

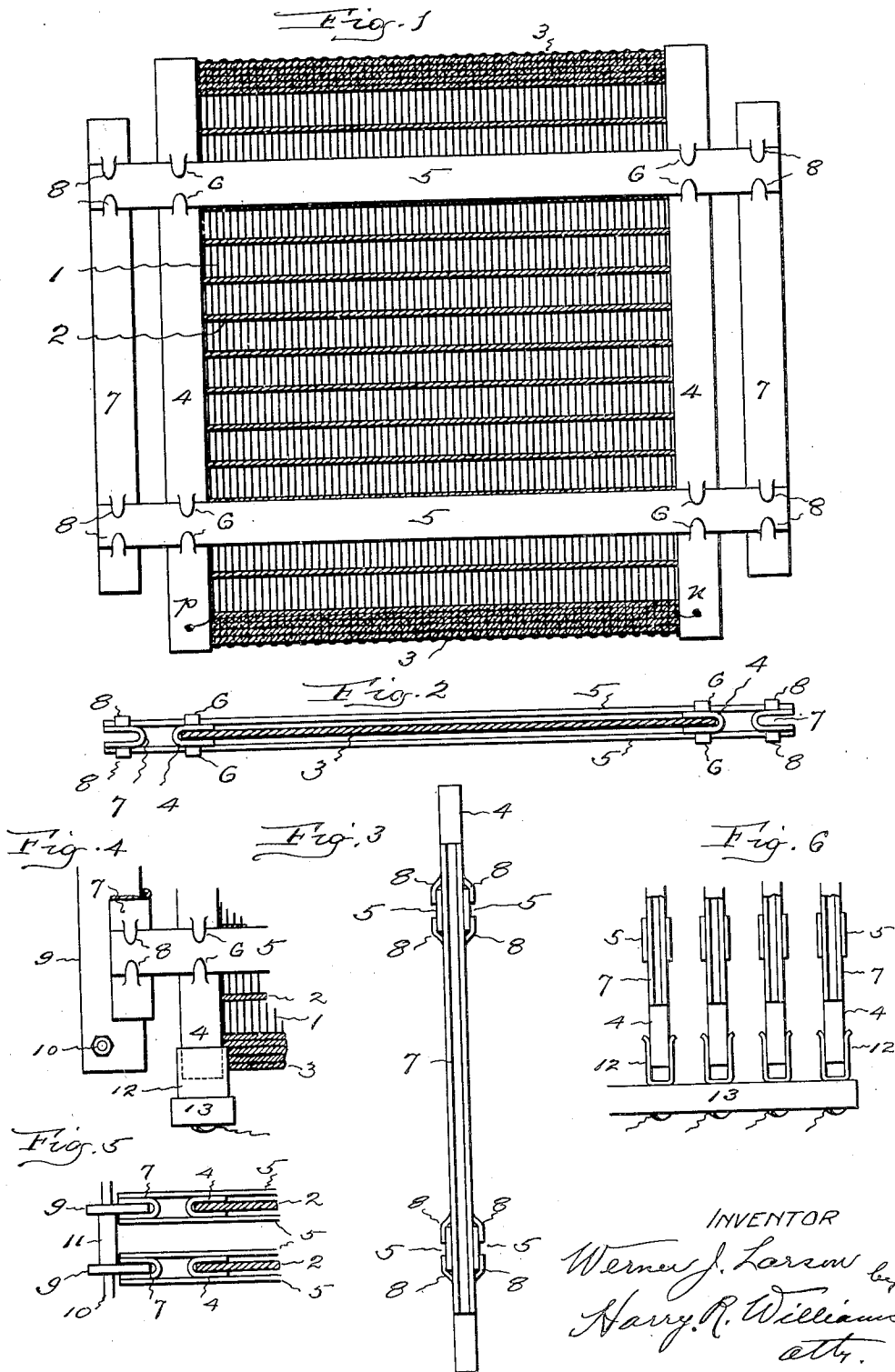
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W. J. LARSON

RESISTOR

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UNITED STATES PATENT OFFICE.

WERNER J. LARSON, OF WEST HARTFORD, CONNECTICUT, ASSIGNOR TO THE STATES COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

RESISTOR.

Application filed March 7, 1925. Serial No. 13,742.

To all whom it may concern:

Be it known that I, WERNER J. LARSON, a subject of Sweden, residing at West Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Resistors, of which the following is a specification.

This invention relates to the construction of resistors or such articles as are used as heating elements in electric heaters, or resistance elements in load boxes, testing devices, radio apparatus and the like.

The object of the invention is to provide a very simple, cheap and compact device of this character which may be readily made in large numbers and a plurality easily and quickly assembled and firmly retained in correct position in their supporting frames or cases.

This object is attained by forming the active member of a section of woven fabric which consists of a warp of non-inflammable and electrical insulating yarn and a weft of electrical resistance wire, and binding this member at its ends with metal strips that are utilized as the electrical terminals and which are clamped between cross strips of insulating material to the ends of which supporting strips are secured.

