No. 696,757. Patented Apr. 1, 1902.

M. C. RYPINSKI.

SHUNT FOR ELECTRICAL INSTRUMENTS.

(Application filed Sept. 5, 1901.)

(No Model.)

Fig. 1.

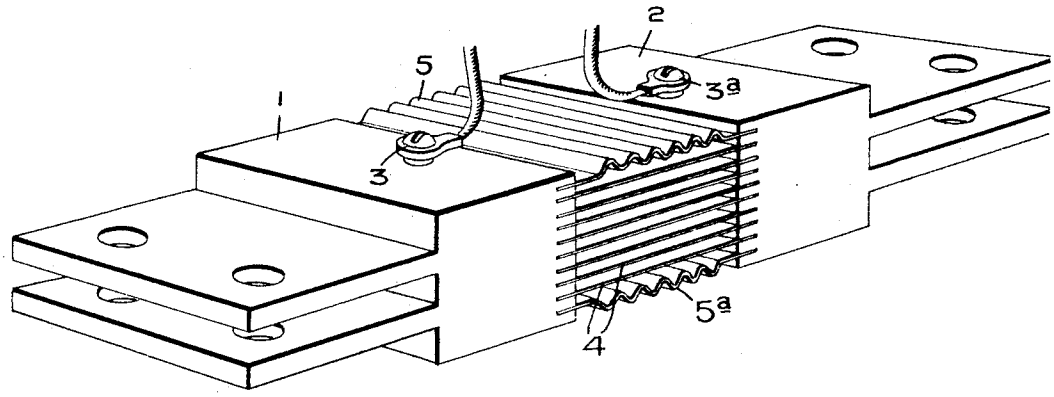
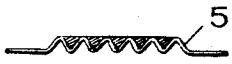


Fig. 2.



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UNITED STATES PATENT OFFICE.

MAURICE C. RYPINSKI, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SHUNT FOR ELECTRICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 696,757, dated April 1, 1902.

Application filed September 5, 1901. Serial No. 74,377. (No model.)

To all whom it may concern:

Be it known that I, MAURICE C. RYPINSKI, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Shunts for Electrical Instruments, (Case No. 2,247,) of which the following is a specification.

This invention relates to permanent shunts for electrical measuring instruments, such as ammeters or galvanometers. Such devices are commonly employed in electrical measurement to divert a variable portion of current of a circuit according to the multiplying power of the shunt around a delicate measuring instrument, so as to admit of the employment of sensitive instruments with heavy currents. Shunts of this character as commonly employed are not interchangeable, but are adjusted for the instrument with which they are to be used. They are commonly constructed of a pair of heavy conducting-terminals with clips or sockets for connection in the electric circuit, between which terminals extend a plurality of metal plates separated from one another to admit of the circulation of air around them. These shunts as leaving the work-shop cannot be relied upon to a degree of accuracy within less than five per cent., and the common practice has been to adjust them by filing them down so as to give them the exact value required for practical use.

My invention relates to a construction in which extreme accuracy may be attained by the employment of simpler means than that just referred to.

In carrying out the invention I provide one or more of the resistance plates or strips with a crimped or corrugated surface, in the channels of which solder may be flowed to alter the resistance to the exact degree required.

In the accompanying drawings, which illustrate the invention, Figure 1 is a perspective view of a shunt embodying my improvements; and Fig. 2 is a detail showing a crimped high-resistance strip with a conducting medium, such as solder, filled into the grooves to alter its conductivity.

1 and 2 represent terminals each of which is provided with jaws, as indicated, for connection with the cables or leads of the circuit into which it is inserted, and with terminals 3 3^a for connection with the measuring instrument it shunts. Between the terminals 1 2 extend a plurality of conducting-plates 4 of such resistance that their combined carrying capacity will permit sufficient drop across the terminals 1 2 to give the required multiplying value to the shunt. By this means a small proportion of the current is diverted through the measuring instrument.

In order to graduate the resistance of the shunt to the exact point required by the multiplying value desired, I employ one or more corrugated conducting-strips 5 5^a, into the grooves of either or both of which may be flowed a metal more readily fusible than that of which the strip is made, such as solder. In adjusting the shunt the amount of solder is regulated to the exact degree required for the instrument with which it is associated. The grooves may be filled or partially filled with solder and more or less melted out, or solder may be flowed successively into the several grooves until the required resistance is attained. It is not absolutely essential that grooved plates be employed, as any structure of the resistance-plate by which its resistance may be conveniently altered *in situ* by the addition or removal of a fusible conductor, such as solder, would answer the purpose.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A shunt for an electrical measuring instrument having between its terminals a resistance-plate adapted for the reception of a fusible conductor.

2. A permanent shunt for an electrical measuring instrument having a resistance-plate formed of a difficultly-fusible metal to which a readily-fusible metal has been applied whereby the resistance may be readily and accurately graduated.

3. A shunt for an electrical measuring instrument containing a resistance-strip of difficultly-fusible metal having its conductivity increased by an application of a readily-fusible metal.

4. A shunt for an electrical measuring in-

strument having a resistance-plate containing receptacles for a more easily fusible metal.

5. A shunt for an electrical measuring instrument having a resistance-plate containing one or more transverse grooves.

6. A shunt for an electrical measuring instrument having a transversely-grooved resistance-plate to which an easily-removable conductor has been applied to vary its resistance.

7. A shunt for an electrical measuring instrument containing a plurality of transverse corrugations to serve as retainers for a more readily fusible metal such as solder.

In witness whereof I have hereunto set my hand this 30th day of August, 1901.

MAURICE C. RYPINSKI.

Witnesses:

EDWARD WILLIAMS, Sr.,

M. H. EMERSON.