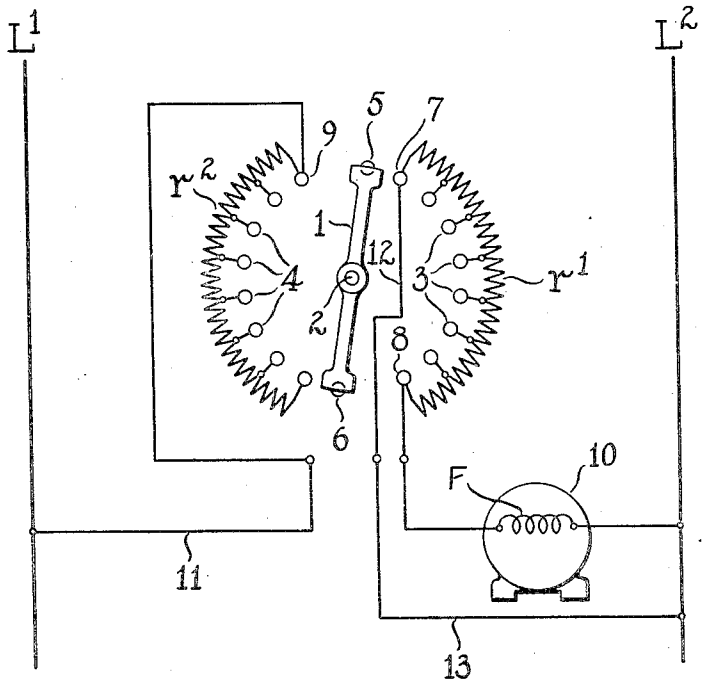
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CIRCUIT CONTROLLERS

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CIRCUIT CONTROLLER

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2 Claims. (Cl. 175—335)

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This invention relates to improvements in circuit controllers and more particularly to controllers of the rheostat type with so-called potentiometer type connections.

In practice it is often desired for various reasons to employ as for shunt field control of a dynamo electric machine a rheostat with potentiometer type connections, such rheostat having its resistor distributed over a supporting base in two groups to be bridged by a centrally pivoted contact arm. However, this type of rheostat has presented difficulties in obtaining the desired connections without complications in structure and connections, particularly where it is desired to disconnect the rheostat to avoid wastage of power when the rheostat is not in use.

An object of the present invention is to provide a rheostat of the aforementioned type and connections therefor which will overcome the aforementioned difficulties and which will without complication enable the rheostat if desired to be provided with an off position for its disconnection from circuit.

Another object is to provide such a rheostat and circuits therefore which will provide for the controlled winding a complete discharge path should the rheostat contact arm due to shock or other cause disengage its cooperating contacts.

Other objects and advantages of the invention will hereinafter appear.

The accompanying drawing illustrates diagrammatically one embodiment of the invention which will now be described, it being understood that the embodiment illustrated is susceptible of modification without departing from the scope of the appended claims.

Referring to the drawing, the rheostat is illustrated as comprising a double ended contact arm 1 pivoted centrally at point 2 to sweep over and bridge two sets of contacts 3 and 4 arranged concentrically to the pivot of said contact arm, the two sets of contacts 3 and 4 having connected thereto resistors r^1 and r^2, respectively. Between the two sets of contacts 3 and 4 are dead contacts 5 and 6 on which the ends of the contact arm 1 rest when disengaged from the sets of contacts 3 and 4. The uppermost contact 3 constitutes a wiring terminal 7 while the lowermost contact 3 constitutes a wiring terminal 8. The uppermost contact 4 constitutes a wiring terminal 9, the opposite terminal contact of said set being without external circuit connection.

The rheostat described is shown as used in regulating the excitation of the shunt field winding F of a dynamo electric machine 10 of any

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suitable type, said shunt field winding being supplied with current from lines L^1, L^2. The field winding F is shown as permanently connected between terminal 8 of the rheostat and line L^2.

The additional circuit connections shown comprise a direct connection 11 from line L^1 to terminal 9 of the rheostat and a direct connection 12—13 from the rheostat terminal 7 to line L^2. Here it will be noted that the connection 12—13 affords a permanent discharge circuit for the field winding F inclusive of all of the resistor r^1 connected to the set of contacts 3.

