

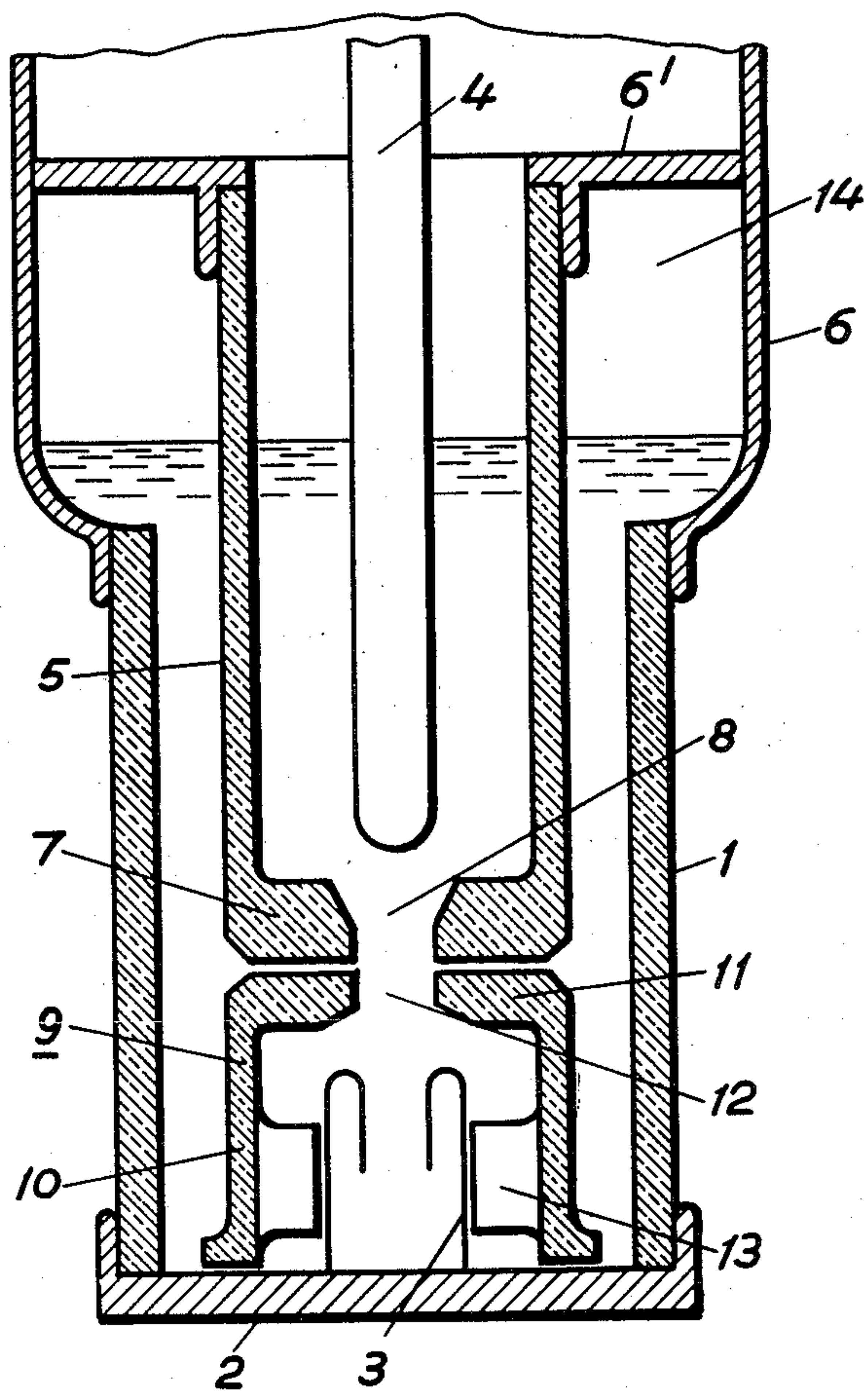
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EXTINGUISHING CHAMBER FOR OIL CIRCUIT BREAKERS

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EXTINGUISHING CHAMBER FOR OIL CIRCUIT BREAKERS

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3 Claims. (Cl. 200—150)

