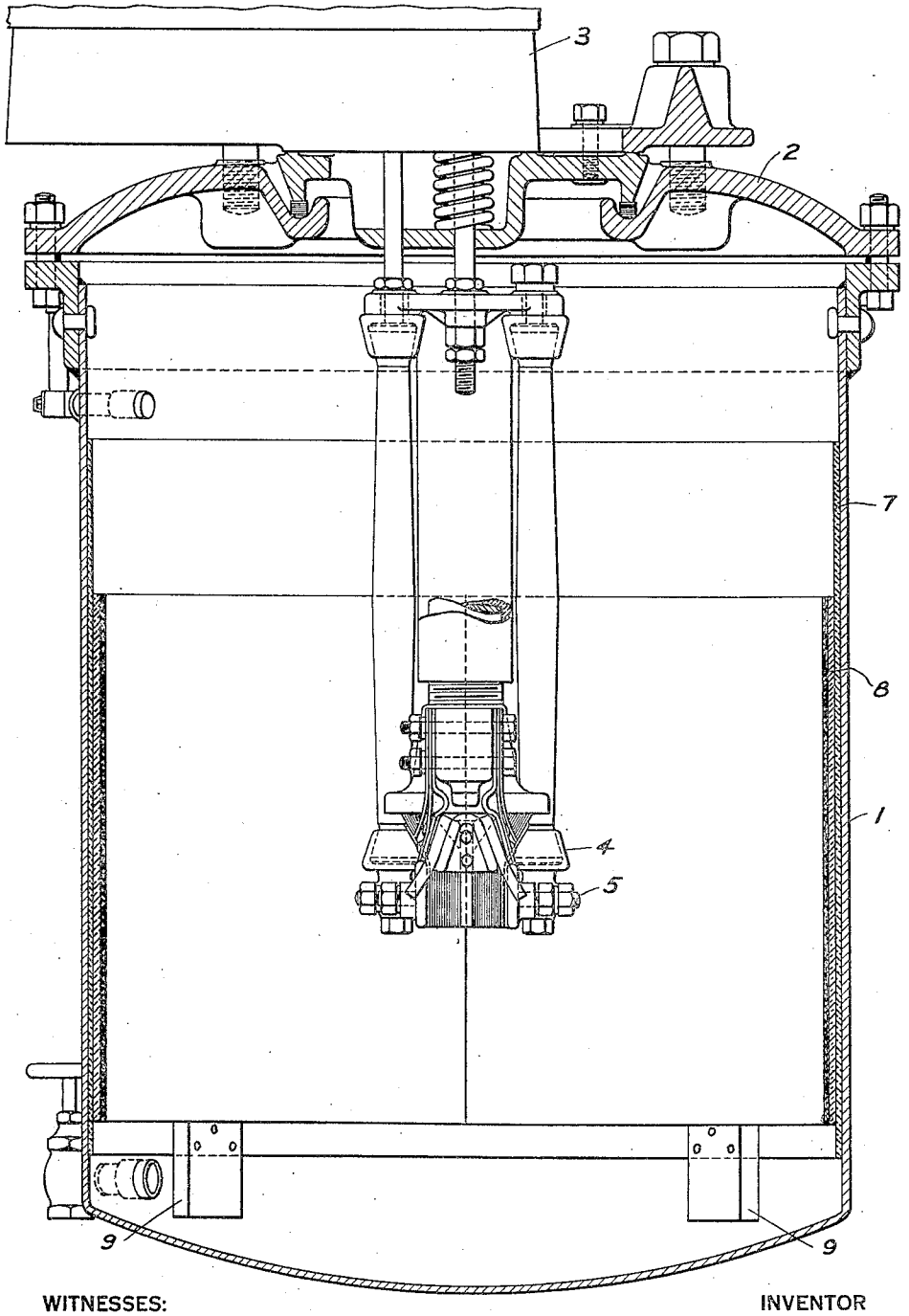
April 16, 1929. C. AALBORG 1,709,648

CIRCUIT BREAKER TANK

Filed Nov. 10, 1922



WITNESSES:

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CIRCUIT-BREAKER TANK.

Application filed November 10, 1922. Serial No. 600,004.

My invention relates to circuit breakers of the fluid type and particularly to linings for the tanks thereof.

One object of my invention is to provide linings for circuit breaker tanks which are not subject to damage upon exposure to flames or high temperatures.

It is also an object of my invention to provide linings for circuit breaker tanks which are sectional and which are capable of ready replacement.

