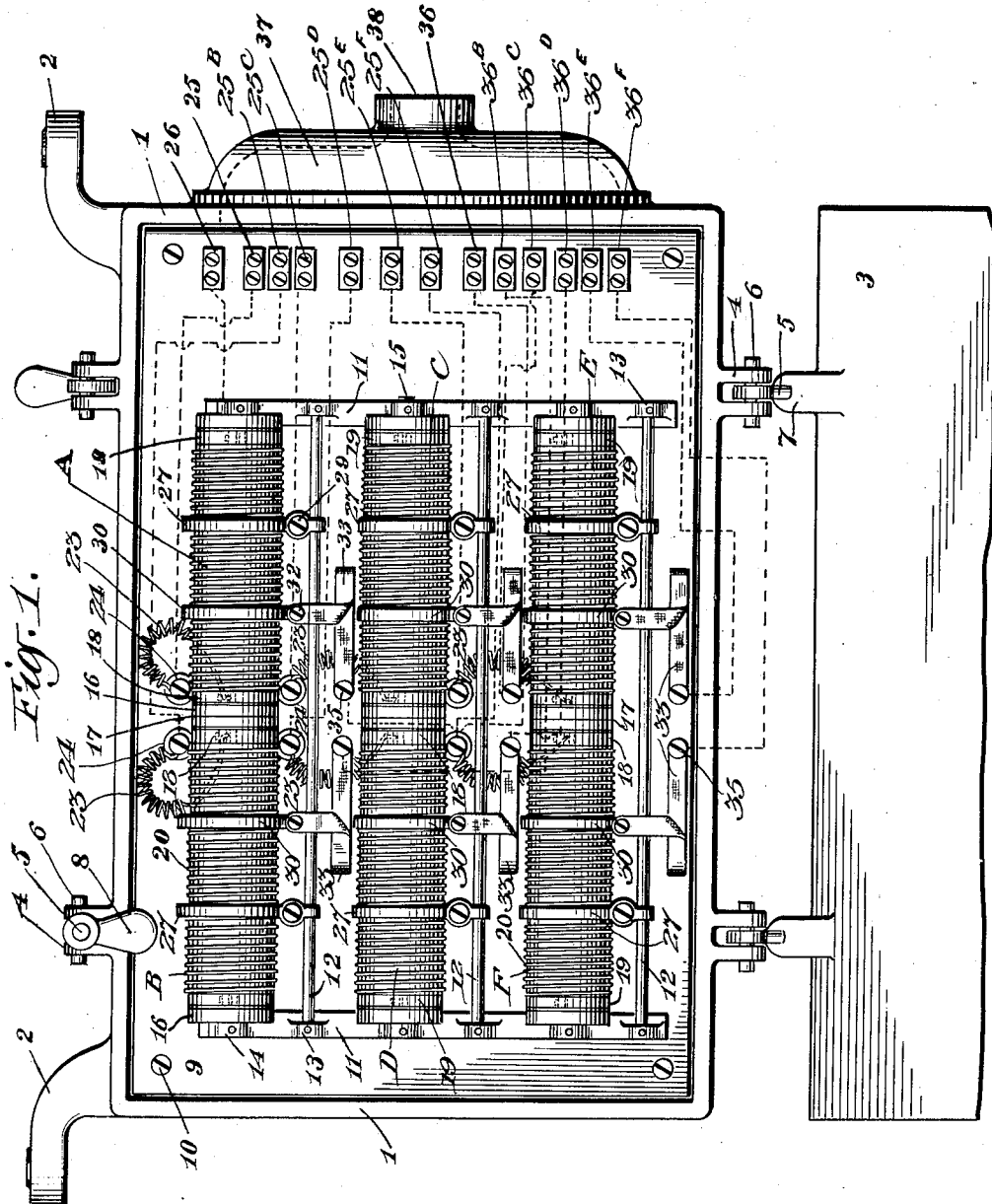


H. G. THOMPSON.
RESISTANCE DEVICE.
APPLICATION FILED NOV. 12, 1909.

1,053,242.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.



