

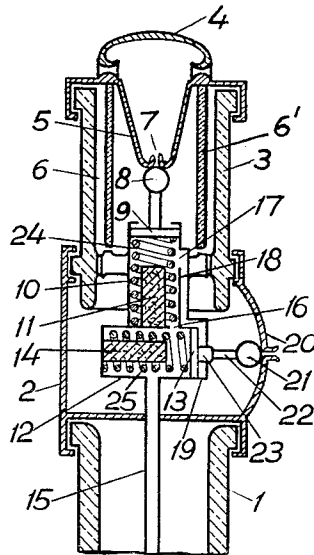
Jan. 2, 1951

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2,536,270

FLUID PRESSURE OPERATED CIRCUIT BREAKER

Filed Jan. 17, 1948



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UNITED STATES PATENT OFFICE

2,536,270

FLUID PRESSURE OPERATED CIRCUIT
BREAKER

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Application January 17, 1948, Serial No. 2,920
In Sweden May 11, 1944

Section 1, Public Law 690, August 8, 1946
Patent expires May 11, 1964

1 Claim. (Cl. 200—82)

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The present invention has for its object an improvement of the invention shown in my co-pending application, Serial No. 2913, filed Jan. 17, 1948. In this the two breaking gaps are simultaneously opened and then the breaking gap connected in parallel with the resistance is again closed. In order to ensure that the latter breaking gap remains open so long that the extinction in reality can take place and the other breaking gap thus only be loaded by the current through the resistance there must be a special retarding device for the latter breaking gap. Such a retarding device means, however, a complication and is difficult to reach for adjusting.

The present invention has for its object a modification of the said arrangement, by which without any special precautions guarantee is reached that the main breaking gap, i. e. the breaking gap coupled in parallel with the resistance, is entirely opened, before the contacts in the other breaking gap begin to separate. Further the opening time for the main contacts easily can be regulated by regulation of the speed, at which the operating pipe line is emptied of compressed air. (By a regulable exhausting valve.)

The accompanying drawing shows in vertical section one form of the circuit breaker in accordance with this invention. On the drawing 1 designates the pillar insulator, on which the whole circuit breaker rests. 2 is a metal casing, to which one of the conductors to the circuit breaker is connected. On this metal casing rests an insulating cylinder 3, which at the upper end is closed by a cover 4, which at the edge is provided with outlets for the compressed air. The other conductor to the circuit breaker is connected to this cover, and on the same a metal sleeve 5 is attached, carrying the stationary contact 7 of the contact pair 7, 8. The movable contact 8 in the cylinder 3 is by means of a rod attached to the piston 9, which is movable in the cylinder 10. In the cylinder 10 there is a block 11 of an elastic suitably insulating material, serving as damper for the impacts from the piston 9.

The space around the contact pair 7, 8 contains an insulating cylinder 6', upon which is mounted a resistance consisting of a fabric of asbestos yarn and very fine resistance wires, or

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upon which, as shown in the drawing, a resistance 6 is wound, said resistance being coupled in parallel with the breaker gap 7, 8.

Below the cylinder 10 another cylinder 12 is arranged. In it a piston 13 is movable and also for this a dampening member 14 is provided, consisting of a block of elastic material arranged on the bottom of the cylinder. The cylinder 12 may by the operating line 15 be brought in communication either with the atmosphere or with the compressed air container of the circuit breaker. The two cylinders are in direct communication with each other by an opening 16 but also by a channel 18, which at one end opens to the cylinder 10 through the opening 17 and in the other end to the cylinder 12 in the space 19 between the piston 13 and the cylinder cover. The breaking gap operated by the piston 13 consists of the movable contact 21 and the stationary contact arranged in the casing 2. The former is attached to the piston 13 by means of a rod 22, which nearest to the piston 13 has a thicker part 23, fitting the hole in the cover of the cylinder.

The arrangement acts in the following way: when opening the circuit breaker compressed air at first is given admittance as well to the circuit breaker as to the operating line 15. When the circuit breaker has been entirely filled with air, the operating line 15 is brought in communication with the free air. As then the pressure in the circuit breaker will be higher than the pressure in the cylinders 10 and 12, the piston 9 at first will move downwards, so that the breaking gap 7, 8 is opened. When the piston 9 during its motion downwards has passed the opening 17 of the channel 18, the pressure in the circuit breaker also will act on the piston 13, which then moves to the left until it strikes the buffer 14. At the end of its motion the piston 13 will pass by the opening 16 between the two cylinders and the pressure in the circuit breaker will therefore also act on the lower side of the piston 9, so that by its spring 24 it is moved upwards, so that the breaking gap 7, 8 again is closed. The breaking gap 20, 21 again will remain open, because the piston 13 will remain in its left position, until compressed air again is delivered to the operating pipe line.

I claim as my invention:

An air blast circuit breaker, comprising a compressed air chamber, contacts forming a main breaker gap, contacts forming an auxiliary breaker gap, means coupling said gaps in series in said compressed air chamber, a resistance connected in parallel with one of said gaps, cylinders and spring-balanced pistons actuated by compressed air for the operation of the movable contacts of said gaps, an evacuating channel for the said cylinders, a channel between said cylinders giving access to compressed air to actuate one of said pistons after evacuation of the cylinders, and only when the other piston at the

opening of the main breaker gap has moved substantially through its full stroke.

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The following references are of record in the file of this patent:

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