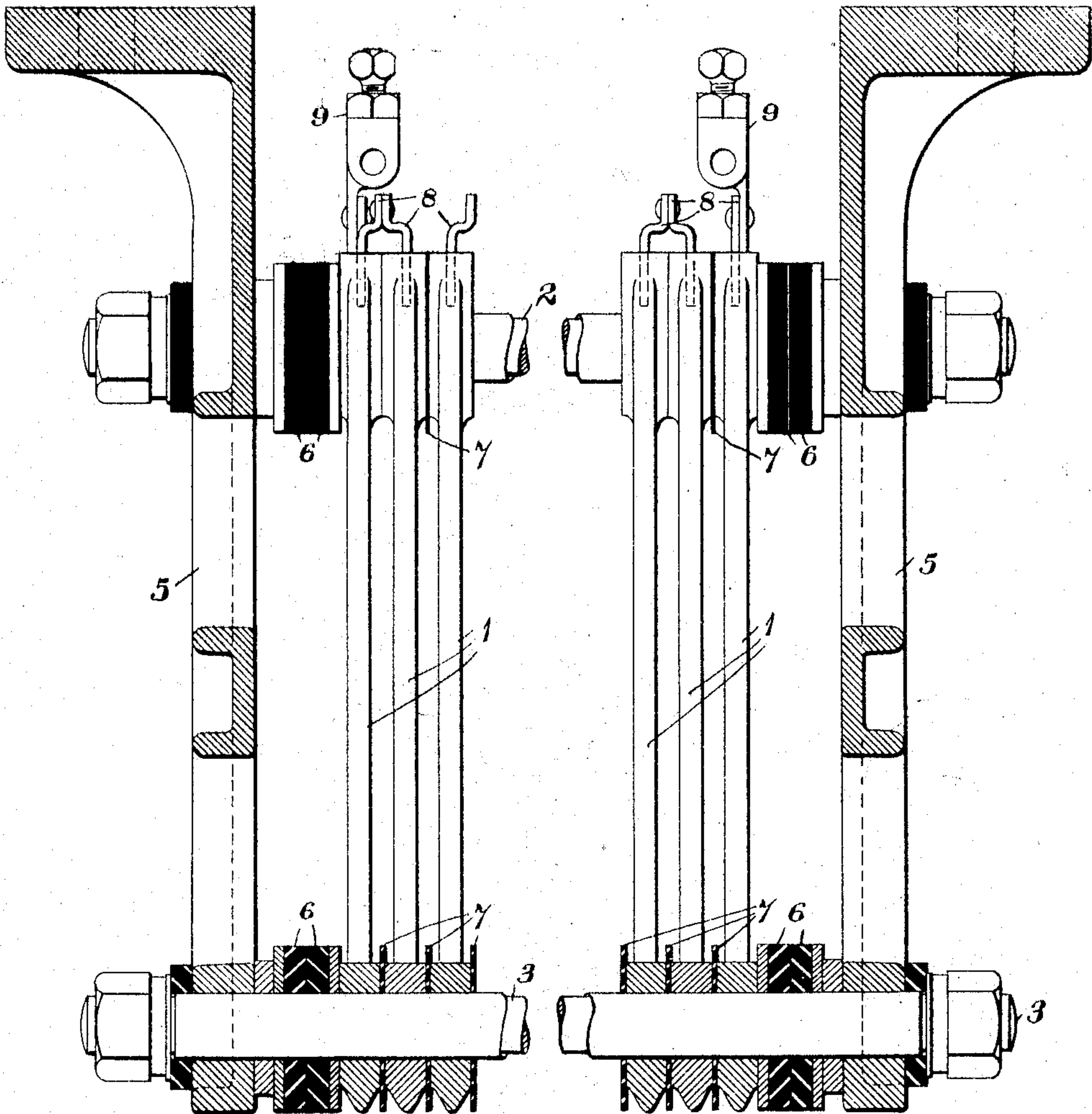


F. D. HALLOCK.  
RESISTANCE TERMINAL.  
APPLICATION FILED JAN. 3, 1906.

946,576.

