

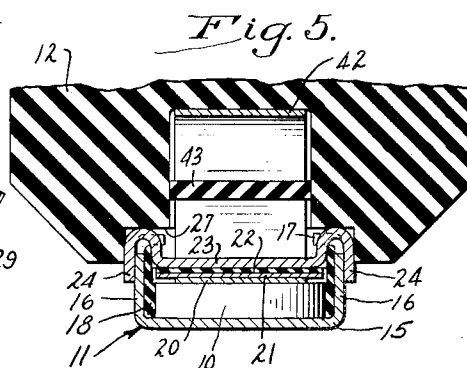
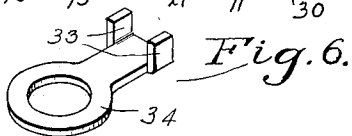
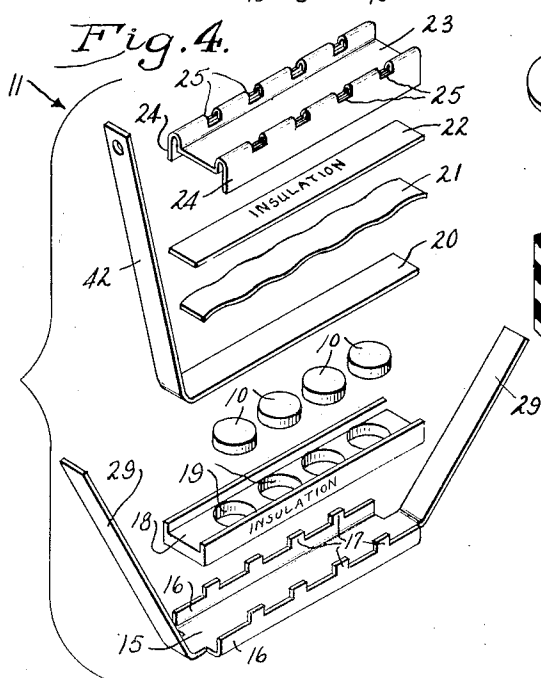
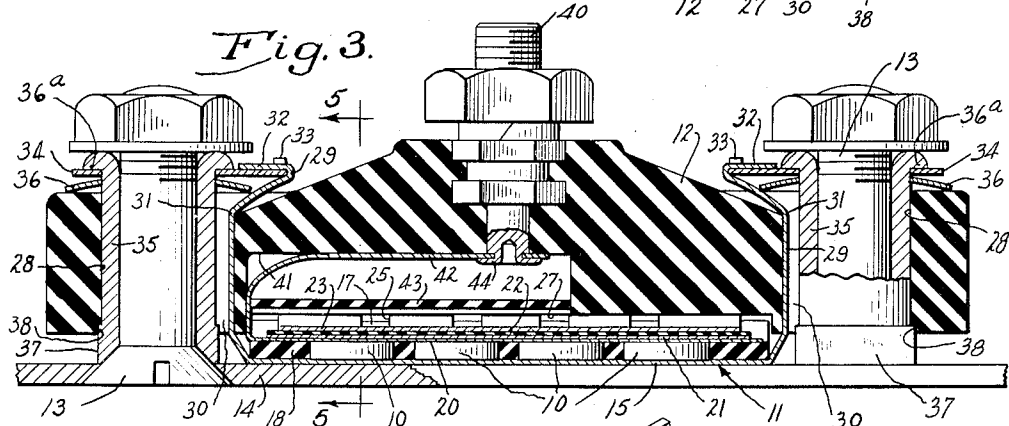
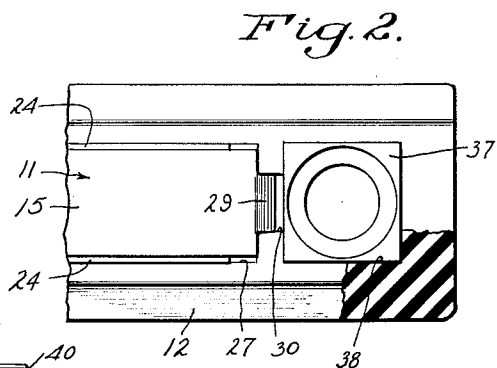
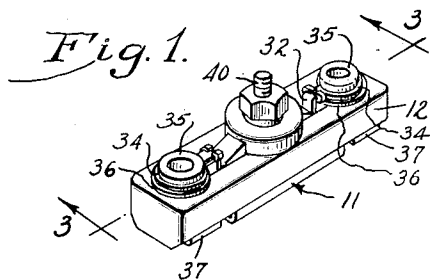
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2,606,986

RESISTANCE UNIT

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RESISTANCE UNIT

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9 Claims. (Cl. 201—63)

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This invention relates to resistance units of the type used in measuring surface temperatures, particularly those units in which the resistance element is a rigid disk or wafer.

