S. W. LAW.

VARIABLE RESISTANCE UNIT.

APPLICATION FILED FEB. 26, 1914.

1,142,586. Patented June 8, 1915.

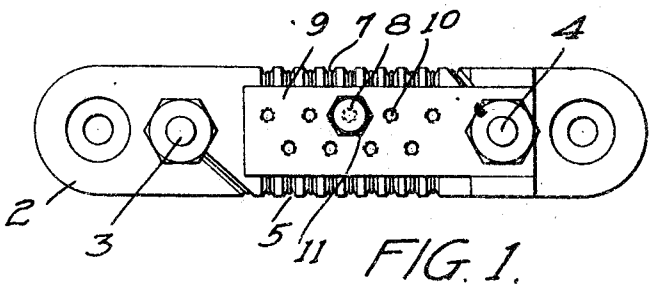


FIG. 1.

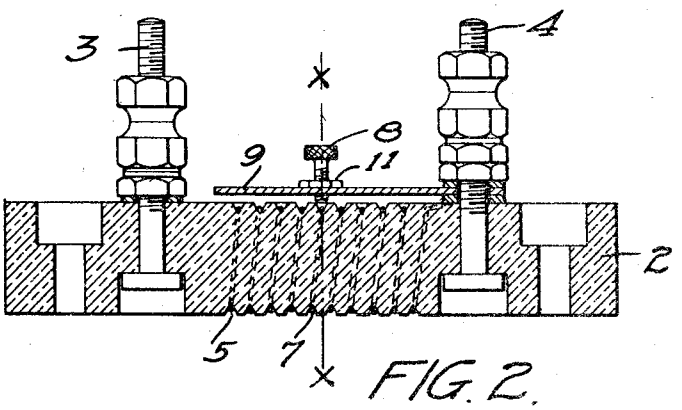


FIG. 2.

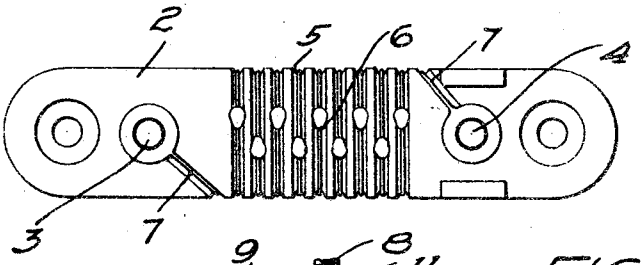


FIG. 3.

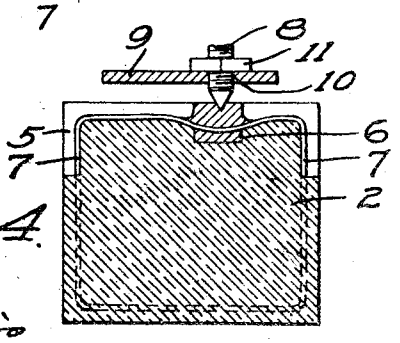


FIG. 4.

WITNESSES

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VARIABLE-RESISTANCE UNIT.

1,142,586. Specification of Letters Patent. Patented June 8, 1915.

Application filed February 26, 1914. Serial No. 821,303.

To all whom it may concern:

Be it known that I, STANLEY W. LAW, citizen of the United States, resident of St. Paul, county of Ramsey, State of Minnesota, have invented certain new and useful Improvements in Variable-Resistance Units, of which the following is a specification.

The object of my invention is to provide a resistance unit of blocks designed for use in any electric circuit where a variable resistance can be used, but particularly for use in series with track battery of a railway signal system to the end that the resistance can be increased or decreased at will and without interrupting the circuit while making the adjustments.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a plan view of a resistance unit embodying my invention, Fig. 2 is a longitudinal section of the same, Fig. 3 is a plan view showing the contact of the conductor plate removed from the unit or block. Fig. 4 is a sectional view on the line *x*—*x* of Fig. 2.

