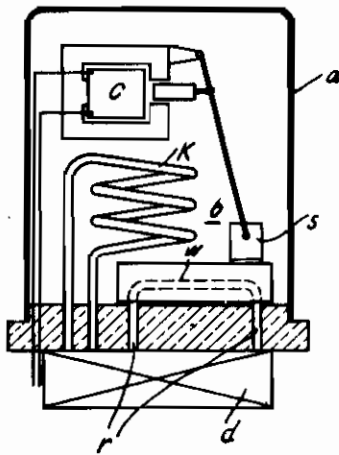


PUBLISHED
MAY 18, 1943.
BY A. P. C.

F. GIEFFERS
DEVICES FOR CONTROLLING POWER CIRCUITS
Filed May 7, 1941

Serial No.
392,280



Friedrich Gieffers
Inventor
ONVENTOR

By *Les* Attorneys *Knights*

ALIEN PROPERTY CUSTODIAN

DEVICES FOR CONTROLLING POWER CIRCUITS

Friedrich Gieffers, Berlin-Spandau, Germany;
vested in the Alien Property Custodian

Application filed May 7, 1941

This invention relates to devices for controlling power circuits with the aid of a variable resistor hereinafter referred to as resistance circuit breaker. If such resistance circuit breakers are properly designed the switching operation is effected without arcing and without development of vapors.

The invention utilizes this fact and consists in enclosing the resistance circuit breaker in a diffusion-proof gas or vacuum container and in providing the resistance circuit breaker with cooling devices. The known vacuum switches are either not suitable for the purposes of the invention owing to their small interrupting capacity or they necessitate movable bushings, seals or bellows which are very difficult to design. The formation of the arc in the vessel presents a further disadvantage. To restrict the formation of the arc the use of a high vacuum has been proposed which is very expensive to produce and to maintain.

The resistance circuit breaker according to the invention avoids these drawbacks. Owing to the relatively small dimensions the entire switch apparatus together with its driving means may be enclosed in a container even in the case of considerable interruption capacities without the necessity of providing movable parts in the wall of the container. Since the switch device does not develop vapors and also the heat developed therein may be kept within moderate limits with the aid of suitable cooling devices, the air-tight housing may be easily carried out without the heat developed in the housing by the resistor being detrimental. In this case the container may be exhausted to a moderate extent or filled up with a suitable gas. The air-tight housing presents also great advantages if the driving device is

partly arranged exteriorly of the container. By the use of an air-tight housing the contact surfaces of the resistor are free of dust, which is of great importance to a sparkless functioning of such devices.

Such a resistance circuit breaker may be employed in shops exposed to risk of explosions or in chemical works in which the air contains gases detrimental to the circuit breaker. It is, therefore, also suitable for places exposed to the risk of fire damp and the like.

In the accompanying drawing is shown an embodiment of the resistance circuit breaker according to the invention in diagrammatic form. In the air-tight container *a* is arranged the resistance circuit breaker *b* consisting substantially of a resistor *w* and of a movable contact *s*. *C* denotes the driving magnet for the resistance circuit breaker *b*. The points of the container wall through which pass the current supply conductors *l* are vacuum-tight. In the container is arranged a cooling coil *k* filled up with the cooling medium which is in communication with a cooler arranged exteriorly of the container. The cooling medium conduits *r* are connected also to the cooling channels of the resistor *w* or of its support so that the heat developed in the resistor is carried off very efficiently.

It is also possible to cause the gas in the container to circulate and to thus transfer the heat developed in the resistor to the surface of the container or to a cooler, from where it is dissipated to the outside. The cooling of the container may be dispensed with if the cooling of the resistor *w* is sufficient for the dissipation of the heat.

FRIEDRICH GIEFFERS.