The general object is to provide a new and improved mounting for a resistance element of the above character which is simple and inexpensive to construct and assemble, which may be clamped firmly against a supporting surface without danger of distortion or short-circuiting, and which is extremely sensitive to changes in the temperature of the supporting surface.

Another object is to mount the resistance element between two bars joined in a novel manner to form a rigid assembly adapted to be mounted in a novel manner in an insulating casing.

A further object is to mount the element assembly in the terminal block in a novel manner so as to prevent damage to the assembly during clamping of the block against a supporting surface.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which

Figure 1 is a perspective view of the improved resistance unit.

Fig. 2 is a fragmentary bottom view.

Fig. 3 is a longitudinal sectional view taken along the line 3—3 of Fig. 1.

Fig. 4 is an exploded perspective view of the parts of the resistance element assembly.

Fig. 5 is a fragmentary sectional view taken along the line 5—5 of Fig. 3.

Fig. 6 is a perspective view of one of the electric terminals.

In the form shown in the drawings by way of illustration, the improved resistance unit comprises generally a plurality of resistance elements or so-called thermistors 10 electrically connected in parallel and disposed within a metallic bar-like assembly 11 which is seated in an insulating block 12 adapted to be clamped by bolts 13 against a support 14 whose temperature is to be measured. The elements 10 are in the form of wafer-like rigid disks which are relatively thin as compared to their diameter.

The assembly 11 includes an elongated channel 15 of highly conductive material such as silver having a flat bottom and upstanding parallel flanges 16 terminating in spaced tabs 17. Seated within the channel is a channel-shaped bar 18 of insulation having spaced holes 19 each adapted to receive one of the resistance disks 10 with the lower end bearing against the bottom of the channel 15 and the top surface projecting

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above the bottom of the channel 18. A highly conductive strip 20 such as silver is laid across the tops of the disks 10 and covered by a serpentine spring strip 21 with a layer 22 of insulation such as mica superimposed thereon.

The parts thus assembled are clamped together by a metal bar 23 shorter than the channel 15 and having inverted J-shaped side flanges 24 fitting down over the upstanding flanges 16 of the channel 15 and apertured at 25 to receive the tabs 17. While the two channels 15 and 23 are pressed together, the tabs are bent inwardly to lock the channels together with the spring 21 holding the bars 15 and 20 in firm electrical contact with the ends of the resistance disks 10.

The elongated bar-like assembly thus formed is seated in a recess 27 which is molded in the bottom of the block 12 between two parallel holes 28. To provide one contact terminal and secure the assembly 11 in the block, elongated strips 29 are formed integral with opposite ends of the channel 15 and bent upwardly along the bottoms of slots 30 extending along the inner sides of the holes 28. Above the block, the strips 29 are bent inwardly toward each other and thus are snubbed around edges 31 to lock the assembly firmly in the block.

The end portions 32 of the contact strips 29 are bent reversely and outwardly into horizontal positions where they are clenched by bent over lugs 33 against terminal washers 34 surrounding tubular studs 35 extending loosely through the holes 28. Dished spring washers 36 bear against the top of the block and press the terminal washers 34 upwardly against the shoulders 36a spun outwardly from the upper ends of the studs 35.

Square heads 37 formed on the lower ends of the studs 35 are seated in correspondingly shaped recesses 38 in the bottom of block 12. The heads 37 terminate substantially flush with the exposed surface of the channel bar 15 which is pressed into intimate heat conducting relation against the support 14 when the block 12 is fastened to the latter by the bolts 13 which extend through the hollow studs. The latter are thus rigidly clamped to the support 14 but, owing to the sliding fit of the studs and the yieldable connection formed by the washers 36, the block 12 is not subjected to bending stresses. Thus there is no danger of distorting or damaging the assembly 11 as an incident to mounting the unit on the support 14.