Patented Jan. 18, 1910.  
2 SHEETS—SHEET 1.

*Fig. 1.*



WITNESSES:

*Fred. H. Miller*  
*R. J. Carlson*

INVENTOR

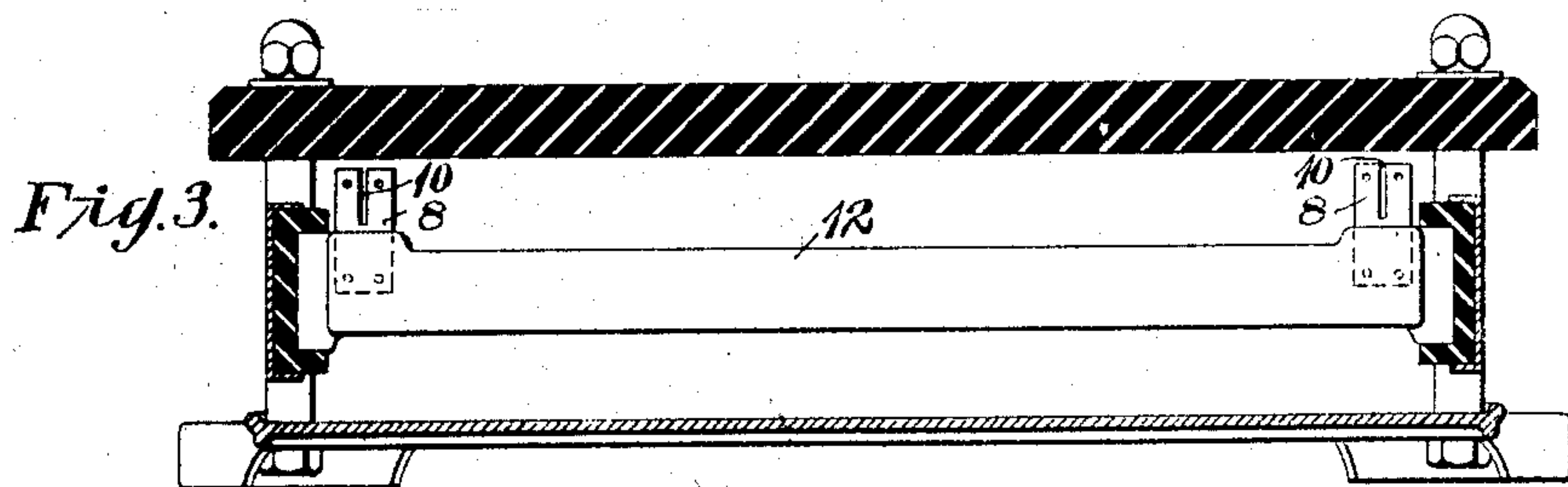
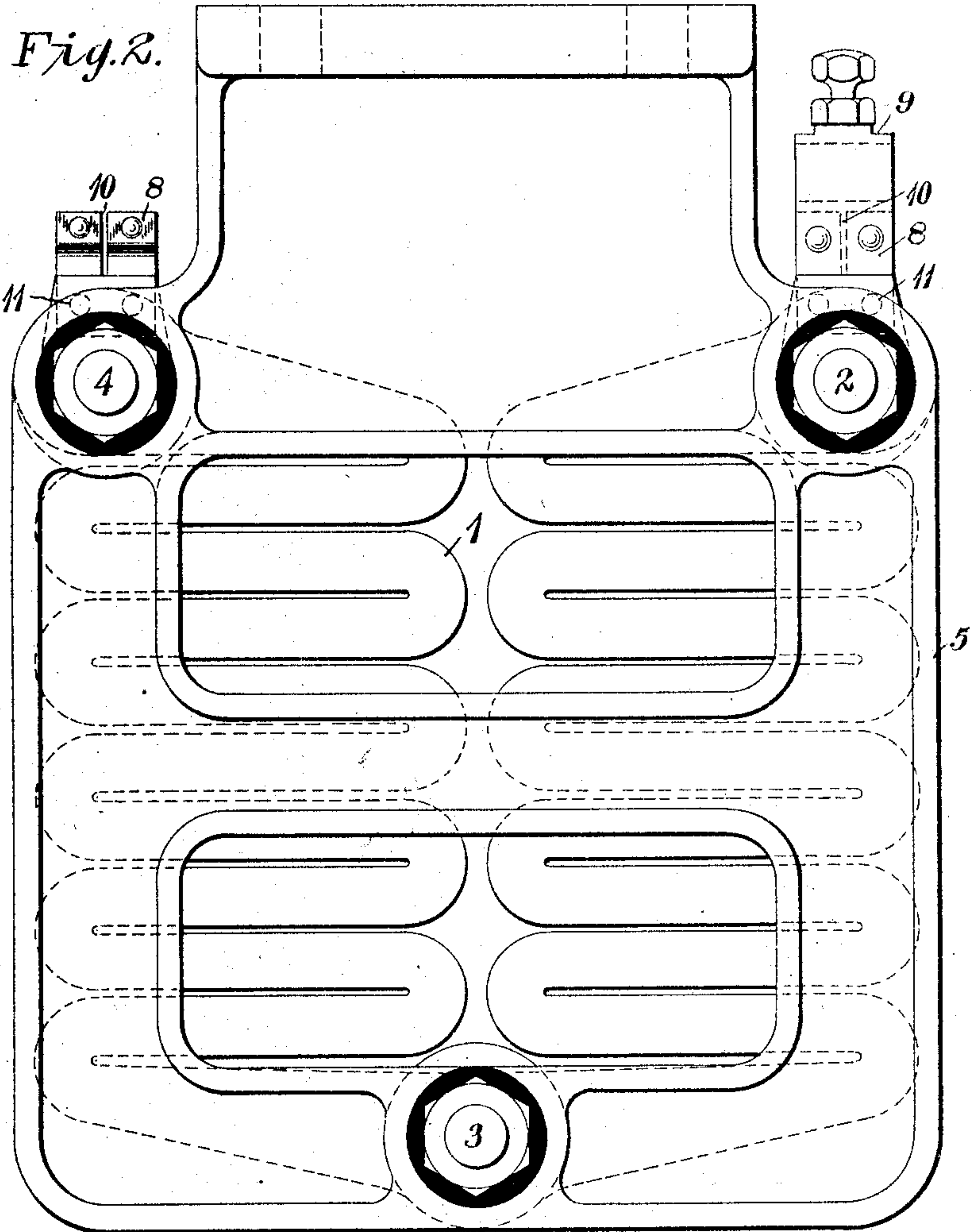
*Fletcher D. Hallock*

