

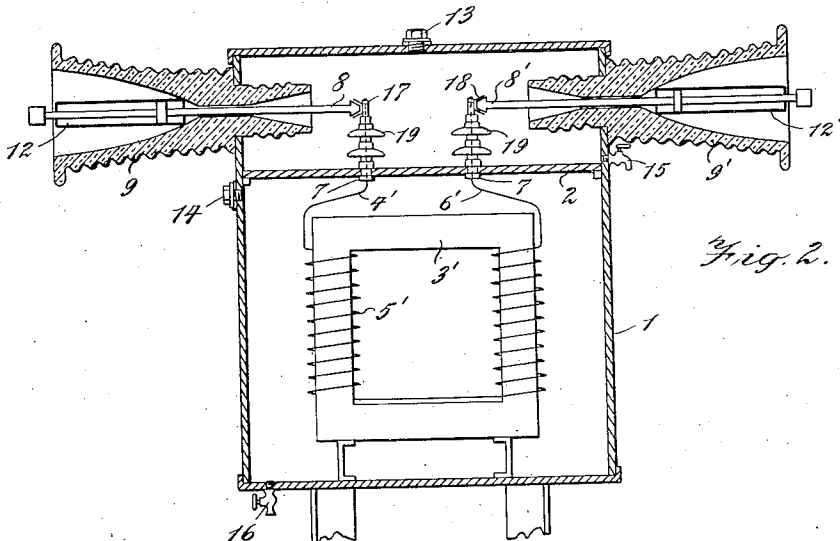
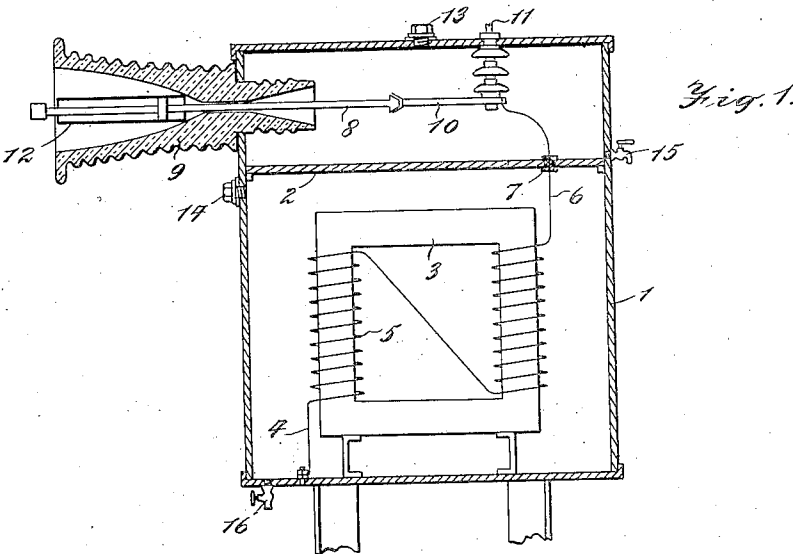
Sept. 5, 1933.

F. G. BAUM

1,925,861

COMBINED CIRCUIT BREAKER AND TRANSFORMER

Original Filed July 31, 1928



INVENTOR
Frank G. Baum
BY *Victor L. Boret*
ATTORNEY

UNITED STATES PATENT OFFICE

1,925,861

COMBINED CIRCUIT-BREAKER AND
TRANSFORMER

Frank G. Baum, Berkeley, Calif.; Esther F.
Born executrix of said Frank G. Baum,
deceased

Application July 31, 1928, Serial No. 296,496
Renewed January 26, 1933

4 Claims. (Cl. 175-361)

The purpose of this invention is to simplify and reduce the expense and space requirements of transformer and switch mechanisms at generating and other stations along high tension electrical transmission lines. According to the usual practice transforming and switch mechanisms in high tension circuits are immersed in oil contained in special tanks for the purpose. These tanks are of considerable size, the oil switch tanks being substantially as large as the transformer tanks by reason of the usual vertical arrangement of the switch elements with the terminal bushings in the top of the tank. Also at least three high tension bushings are required for each transformer and switch set, one for the transformer tank and two for the switch tank. By this invention I dispense with the requirement for the high tension or secondary winding bushings heretofore used with the transformer tank, and I dispense with one of the tanks.

In accordance with my invention I employ a tank divided by a partition into two compartments, each of which may be filled with oil, the transformer being located in one compartment and having a terminal connected to one of the contact elements of the switch which is located in the other compartment. In case of a two terminal transformer the switch will be a double switch and both terminals of the transformer will be connected to a contact element of the switch.