In my prior application, Serial No. 454,826, filed March 7, 1921, I have shown and described a sectional lining for a circuit breaker tank comprising layers of micarta material. In accordance with the present invention, I employ an asbestos lining combined with one of the micarta material linings set forth in the former application.

The single figure of the accompanying drawing is a sectional view of a circuit breaker and a tank therefor embodying my invention.

In the preferred embodiment of my invention, a metallic tank 1 is provided with a cover 2 surmounted by a container 3 for suitable operating mechanism. A pair of relatively movable contact members 4, 5 are suspended within the tank 1 by any conventional means. The tank 1 is generally filled with a fluid, such as oil, to a depth sufficient to submerge the relatively movable contact members 4 and 5. These parts may be of any conventional design, as they form no part of this invention.

Within the tank 1, I place a plurality of linings 7 and 8. In this embodiment of my invention, I have shown a single pair of such linings, although it is to be understood that the number of linings may be varied to fit the need of any desired size of tank. In the preferred form of my invention, the outer layer 7 is formed of a phenolic condensation product, commonly known as micarta material, although other forms of insulating fabric which are not susceptible to deterioration in the presence of oil and arc gases, may be employed. The inner layer 8 is composed of asbestos which has been suitably treated with a phenolic condensation product in such a manner that the inner face of the lining is composed almost entirely of asbestos which merges with the phenolic condensation product until the outer face of the lining is composed almost entirely of the phenolic condensation product. The percentage of asbestos thus diminishes directly with the distance from the inner face. As is shown in the drawing, the several layers of lining are spaced apart to allow separate removal of any lining section. The lining 7 is primarily an electrical insulating medium while the lining 8 is primarily a heat resisting medium with relatively poor electrical insulating characteristics.

Suitable brackets 9 are placed at points about the inner circumference of the tank 1 to support the tank linings.

In the operation of circuit breakers of this type, the separation of the relatively movable contact members 4 and 5 is accompanied by an electrical arc which produces violent mechanical, chemical and thermal effects upon the tank structures. It is, therefore, necessary to design linings for such tanks which are insulators of electricity, are not subject to deterioration in the presence of oil and are capable of withstanding high temperatures. These qualities are possessed by an asbestos fiber treated with a phenolic condensation product. By this construction, the micarta-material lining, heretofore employed, is given the added heat-resisting qualities which are inherent in asbestos, the phenolic condensation product serving as a bond and support for the asbestos fiber.

It will be apparent that various modifications may be made in the apparatus and in the arrangements of the several parts without departing from the spirit of the invention, as set forth in the accompanying claims.

I claim as my invention:

1. In a circuit breaker structure, the combination with a lining comprising micarta material, of a lining comprising an asbestos product.

2. In a circuit breaker structure, the combination with a lining comprising micarta material, of a lining comprising asbestos treated with a phenolic condensation product.

3. In a circuit breaker structure, the combination with a lining comprising a fiber treated with a phenolic condensation product, of a second lining comprising a non-combustible fiber treated with a phenolic condensation product.

4. In a circuit breaker structure, the combination with a lining comprising a phenolic condensation product, of a second lining com-

prising a phenolic condensation product of different heat-resisting characteristics than said first-named lining.

5. A lining member comprising a phenolic condensation product having a large percentage of asbestos distributed adjacent to one face, the percentage of asbestos diminishing directly with the distance from said face.

6. A lining member comprising a phenolic condensation product having a large percentage of asbestos distributed adjacent to one face, the percentage of asbestos diminishing directly with the distance from said face, the material adjacent to the other face being substantially a phenolic condensation product.

7. The combination with a fluid-containing tank for circuit interrupters, of a pair of substantially coextensive lining members, one of which is disposed within the other, one of the linings being primarily a refractory medium and the other lining being primarily an electrical-insulating medium.

8. The combination with a fluid-containing tank for circuit interrupters, of a pair of substantially coextensive lining members, one of which is disposed within the other, the inner lining being primarily a refractory medium and the outer lining being primarily an electrical-insulating medium.

9. In a circuit interrupter, the combination with a tank and a pair of relatively movable contact members mounted therein, of a lining for the tank comprising an outer portion of an electrical insulating material and an inner portion of a refractory material for protecting the outer portion of the tank lining and the tank from the deleterious effects of the heat generated upon the development of electrical arcs between the relatively movable contact members.

In testimony whereof, I have hereunto subscribed my name this 4th day of November, 1922.

CHRISTIAN AALBORG.