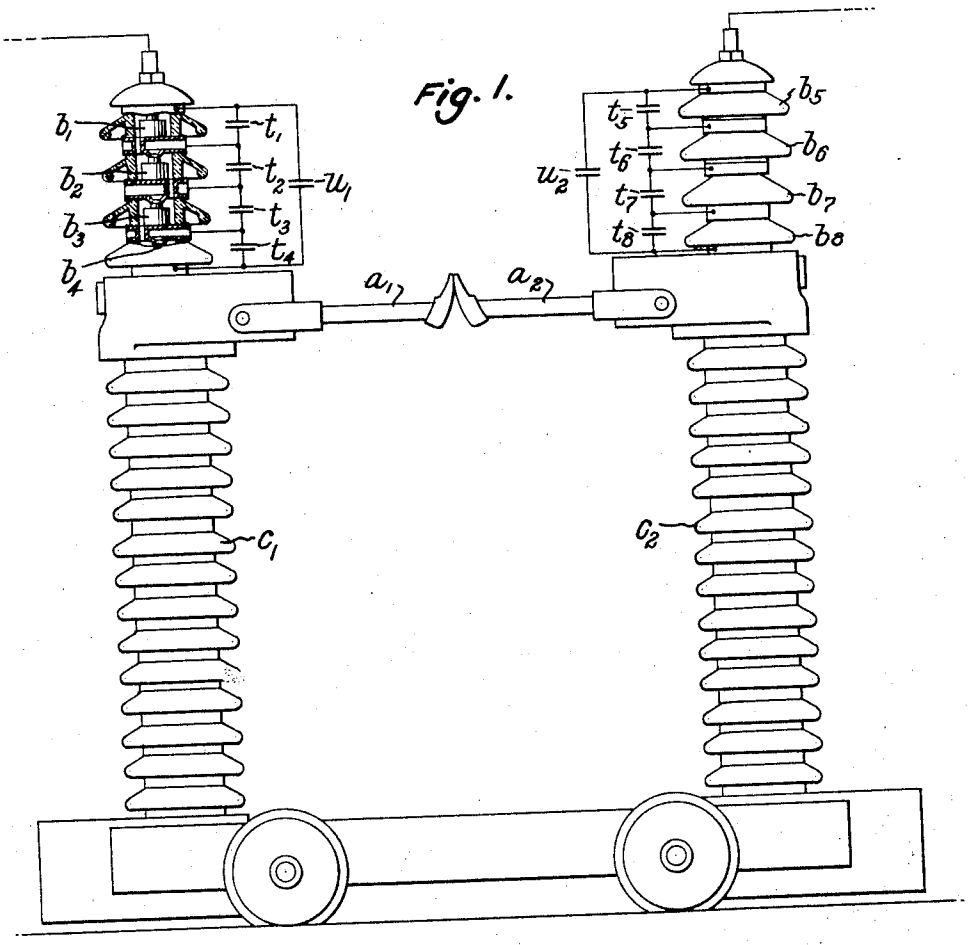
Feb. 1, 1944. H. THOMMEN 2,340,827

MULTIBREAK SWITCHING DEVICE

Filed Sept. 24, 1942

Fig. 1.



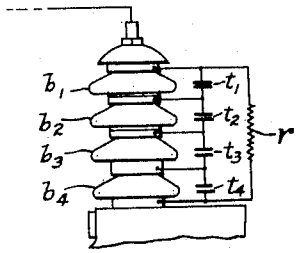


Fig. 2.

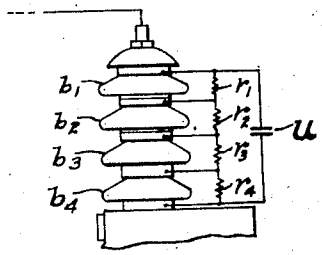


Fig. 3.

Inventor:

Hans Thommen,

By Pierce & Scheffler,

Attorneys.