With the arm in the position illustrated which may be termed the "off" position it will be noted that no circuit is completed other than the aforementioned field discharge circuit. On the other hand, when contact arm 1 is moved clockwise to engage contacts 3 and 4 circuit will be completed from line L^1 to rheostat terminal 9 through all or a portion of resistor r^2 according to the position of said arm, and thence to a contact 3. With the arm 1 in engagement with terminal contact 7 of contacts 3 the resistor r^1 together with the field winding F will be shunted by conductors 11 and 12 while resistor r^2 will be thrown directly across lines L^1, L^2. On the other hand, as movement of arm 1 in a clockwise direction is continued the resistors r^1 and r^2 being in series with the field winding F will be gradually excluded from the field winding circuit, the excluded portion of the resistor r^1 being shifted to the circuit shunting said field winding. Thus as the arm continues to move in a clockwise direction the excitation of field winding F is gradually increased until the resistors r^1 and r^2 in their entirety are excluded from series relation with said winding for maximum excitation of said winding. As will now be observed, if after the arm 1 is engaged with contacts 3 and 4 it is by shock or otherwise disengaged from said contacts, the field winding F will have a completed discharge circuit inclusive of all of the resistor r^1.

With the arm 1 in a position to engage contacts 3 and 4 it will of course be apparent that counterclockwise movement of said arm gradually increases the resistance of the circuit of the field winding F thereby to reduce the excitation of said winding, until the arm reaches the rheostat terminal contact 7. Then if the arm 1 is returned to the position illustrated it will interrupt the connection between resistor r^2 and line L^2, also completely disconnecting from line L^1 the field winding F.

We claim:

1. In combination, a first resistor, a second re-

sistor, a bridging arm for said resistors of the double ended type pivoted intermediate its ends, a power supply circuit, connections between one line of said supply circuit and said second resistor at different points on the latter, certain of said connections being for inclusion therein of a controlled winding, and a connection between a second line of said supply circuit and an end terminal of said first resistor, said arm having a position in which it connects said first resistor across said lines by interconnecting said resistors at a line connected point of said second resistor and said arm being movable in one direction from such position to interrupt circuit between said resistors thereby to terminate consumption of power from said supply circuit without interruption of said connections between said resistors and their respective lines or movable in an opposite direction from such position to shift the interconnection of said resistors to taps thereof for regulating purposes.

2. The combination with an electroresponsive winding, of a control rheostat therefor comprising a first resistor, a second resistor and bridging arm therefor of the double ended type pivoted intermediate its ends, said arm having a position in which it interconnects said resistors end to end and being movable in one direction from such position to interrupt circuit between said resistors or movable in a reverse direction from such position to shift the interconnection of said resistors to taps thereof, a power supply circuit, a connection between one line of said supply circuit and the end terminal of said first resistor farthest removed from said arm in circuit interrupting position, a connection between another line of said supply circuit and said second resistor at its end terminal utilized in interconnecting said resistors in the first mentioned position of said arm and a second connection from the latter line of said supply circuit to said second resistor through said electroresponsive winding, said connections of said second resistor providing in all positions of said arm a discharge path for said electroresponsive winding.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
795,861	Schuler	Aug. 1, 1905
1,356,099	Turbayne	Oct. 19, 1920
1,092,880	Wiegand	Apr. 14, 1914
2,073,326	Taylor	Mar. 9, 1937
838,315	Geipel	Dec. 11, 1906
1,121,544	Wilkinson	Dec. 15, 1914
1,938,427	Hunter	Dec. 5, 1933
673,239	Burke	Apr. 30, 1901
1,655,663	Rogers et al.	Jan. 10, 1928
1,828,272	Ashbaugh	Oct. 20, 1931
1,411,586	Rogers	Apr. 4, 1922
1,048,548	Kramer	Dec. 31, 1912

FOREIGN PATENTS

Number	Country	Date
618,632	Germany	Sept. 12, 1935