WITNESSES:
St. Crocker
E. Hall

INVENTOR
Harrison G. Thompson
BY
John H. Crocker
ATTORNEY

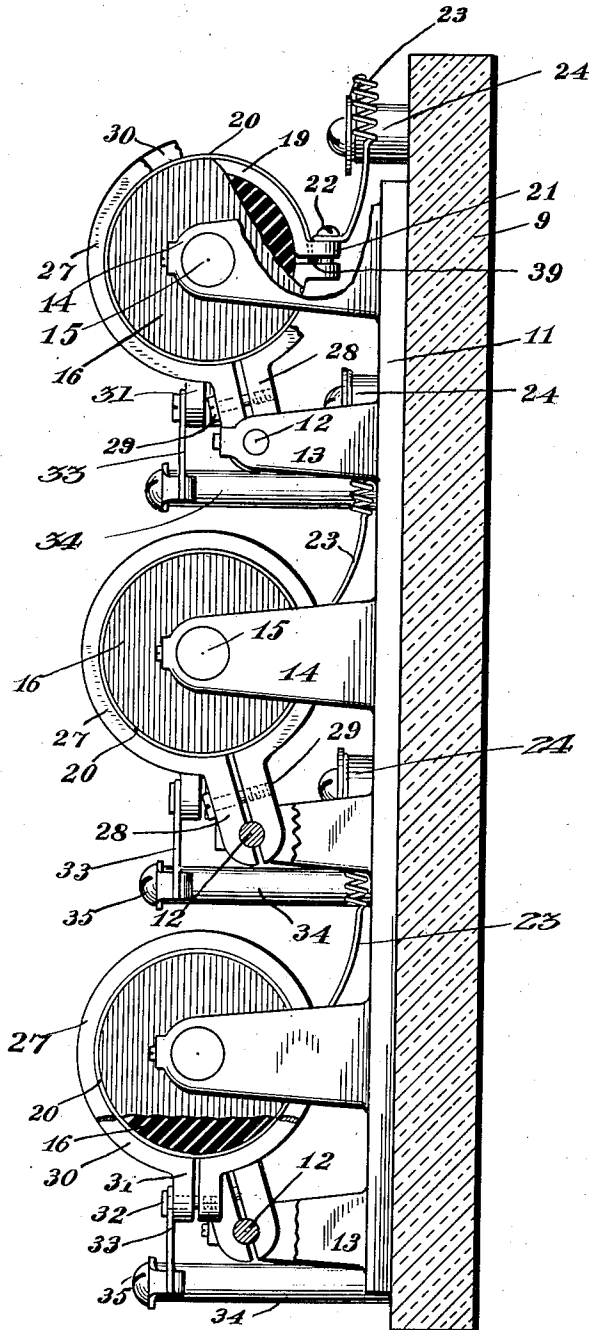
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Fig. 2.



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UNITED STATES PATENT OFFICE.

HARRISON G. THOMPSON, OF GLEN RIDGE, NEW JERSEY, ASSIGNOR TO SAFETY CAR HEATING & LIGHTING COMPANY, A CORPORATION OF NEW JERSEY.

RESISTANCE DEVICE.

1,053,242.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed November 12, 1909. Serial No. 527,590.

To all whom it may concern:

Be it known that I, HARRISON G. THOMPSON, a citizen of the United States, residing in Glen Ridge, county of Essex, and State of New Jersey, have invented new and useful Improvements in Resistance Devices, of which the following is a description.

My invention pertains to that class of apparatus used in the electrical art and known as resistances, and it has for its objects, first, to provide a resistance device which will permit of certain adjustments being readily made and at the same time permanently maintained under conditions of more or less rough usage, such as is met with by this class of apparatus when used in connection with automatic machinery, particularly in exposed places, as beneath railway cars propelled by electricity; second, to provide a resistance device which may include a plurality of resistances, or individual units, which may be adjusted to perform certain functions and a certain means for adjustably connecting up the same in such manner that portions thereof may be cut out, as desired, as will hereinafter more plainly appear; third, to provide a resistance device made up of individual units so arranged that any one or all of them may be quickly reached for adjustment, said adjustment when effected being permanently secured, and the entire resistance effectively protected from inclement weather under all conditions of usage.