The present invention concerns an extinguishing chamber for oil circuit breakers, especially for small breaking capacities. The extinguishing chamber according to the invention is characterized by small dimensions, a considerable breaking capacity and a simple design. An important feature of this invention is that the extinguishing oil is brought into contact with the arc by an annular shaped slot with changeable width, which slot is closed as long as the pressure developed by the arc is high and is opened only when the current through the arc decreases. By this arrangement an unnecessary increase of the arc voltage is avoided, which always appears when the arc is exposed to the action of a strong oil jet, when the circuit through the arc still is comparatively high. This increase of the voltage causes an unnecessary decomposition of the oil.

The invention will be readily understood with reference to the accompanying drawing which schematically shows an extinguishing chamber according to the invention. In the drawing 1 designates an insulating cylinder, which at the bottom is closed by a cover 2 of metal, on which the stationary contact 3 of the circuit breaker is attached. The movable contact is a pin contact and is designated by 4. In the cylinder 1 there is arranged a further insulating cylinder 5, which at the upper end is attached by means of an annular cover 6' to a metal cylinder 6 fastened to the upper end of the cylinder 1. The cylinder 5 is at the lower end provided with a bottom 7 having an opening 8 for the passage of the movable contact. Below the bottom 7 there is a dome 9, which consists of an insulating cylinder 10 with a cover 11, which cover also is provided with an opening 12 for the passage of the movable contact. The dome 9 is provided with fins or other inwardly extending members 13, which slide against the stationary contact 3 or against a sleeve surrounding this contact, whereby the motion of the dome 9 is guided sideways. The extinguishing chamber is to a certain height filled with oil, but above the oil level, between the cylinders 5 and 6, there is a space 14 which is filled with air or some other gas.

The arrangement acts in the following way. When the contacts 3 and 4 separate, an arc is formed in the space bounded by the dome 9. The pressure generated by said arc lifts the dome so that the cover 11 is forced against the bottom 7 thus closing the slot between these parts. Simultaneously at the lower edge of the dome 9 an opening is formed for the passage of the oil into the space between the cylinders 1 and 5, so that the oil

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level in this space will be raised and thus the gas in the space 14 will be compressed. When later, with the continued upward motion of the contact 4, the current through the arc decreases towards zero, the bottom 7 and cover 11 separate, and the pressure in the space 14 will then force the oil through the slot between these parts and against the arc.

The invention may be modified in a plurality of ways. It is important, however, that the extinguishing chamber be provided with an annular slot through which oil is forced against the arc, and that the width of this annular slot shall be dependent upon the pressure, so that it is closed when the current through the arc is high and is opened only when the pressure through the arc decreases.

I claim as my invention:

1. An oil blast circuit breaker comprising a housing forming an extinguishing chamber, a movable and a stationary contact in said chamber, a vertically movable dome shaped member surrounding the stationary contact and arranged in the bottom of said chamber, a cylinder arranged above said dome shaped member and attached to said housing, said cylinder and housing forming a confined space containing oil and gas and forming a pressure accumulator, the top of said dome shaped member and the bottom of said cylinder being provided with apertures forming a passage for the movable contact and said dome top and cylinder bottom forming an annular slot of variable width through which oil may be forced against an arc between the contacts by the pressure of the gas enclosed in the said confined space.

2. An air blast circuit breaker comprising a housing forming an arc extinguishing oil chamber, a fixed contact located in said chamber and attached to the bottom of said housing, a movable contact located in said chamber for downward movement into the closed position, an inner insulating cylinder fixed to the said housing so as to form a confined annular space for a gas between its outer surface and the upper part of the housing, and a vertically movable annular insulating member surrounding the fixed contact and forming with the lower end of said cylinder an annular slot for the passage of oil to the arc between the said contacts when the oil is forced downwardly by the pressure of the gas in the said confined annular space and when the said insulating cylinder and annular insulating member are separated from each other to open the said annular slot.

3. A circuit breaker according to claim 2, in which the fixed contact serves as a guide for the vertical movement of the said annular insulating member towards and away from the said insulating cylinder to close and open the said annular slot.

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