With this arrangement the switch may be a horizontally opening switch located above the transformer and the single tank for the two members need be but slightly higher than the usual transformer tank. The single bushing in case of a single terminal transformer, or the two bushings in case of a two terminal transformer, may be disposed horizontally in the side wall of the switch compartment, while the lead or leads from the transformer to the switch may pass through the partition by means of oil tight bushings. The partition will effectively separate the two compartments so that there will be no transference of oil between them, and means will be provided to drain or renew the oil independently in the two compartments.

I shall now describe the illustrated embodiments of my invention and shall thereafter point out my invention in claims.

Fig. 1 is a vertical section of one embodiment of my invention;

Fig. 2 is a like view of another embodiment.

In the construction shown in Figure 1, the tank 1 which may be made of steel, is divided by

the horizontal partition 2 into a relatively large lower transformer compartment and a smaller upper switch compartment. The transformer 3 in the lower compartment has its core supported on the bottom of the tank and one terminal 4 of the secondary winding 5 of the transformer is grounded to the tank while the other terminal 6 is passed through a bushing 7 in the partition 2 into the upper compartment. For clarity of illustration the primary winding of the transformer is omitted in the drawing.

The switch construction contained in the upper compartment is of a form which constitutes the subject-matter of my copending application, Serial No. 295,007, filed July 24, 1928. One of the switch elements is a horizontally sliding contact rod 8 which enters through and bears in an insulating bushing 9 in the side wall of the compartment, and the other co-operative element of the switch is a rotative or swinging conductive rod 10. This rod 10 is rotated by a suitably insulated vertical operating rod 11, which bears in the top of the tank and is actuated from any suitable means (not shown) external of the tank. The rod 8 will also be actuated in synchronism with the contact member 10 by any suitable means 12 external of the tank. The lead 6 of the transformer terminal is connected electrically with the rotative switch member 10, while the sliding rod 9 will be connected to a line terminal.

The compartments may be filled after removing plugs 13 and 14, and they may be drained through faucets 15 and 16. An expansion space may be provided for the oil switch chamber, as by arching the top.

The construction shown in Figure 2 differs from that above described in that the transformer 3' is of the two terminal type. The two terminals 4' and 6' of the secondary winding 5' lead into the switch chamber through bushings 7 and are connected to two oppositely facing fixed switch elements 17 and 18 which are supported by insulating pillars 19 upon the partition 2. Coacting with the switch elements 17 and 18 are two horizontal sliding contact rods 8 and 8' bearing in opposed bushings 9 and 9' and actuated oppositely in synchronism by suitable actuating means 12 and 12'. The sliding contact rods 8 and 8' will be connected to the line terminals.

It is obvious that various modifications may be made in the constructions shown in the drawing and above particularly described within the principle and scope of my invention.

I claim:

1. For high-tension circuits, a combined cir- 110

cuit-breaker and transformer comprising an oil-containing tank divided by a horizontal partition into an upper and a lower compartment, a transformer in one compartment, a contact in the other compartment having electrical connection with one transformer terminal, a sliding contact rod in the said other compartment arranged to make and break contact with the said contact to connect and disconnect the high-tension circuit to and from said transformer, respectively, and actuating means for the contact rod external of the tank.	cuit-breaker and transformer comprising an oil-containing tank divided by a horizontal partition into a relatively large lower compartment and a smaller upper compartment, a transformer in the lower compartment, an insulating bushing in the side wall of the upper compartment, and a switch in the upper compartment including a contact rod slidable through the bushing and a cooperative contact having electrical connection with a transformer terminal.
2. For high-tension circuits, a combined circuit-breaker and transformer comprising an oil-containing tank divided by a horizontal partition into an upper and a lower compartment, a transformer in one compartment, a contact in the other compartment having electrical connection with one transformer terminal, an insulating bushing in the wall of the said other compartment, a contact rod slidable through said bushing and adapted to make and break contact with said contact, and means external of the tank for actuating said contact rod.	4. For high-tension circuits, a combined circuit-breaker and transformer comprising an oil-containing tank divided by a horizontal partition into a relatively large lower compartment and a smaller upper compartment, a transformer in the lower compartment, an insulating bushing in the side wall of the upper compartment, a switch in the upper compartment including a contact rod slidable through the bushing and a cooperative contact having electrical connection with a transformer terminal and actuating means for the contact rod disposed within the bushing external of the tank.
3. For high-tension circuits, a combined circuit-breaker and transformer comprising an oil-containing tank divided by a horizontal partition into an upper and a lower compartment, a transformer in one compartment, a contact in the other compartment having electrical connection with one transformer terminal, a sliding contact rod in the said other compartment arranged to make and break contact with the said contact to connect and disconnect the high-tension circuit to and from said transformer, respectively, and actuating means for the contact rod external of the tank.	FRANK G. BAUM.
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150