Patented Feb. 1, 1944

2,340,827

UNITED STATES PATENT OFFICE

2,340,827

MULTIBREAK SWITCHING DEVICE

Hans Thommen, Baden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland, a joint-stock company

Application September 24, 1942, Serial No. 459,547
In Switzerland September 27, 1941

4 Claims. (Cl. 200—145)

The present invention concerns a gas blast circuit breaker with multiple interruption for interrupting the power and a disconnecting switch connected in series for the voltage isolation, impedances being connected in parallel with the individual power interrupting points, these impedances being so dimensioned that an equal voltage distribution is obtained over all points of interruption and the residual current can be interrupted by a switch which isolates without a pressure gas. The impedances can consist of condensers or resistances. It is also possible to construct these circuit breakers in such a manner that equal numbers of interrupting points are grouped together, these groups being located on the head pieces of the supporting insulators which at the same time carry the contacts for the voltage interrupting point. Tests made with switching arrangements of the last mentioned kind have now shown that in order to be able to use small control elements it is necessary to provide each group with an additional control element besides the control means already provided for obtaining a uniform voltage distribution over all points of interruption, these additional control elements being used for coarse regulation and ensuring that the voltage is evenly distributed over the groups.

Therefore according to the invention in addition to the impedances for obtaining a uniform voltage distribution over the individual points of interruption of each group, supplementary means are provided for the coarse regulation of the voltage distribution over the groups themselves.

The nature and advantages of the invention will be apparent from the following specification when taken with the accompanying drawing in which:

Fig. 1 is a side elevation, partly in section, of a switch system embodying the invention, the switch system including two groups of current interrupting points in an air blast circuit breaker for current interruption and a disconnecting switch for voltage isolation, the voltage distribution elements being shown diagrammatically as capacitive impedances;

Fig. 2 is a fragmentary side elevation of another embodiment that includes capacitive impedance for establishing a desired voltage distribution along the current interruption points of the group, and resistive impedance for establishing a desired voltage distribution over the groups; and

Fig. 3 is a similar fragmentary side elevation of another embodiment in which resistive impedance forms the voltage divider within each group of current interrupting points, and capacitive impedance forms the voltage divider across the groups of points.

The power interrupting points b_1 to b_8 are divided into two groups b_1–b_4 and b_4–b_8 each of which is located on the supporting insulators c_1 and c_2 respectively. The points of interruption are actuated by compressed gas and subjected to a gas blast for extinguishing the arc. The head pieces of the supporting insulators also carry the movable contacts a_1, a_2 of the voltage isolating switch. The contacts of the power interrupting points are bridged over by condensers t_1 to t_8 which serve to ensure a uniform voltage distribution over the individual points of interruption. In addition condensers u_1, u_2 are provided which undertake the coarse regulation of the voltage over each group of interrupting points bridged over by condensers t_1 to t_4 and t_5 to t_8 respectively.

By means of the arrangement described where a course control is provided in addition to the control for the voltage distribution over the points of interruption, it is possible to obtain much more favourable conditions for the desired uniform voltage distribution and furthermore the control elements can be made much smaller.

Resistances can be used just as readily in place of the condensers shown in the drawing. It is also possible to use combinations of condensers and resistances to obtain the desired voltage distribution. An embodiment of this mixed impedance may include condensers t_1, t_2— across each current interrupting point, and resistor r across each group of points, Fig. 2. Alternatively, as illustrated in Fig. 3, condensers u may be connected across the groups for the coarse control and resistances r_1, r_2— may be provided for controlling the voltage distribution within the groups. The contacts of the voltage isolating switch do not require to be subjected to an air stream, they can be magnetic.

I claim:

1. In a multibreak gas blast circuit breaker, the combination with a plurality of insulators each supporting a group of a plurality of pairs of circuit interrupting contacts, and impedances shunted across the respective pairs of contacts of each group to establish a predetermined voltage gradient over the contacts of that group, of impedances shunted across each group of associated pairs of contacts to establish a predeter-

mined voltage gradient over the plurality of groups.

2. In a multibreak gas blast circuit breaker, the invention as recited in claim 1 wherein the impedances across the pairs of contacts of a group and the impedances across the groups of contacts are of unlike type.

3. In a multibreak gas blast circuit breaker, the invention as recited in claim 1 wherein the impedances across the pairs of contacts of a group are resistive and the impedances across the groups of contacts are capacitive.

4. In a multibreak gas blast circuit breaker, the invention as recited in claim 1 wherein the impedances across the pairs of contacts of a group are capacitive and the impedances across the groups of contacts are resistive.

HANS THOMMEN.