section and partially in elevation, of an arc-blow-out device embodying my invention, and Fig. 2 is a top view, partially in section and partially in plan, of the device shown in Fig. 1.

An arc chute 1 comprises, in general, side walls 2 and 3 constructed of asbestos, soapstone or other insulating material, and top and bottom walls 4 and 5 which are disposed at an angle with respect to each other and similarly constructed of insulating material. The inner ends of the top and bottom walls 4 and 5 are separated and are disposed adjacent the contact members 6 and 7 of the interrupter in connection with which the arc chute is to be used. Ordinarily, magnet pole pieces (not shown) are disposed adjacent the side walls of the arc chute 1 for the purpose of propelling the arc outwardly that is drawn when the contact members 6 and 7 separate.

When a device of this type is used, the arc that is formed assumes substantially the shape shown by the broken lines 8 in the drawing. In order to deflect the arc from the outer edges of the top and bottom walls 4 and 5, I provide a front wall 9 of soapstone or other similar insulating material having two portions 10 and 11 that are so disposed with respect to each other as to constitute a member of substantially V-shape. Openings 12 are provided in the member 9 to permit the rupture of the arc that is blown outwardly when the contact members 6 and 7 separate.

As is shown in Fig. 1, upon the separation of the contact members 6 and 7 the resultant arc stream moves successively outwardly from a path designated A, indicated by a dot-and-dash line, to a path designated B. The magnetic propelling or blow-out force always act at right angles to the direction of flow in the arc stream.

When the arc stream is in contact with the several walls of the arc chute, the arc stream follows the path B, which closely follows the inner contour of the arc chute 1. Since the walls 4 and 5 of the arc chute are solid, no further deflection of the arc stream may take place in their direction. Consequently, the only avenue of escape for the arc stream is through the openings 12. As the arc stream B is moving in a direction parallel to the wall 9, the impulse of the propelling magnetic force is at right angles to the surface 9, or in axial alinement with the openings 12.

The openings 12 in portions 10 and 11 of the wall 9 are disposed at divergent angles to the medial line of the arc chute 1. The direction of the propelling force through the openings 12, in portions 10 and 11 of the wall 9, which are equi-distant from the medial line of the arc chute, is such as to create a tendency for the deflected arc streams to focus at a point on the medial line of the arc chute, but outside thereof. The result is that the portions of the arc stream which are blown through the portion 10 of the wall 9 are directed into the same zone as are the portions of the arc stream blown through the portion 11 of the wall 9. The arc stream thereafter continues to elongate itself until it breaks down by reason of the resistance of the atmosphere.

It will thus be seen that I have provided an arc chute in which the arc stream is focused into a definite predetermined zone, as is shown by the dot-and-dash line 13, and is not permitted to prolong itself indefi-

nitely in a radial direction, as is shown by the dotted line 8. The arrangement just described prevents the formation of the arc stream across the outer ends of the walls 4 and 5, thus protecting them, as well as apparatus located adjacent thereto, from injury.

My invention is not limited to the specific construction illustrated, as it may be variously modified without departing from the spirit and scope thereof, as set forth in the appended claims.

I claim as my invention:

1. An arc chute comprising side walls, top and bottom walls, and a partially enclosing front wall composed of two sections disposed angularly with respect to one another and to the top and bottom walls, the remote ends of the said two sections abutting against the outer ends of the top and bottom walls, respectively, and the adjacent ends thereof extending toward the inner ends of the top and bottom walls.

2. In an arc chute, relatively movable contact members, and deflecting and guiding means for focusing the arc stream generated upon the occurrence of an arc between said contact members into a zone external to said arc chute.

3. In an arc chute, relatively movable contact members, and a confining wall equipped with means for focusing the arc stream generated upon the occurrence of an arc between said contact members, into a zone external to said arc chute.

4. An arc chute comprising spaced side-wall members, top and bottom-wall members and a sectional front-wall member, the sections meeting at an angle, and the said wall being provided with a plurality of openings therein, the axes of said openings converging externally of said arc chute.

5. An arc chute comprising side-wall members, top and bottom-wall members, and a front wall member having a plurality of openings therein, the axes of said openings converging externally of said arc chute.

In testimony whereof, I have hereunto subscribed my name this 28th day of Dec., 1918.

CHRISTIAN AALBORG.