In the accompanying drawings, Fig. 1 shows a front view of a resistor constructed according to this invention. Fig. 2 shows a top view of the same. Fig. 3 is an end elevation. Fig. 4 is a front view of a portion of the resistor, showing the manner of supporting it and completing the electrical connection. Fig. 5 is a top view of what is shown in Fig. 4. Fig. 6 is an end view illustrating how several resistors may be mounted.

The active member or woven fabric is composed of insulating warp strands 2 which are desirably asbestos yarn, and a weft 1 of resistance wire of common composition. This member which is more or less flexible is usually woven with selvage edges 3 and it may be coated with insulating composition to give it sufficient firmness to allow it to be easily handled. A section having the desired resistance capacity is cut from the woven fabric and the ends of the sections are bound by metal strips 4. These strips that form means for stiffening the member vertically and to which the ends of the resistance wire are connected, as at p. n.,

are stamped from sheet metal in the form of troughs. After the ends of the fabric are inserted in the troughs the sides of the troughs are squeezed together so as to firmly retain the ends of the fabric and the wire terminals fastened to them. For the purpose of further stiffening the fabric member and providing means for supporting it the binding and terminal strips are connected by flat strips 5 that extend across both faces of the fabric. These strips 5 which should be of insulating material are preferably made of mica, and they are fastened to the binding strips by tongues 6 stamped out of the binding strips and bent over the mica strips. The ends of the insulating cross strips extend beyond the binding strips and are fastened to the supporting strips 7, preferably by tongues 8 stamped out of the supporting strips and bent over the ends of the mica strips. The supporting strips are trough-shaped sheet metal pieces and are left open so that they may be slipped upon ribs, flanges or guides 9 of the frame or case which is to support the resistors. In a form being made the frame guides are fastened together by bolts 10, and are held properly spaced by separating sleeves 11 on the bolts. The electrical connections of a battery of these resistors may be made by arranging suitably spaced clips 12 on an insulating bar 13 and simply thrusting the ends of the binding strips into these clips, as indicated in Fig. 6.

A plurality of these resistors are used according to the required capacity. All of the parts of this resistor are cheap to make, the terminal-binding strips and the supporting strips being folded from pieces of thin sheet metal and the insulating cross strips being flat pieces of mica, which strips are so fastened together in a simple way that they perform their several functions and produce a flat firm article which can be easily mounted or assembled in its place of use with the proper electrical connections.

The invention claimed is:

1. A resistor consisting of a fabric of woven resistance wire and insulating yarn, binding strips extending parallel with the resistance wire at the ends of the woven fabric and clamping the ends of the insulating yarn, insulating strips extending across the resistance wire and binding strips, supporting strips spaced from and parallel with

the binding strips and attached to the ends of said insulating strips, and means fastening said strips together.

2. A resistor consisting of a fabric of woven resistance wire and insulating yarn, binding strips at the ends of the woven fabric, insulating strips connecting the binding strips, and supporting strips spaced from and parallel with the binding strips and attached to the ends of said insulating strips, said strips being fastened together by tongues stamped from the binding strips and supporting strips and folded over the insulating strips, whereby all of said strips are permanently fastened together.

3. A resistor consisting of a fabric of woven resistance wire and insulating yarn, trough-shaped strips extending parallel with the resistance wire clamping the ends of the yarn and binding the ends of the woven fabric, insulating strips extending across the resistance wire and binding strips, and trough-shaped supporting strips spaced from and parallel with the binding strips and attached to the ends of said insulating strips.

4. A resistor consisting of a fabric of woven resistance wire and insulating yarn, vertically arranged binding strips clamping the ends of the yarn at the ends of the woven fabric, vertically arranged supporting strips parallel with the binding strips and spaced therefrom, and horizontally arranged insulating strips connecting and fastened to the binding and supporting strips.

5. A resistor consisting of a fabric of woven resistance wire and insulating yarn, trough-shaped binding strips extending parallel with the resistance wire and clamped upon the ends of the insulating yarn at the ends of the woven fabric, mica strips extending across the resistance wire and binding strips on both faces of the fabric, and trough-shaped supporting strips parallel to and spaced from the binding strips and attached to the ends of said mica strips.

6. A resistor consisting of a fabric of woven resistance wire and insulating yarn, U-shaped metallic binding strips extending parallel with the resistance wire and clamping the insulating yarn at the ends of the woven fabric, insulating strips extending parallel with the insulating yarn and across said binding strips, U-shaped supporting strips spaced from the binding strips at the ends of said insulating strips, and means fastening said strips together.

7. A resistor consisting of a woven fabric of resistance wire and insulating strands, metallic terminal strips binding opposite ends of the fabric, with an electrical connection between the resistance wire and said binding strips, supporting strips parallel to and spaced from the binding strips, and insulating strips extending across the fabric, the binding and supporting strips and fastened to the binding and supporting strips.

WERNER J. LARSON.