My invention also comprehends certain improvements in the way of design and construction of resistances considered broadly which make the same particularly applicable for resistances to be used in the art of train lighting and for the purpose of this specification a device designed and employed by me for this use and embodying the elements of my invention will be described.

Figure 1 is a plan view of my improved resistance device and an inclosing frame or box which I have found useful for supporting and carrying the same. Fig. 2 is an enlarged and elevational view, partly in section, of the resistance device shown in Fig. 1.

In the drawing 1 represents a frame or box adapted to be held in position as below the body of a car by attaching thereto the

lugs 2 by means of bolts or other suitable devices. This frame is provided on each side with covers, a portion of one of which is indicated at 3 which may be attached to the frame by means of bosses 4 carried thereby, to which are pivotally attached eye bolts 5, as by means of hinge pins 6. The said eye bolts pass through lugs 7 of the cover 3 and carry upon the threaded portion thereof suitable hand nuts 8, thus providing means whereby the cover 3 may be hinged to swing upward or downward as desired.

9 represents any suitable type of base or back-plate made preferably of an insulating material upon which the various parts of my resistance device are mounted, the said base being attached to the frame or box 1 as by means of screws 10.

11 represents a metallic frame attached to the base 9 and carrying rods 12 upon bosses or extensions 13, 13. 14 indicates similar bosses or extensions carrying rods 15 which pass through the centers of insulating cylinders or cores 16 which may be in the form of one cylinder extending across the device or preferably mounted in pairs of equal length placed end to end against each other as indicated at 17. The said cylinders are recessed at each end into which recesses are fitted metallic rings 18 and 19. Upon the cylinders are wound resistance spirals of wire 20, each spiral having its ends attached to the metallic rings 18 and 19 respectively. These rings are preferably split rings provided with bosses on either side of the split as indicated by 21 and drawn together as by screws 22 in such manner as to readily grip the cylinders 16 and also hold the end of the wires 20 as shown at 39. From the rings 19 I lead out the conductors 23 to suitable binding posts 24, etc., for each unit of resistance, which are connected electrically, as indicated in dotted lines, with a plurality of binding posts as shown on the extreme right of Fig. 1; for example as shown at post 25 in reference to the unit A shown in the upper right-hand side of said figure.

26 is a common binding post permanently connected electrically with the frame 11 and all of the rods 12, thus connection with the rod 12 and any portion of the resistance 20 of unit A will complete the circuit between

posts 26 and 25 and include that portion of the resistance 20 between the said connection with the rod 12 and the ring 18. Connections between rods 12 and resistances 20 are made as by means of split rings 27 provided with bosses 28 adapted to be drawn together as by screws 29 in such manner as to firmly grip the spirals of wire 20 and the rods 12, thus securing an adjustable and permanent arrangement. In order to establish an intermediate connection whereby that portion of the resistance indicated in circuit may be reduced at desired times to a certain predetermined amount or a portion thereof shunted out by making proper external connections, I provide a split ring 30 for each unit, as shown, having bosses 31 adapted to be drawn together as by screws 32 in such manner as to firmly grip the resistance 20 at a desired point between the rings 18 and 27. The screws 32 also serve to connect with the rings 30 the flexible connectors 33 which are led to the extension posts 34 and attached thereto as by means of screws 35, the said extension posts being connected electrically with certain of the binding posts as by wires indicated in dotted lines, for example, the flexible connector 33 in connection with the ring 30 of unit A being led to the binding post 36, as shown by the dotted line. All of the rings 27 are slidably connected with the rods 12 and thus in electrical communication with the frame 11 and binding post 26. The rings 18 in connection with the live ends of the various units B, C, D, E and F are connected with the binding posts 25^B, 25^C, 25^D, 25^E, and 25^F respectively, as indicated by dotted lines, and the rings 30 upon the various units B, C, D, E and F are connected with the binding posts 36^B, 36^C, 36^D, 36^E and 36^F respectively, as indicated by the dotted lines, and thus any of the units may be connected in circuit as described above with reference to unit A, for example.