In the drawing, 2 represents a block of suitable insulating material, preferably porcelain, wherein the terminals 3 and 4 are mounted in the usual way. Between these terminals the block is provided with a spiral groove 5 of suitable depth and having a series of depressions or wells 6 therein arranged preferably in parallel rows running lengthwise of the block, the wells of one row being in staggered relation to the wells of the other row, as plainly shown in Fig. 3. As many of these wells are provided as there are sections of the groove in the top of the block. A resistance wire 7 is attached at its ends of the terminals 3 and 4 in the usual way and is coiled in the groove 5 bridging the wells or depressions therein, as shown in Fig. 4. This wire closes the circuit between the terminals. After the resistance wire is coiled in the groove, the wells 6 are filled with solder or other suitable metal of low melting point and this metal, when fused and dropped into the wells, will flow to the bottom thereof under and around the sections of the wire, bridging said wells and adhering thereto. The top of the metallic substance dropped in the wells is allowed to flatten and present a substantial contacting surface for the thumb screw 8 that is mounted in a metallic plate 9 carried by one of the terminals and in circuit with one end of the resistance wire. This plate 9 has a series of holes 10 therein corresponding in number to the wells in the groove and adapted to register therewith when the parts are assembled, and the thumb screw 8 is provided with a suitable lock nut 11. When the screw is turned until it contacts with the metal in the well beneath, the end of the screw will cut sufficiently into the soft surface of the metal to make a clean rubbing contact. At the same time the pressure of the screw on the soft metal will raise the plate and put it under tension slightly to increase the pressure of the screw on the contacting surface in the well. When the desired adjustment has been obtained, the lock nut 11 is tightened and the screw will thereby be locked in position. A total resistance of this unit is divided into as many parts, approximately equal, as there are contacts plus one, this particular unit having ten adjustments. As the contact screw is moved toward the free end of its supporting plate, the resistance will be decreased and when moved toward the opposite end of said plate the resistance will be increased with each successive adjustment.

The grooves in the insulating block may be filled with a suitable preparation which will serve both as an insulation therefor and to protect the coils of the wire.

In various ways the details of construction herein shown and described may be modified and still be within the scope of my invention.

I claim as my invention:

1. A resistance unit comprising a block, terminals mounted thereon, a resistance wire connected to said terminals and coiled on said block, said block having wells or depressions therein bridged by the respective coils of said wire, a filler of conducting material for said wells in which filler portions of said coils are embedded, a conductor plate in circuit with one of said terminals and overhanging said coils and wells, and a contact screw carried by said plate to contact with the filler in said wells.

2. A resistance unit comprising an insulating block and terminals mounted thereon, said block having a spirally formed groove between said terminals, a resistance wire in

circuit with said terminals and coiled in said groove around said block the respective coils of said wire having conducting surfaces formed thereon, a contact plate in circuit with one of said terminals and having a series of holes therein to register with the surfaces of said coils, and a contact screw fitting said holes and having a point to engage the surfaces of said coils.

3. A resistance unit comprising an insulating block and terminals mounted thereon, a resistance wire in circuit with said terminals and coiled around said block, a contact plate in circuit with one of said terminals and overhanging the coils of said wire and having a series of holes therein to register with the convolutions of said wire, and a contact screw fitting said holes and engaging said convolutions.

4. A resistance unit comprising a block having terminals thereon, a resistance wire in circuit with said terminals and coiled on said block between said terminals, said coils having contacting surfaces, a conductor plate connected with one of said terminals and overhanging said coils and provided with holes therein at intervals in staggered relation to one another, and a contact screw fitting said holes to contact with the surfaces of said coils.

5. A resistance unit comprising a block having terminals mounted thereon, a resistance wire in circuit with said terminals and coiled on said block between said terminals and provided with contact surfaces, a conductor plate mounted on said block in circuit with one of said terminals and overhanging said coils and spaced therefrom, said plate having rows of holes therein, and a contact screw mounted for adjustment in one end of said holes to engage a contact surface of the coil beneath and vary the degree of resistance through the coil.

In witness whereof, I have hereunto set my hand this 21st day of February, 1914.

STANLEY W. LAW.

Witnesses:
GENEVIEVE E. SORENSEN,
EDWARD A. PAUL.