The bolts 13 constitute one terminal binding post. The other terminal is formed by a threaded stud 40 molded into the top of the block 12 near the center thereof and extending downwardly

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into a countersunk recess 41 in one end of the block. An extension 42 of the top connector strip 20 is bent upwardly around the end of an insulating bar 43 pressed into the recess 41. Above this bar, the strip 42 is bent inwardly and its end is riveted or otherwise secured at 44 to the inner end of the binding post 40.

I claim as my invention:

1. A resistance unit comprising a channel of conductive material having a terminal strip projecting from one end, an insulating bar seated in said channel and having a hole therethrough, a wafer-like resistance element disposed in said hole and abutting said channel, an insulated conductor lying against the other end of said element and projecting from the end of said bar, and an inverted channel with flanges telescoping with the flanges of said first channel, and means interlocking said channels along opposite edges to clamp said element between said conductor and said first channel.

2. A resistance unit comprising a channel of conductive material having a terminal strip projecting from one end and tabs spaced along and projecting from the edges of the channel flanges, an insulating channel seated in said first channel and having a hole therethrough, a wafer-like resistance element disposed in said hole and abutting said first channel, an insulated conductor lying in said second channel against the other end of said element and projecting from the end of the second channel, and an inverted channel with flanges telescoping with the flanges of said first channel and having apertures at the base of its flanges receiving said tabs, the latter being bent laterally to lock said first and third channels together.

3. A resistance unit comprising a wafer-like resistance element, insulated conductive bars clamped against opposite end surfaces of said element and forming therewith relatively rigid assembly having insulated contact strips projecting from the ends of said bars, a block of insulation having a bottom recess receiving said assembly with one of said bars exposed for engagement with a supporting surface, a terminal post fixed to said block and projecting from the block beyond one end of said assembly, one of said projecting strips being connected to said post, and a second post projecting from said block intermediate the ends thereof, the other of said projecting strips being bent reversely within the block and connected to said second post.

4. A resistance unit comprising a wafer-like resistance element, conductive bars clamped against opposite end surfaces of said element and forming therewith relatively rigid assembly having insulated contact strips projecting from the ends of said bars, a block of insulation recessed to receive said assembly with one of said bars exposed for engagement with a supporting surface, and spaced terminals fixed to said block and respectively connected to said projecting strips.

5. A resistance unit having, in combination, a block of insulation having a bottom recess and spaced parallel holes through opposite ends communicating with said recess beyond the ends of said recess, a resistance element disposed in said

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recess, a bar exposed at the bottom of said recess and covering said element, and contact strips projecting from opposite ends of said bar and extending upwardly through said holes and then reversely on top of said block, the upper ends of said strip being bent inwardly and snubbed around edges of said block to hold said bar seated in said recess.

6. A resistance unit comprising a channel of conductive material having a terminal strip projecting from one end, a wafer-like resistance element disposed in said first channel between the flanges thereof and abutting the channel bottom, a conductor lying against the other end of said element within said channel and insulated from the latter, a bar disposed between the flanges of said channel and interlocked therewith to clamp said element between said bar and channel, terminal strips projecting from opposite ends of said channel, said element, said conductor and said bar forming a unitary assembly, an insulating block recessed to receive said assembly and having holes through which said terminal strips may be extended, and means securing said strips to said block to fasten the assembly therein with said channel exposed for contact with a supporting surface.

7. A resistance unit comprising a channel of conductive material having a terminal strip projecting from one end, a wafer-like resistance element disposed in said first channel between the flanges thereof and abutting the channel bottom, a conductor lying against the other end of said element within said channel and insulated from the latter, a bar disposed between the flanges of said channel and interlocked therewith to clamp said element between said bar and channel, and insulated terminals projecting from the ends of said channel and said conductor.

8. A resistance unit comprising a wafer-like resistance element, conductive bars clamped against opposite end surfaces of said element and forming therewith relatively unitary assembly having insulated strips projecting from the ends of one bar, and a block of insulation recessed to receive said assembly with said one bar exposed on the bottom of the block for engagement with a supporting surface, said strips being bent upwardly and around opposite end portions of the block to fasten said assembly therein.

9. A resistance unit having, in combination, an elongated insulating block having parallel holes extending through opposite ends, hollow studs extending through said holes and having shoulders at opposite ends, one of the shoulders being seated in said block, a resiliently yieldable connection between the exterior of said block and the other of said shoulders, said studs being adapted to receive bolts by which the studs may be clamped rigidly against a supporting surface without distortion of said block, and a resistance unit assembly mounted in one side of said block and adapted to be pressed against said supporting surface when said block is attached thereto.

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No references cited.