BY *Wesley G. Carr*  
ATTORNEY

F. D. HALLOCK.  
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2 SHEETS—SHEET 2.



WITNESSES:

*Fred. H. Miller*  
*R. J. Pearson*

INVENTOR

*Fletcher D. Hallock*  
BY  
*Wesley S. Carr*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

FLETCHER D. HALLOCK, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

RESISTANCE-TERMINAL.

946,576.

Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed January 3, 1906. Serial No. 294,468.

*To all whom it may concern:*

Be it known that I, FLETCHER D. HALLOCK, a citizen of the United States, and a resident of Wilkesburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Resistance-Terminals, of which the following is a specification.

My invention relates to terminals, connectors or similar parts for electrical apparatus and has special reference to connectors which are adapted for use with cast metal resistance units.

The object of my invention is to provide means for connecting the several units of a cast metal resistance group that shall be simple and durable in construction and shall have no appreciable resistance drop when the connection is completed or after an indefinite lapse of time.

The use of cast metal resistance units has become well known in the prior art, and in assembling such resistance groups, connectors of various kinds have been employed for completing the circuit from one unit to another. Of all the methods which have been employed for connecting different units, perhaps the best results have been obtained by finishing a small surface on each resistance unit and fastening a strip of conducting material in engagement with this surface by binding screws. According to another well known method, the engaging surfaces of adjacent units which are to be connected are finished and relatively heavy pressure applied to the assembled group in order to keep the finished surfaces in close engagement with each other. It will be observed that in both of the methods outlined as representative of prior practice, a certain amount of machining is essential and furthermore, although a slight resistance drop may be detected when the resistance group is first assembled, this drop has been found to increase, after the resistance has been in service for a considerable length of time, to such an extent that the total ohmic resistance of the group is substantially increased by reason of the oxidation of the contact surfaces. This is particularly true of resistances which are subjected to severe weather conditions, such as street railway diverters.

According to my invention, a suitable connector of conducting material, such as cop-

per, is cast into the extremities of each resistance unit and the projecting portions are divided longitudinally into two similar parts by a slot or saw-cut. In this way, the cast units may be assembled without machining and the connectors of adjacent units, which are to be electrically connected, are riveted together or otherwise attached so that the contact surfaces are both of the same conducting material which provides a very much better connection than may be obtained between surfaces of a conducting metal and a high resistance metal, such as cast iron, or between two iron surfaces. The engaging surfaces may also be sealed with solder so that air and water may be effectively prevented from getting into the joint.

In the accompanying drawings, Figure 1 is a view, mainly in elevation and partially in section, of a resistance group of the grid type having the connectors of my invention, and Fig. 2 is an end elevation of the resistance of group of Fig. 1. Fig. 3 is a sectional elevation of a modified form of resistance unit with which my improved connector may advantageously be employed.

Referring to Figs. 1 and 2, the resistance group illustrated therein comprises a plurality of similar cast metal resistance units 1 mounted upon a plurality of insulated rods 2, 3 and 4, which constitute, together with a pair of end castings 5, a supporting frame for the resistance units. Each of the resistance units 1 consists of a double grid structure which is supported at three points and which is stiffened by widening the strip at and near the points of connection to the rods 2, 3 and 4. The several units are insulated from the end castings by insulating and spacing washers 6 and are insulated from each other at suitable points by relatively thin washers 7 of insulating material, such as mica. The extremities of each unit adjacent to the rods 2 and 4 are provided with strips 8, of conducting material which are cast into the unit and may serve as supports for terminals 9 or as connectors. The portion of each strip 8 which projects from the casting is divided longitudinally into two portions by a saw-cut or slot 10 so that one portion may be bent in one direction and the other portion in the opposite direction in case it is desired to connect any one unit with the ad-



jacent units at each side in order to provide a multiple circuit arrangement. When the several units are to be connected in series relation the connectors on corresponding ends of adjacent units are connected together in the usual manner. In order to provide a strong mechanical joint between the cast units and the connecting strips, the latter may be punched or otherwise provided with suitable holes 11 through which the molten metal may flow.

Referring to Fig. 3, the cast resistance unit illustrated therein, comprises a bar 12 of high resistance material such as metallic silicon provided with connectors 8 similar to the strips 8 of Figs. 1 and 2 which are cast into the unit near its extremities. Several units of this form may be used either by themselves or in combination with units like those set forth in Patent No. 788,686, granted to the Westinghouse Electric & Manufacturing Company, as assignee of Hermon L. Van Valkenburg, or other units of the same general form and dimensions.

Although I have illustrated the connector of my invention as applied to specific types of resistance units, its use is not restricted thereto and it is to be understood that considerable variations in the size and

shape of the terminal members may be effected within the scope of my invention.

I claim as my invention:

1. A cast metal resistance unit having flexible terminal or connecting strips of conducting material cast into and projecting from its extremities, the outer portions of said strips being divided by longitudinal slots into two substantially similar ears.

2. A resistance unit comprising a casting having two branches of zigzag formation the outer extremities of which and the junction between which are enlarged and provided with holes to receive insulated rods and having terminal or connecting members of relatively low resistance conducting material cast into the extremities of the branches and provided with holes through which the molten metal may flow and with projecting portions which are divided into two strips by a longitudinal slot or saw-cut.

In testimony whereof, I have hereunto subscribed my name this 30th day of December 1905.

FLETCHER D. HALLOCK.

Witnesses:

R. J. DEARBORN,  
BIRNEY HINES.