37 represents an extension cap to provide room for the leading in wires which pass through the opening in the boss 38 to the various binding posts 25, 26 and 36.

From the foregoing it will be obvious that I have produced a resistance device of rugged construction permitting of the various adjustments set forth in this specification and that I have provided means whereby when the proper adjustment is determined, the resistance may be set permanently in such manner as to withstand more or less rough usage without alteration.

I do not wish in any way to limit myself to the exact details of construction or design as shown in the accompanying drawings which are used to merely illustrate one form of apparatus embodying my invention in which many changes may be made without departing from the spirit of the said invention.

Having thus described my invention that which I consider novel and desire to protect by Letters Patent is as set forth in the following claims:

1. A resistance device comprehending a resistance unit, means for making permanent electrical connection with said unit, an adjustable connection with said unit for completing a circuit therethrough, another adjustable connection provided with means for attaching it to the said unit at a point intermediate the above connections, and means for permanently connecting the same in circuit.

2. A resistance device comprehending a resistance unit, means for permanently connecting one end thereof in an electrical circuit, adjustable means for connecting another portion thereof in circuit so as to interpose the resistance located between the said connecting means, combined with adjustable circuit connecting means for varying the said resistance to lessen the effect thereof, said latter means being permanently secured to an electrical circuit at its fixed end.

3. A resistance device comprehending a plurality of resistance units, means for supporting the same, means for establishing electrical connection with the various members, adjustable means for establishing connection between a single conductor and the plurality of resistance units in such manner as to include a portion of each thereof in circuit, and means for permanently gripping the adjustment so as to hold the same constant.

4. A resistance device comprehending a plurality of resistance units, means for connecting the same in multiple to a single circuit and adjustable means for connecting the same in common with the various circuits.

5. A resistance device comprehending a plurality of resistances; in combination with a common conductor and multiple connections with all of said resistances; together with adjustable means for connecting said resistances in shunt relation with various circuits.

6. A resistance device comprehending a spiral of wire having one end permanently connected to a binding post; in combination with a movable member slidably connected to another binding post and provided with a clamping member for clamping it around said spiral.

7. A resistance device comprehending a core of insulating material, a resistance unit wound thereon, means for connecting one end of the unit permanently in an electrical circuit, and adjustable means for connecting a portion thereof in circuit combined with adjustable circuit connecting means for shunting out a portion thereof, said means

being permanently connected at one end to a binding post.

8. A resistance device comprehending in its structure a conducting supporting frame, a rod carried thereby, a resistance unit carried by said frame, means for connecting the resistance and said rod in an electrical circuit and means for establishing connection between the resistance and rod in such manner as to include a portion of the resistance in circuit; together with an adjustable circuit connection for shunting out a portion of said resistance; said adjustable circuit connections being permanently connected at one end to a binding post.

9. A resistance device comprehending in its structure a conducting supporting frame, a rod carried thereby, a resistance unit carried by said frame, means for connecting the resistance and the said rod in an electrical circuit, means for establishing connection between the resistance and rod in such manner as to include a portion of the resistance in circuit and means for establishing con-

nection with the said resistance between the above mentioned connection.

10. A resistance device comprehending in its structure an insulating base, a conducting frame carried thereby, resistance units carried by said frame, means whereby adjustable connection may be established between said units and the said frame and means whereby adjustable connection may be established with the said resistance units independent of said frame.

11. A resistance device comprehending an insulating base, a unit of high resistance carried upon the same, a frame for carrying the said unit insulated therefrom, means adapted to be rigidly clamped upon the said resistance unit and upon a portion of said frame, and movable means adapted to establish contact at another point upon said resistance member.

HARRISON G. THOMPSON.

Witnesses:

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E. E. ALLEE.