

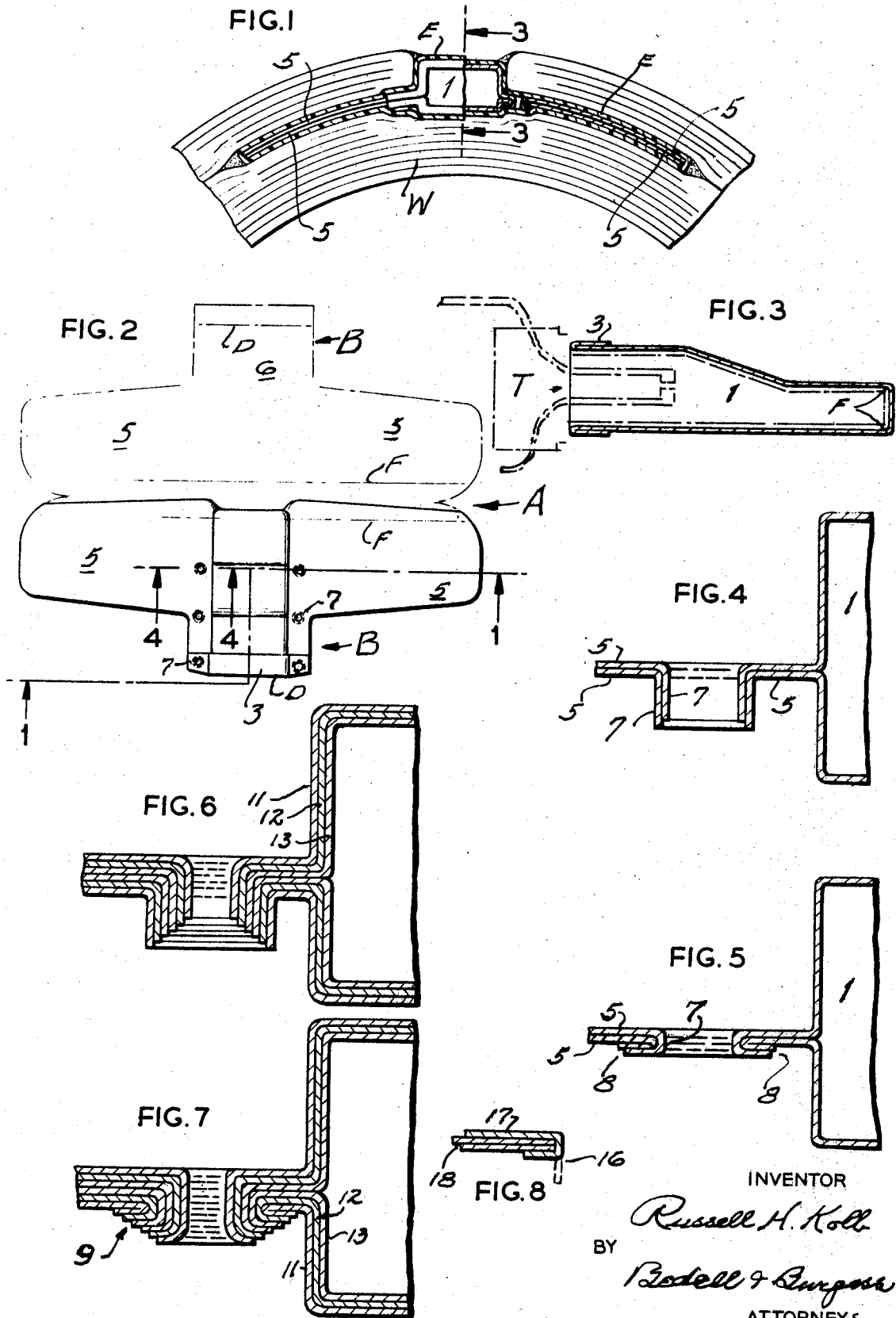
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THERMOSTAT DEVICE HOUSING

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THERMOSTAT DEVICE HOUSING

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7 Claims

ABSTRACT OF THE DISCLOSURE

A structure for receiving a thermostat or its sensor, if spaced from the thermostat, including two or more thin sheets of heat-conducting material having portions of substantial area in contact with each other and other portions spaced apart to form the walls of a box-like housing. At least one of the sheets has an integral extrusion, in its area of contact with another sheet, resembling a rivet. Extrusions on one or more additional sheets may be internested and all the internested extrusions comprise interlocking rivet-like elements securing the respective sheets tightly together so that the portions of substantial area may be in contact with wound strands of an electric motor coil or similar apparatus. The elements block the crevice or crevices between the sheets and prevent admission of oil, water or fluid insulating material.

BACKGROUND OF THE INVENTION

Previously, housings for a similar purpose and having heat-conducting wings have been formed of thin sheets secured together by separate elements or by the use of cement, bonding, or spot welding equipment. Such structures have involved difficulties in handling numerous small parts and in assembling the same, and frequently have failed to prevent the penetration of flowable insulation material between the parts of the structure or about the thermostat device housed in it.

SUMMARY OF THE INVENTION

Among the objects of the invention is the provision of a box-like housing, the walls of which are formed of thin sheet material with high heat conductivity and having wide areas held together in layer-like assembly in tight contact with each other by securing elements integral with the sheets, thus avoiding use of separate fastening means such as screws, staples, spot welds or cement, which would tend to injure the thin sheets or to insulate them from each other or from the coil windings or to dislodge adjacent strands of wire from the sheets.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a portion of a motor coil winding with a sensor housing inserted between adjacent coils. The housing is sectioned approximately on line 1—1 of FIG. 2.

FIG. 2 is a plan view of the housing shown in FIG. 1 and indicates the blank from which the housing is formed.

FIG. 3 is a vertical section on line 3—3 of FIG. 1 but drawn to a substantially larger scale.

FIG. 4 is a detail vertical section at right angles to section 3 on line 4—4 of FIG. 2 before securing extrusions are completely assembled but drawn to a larger scale than FIGS. 1—3.

FIG. 5 is a similar detail section showing completion of the securing means.

FIG. 6 corresponds to FIG. 4 but shows another form of the invention.

FIG. 7 corresponds to FIG. 5 but embodies the form shown in FIG. 6.

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FIG. 8 illustrates another form of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The housing is formed of a blank A (FIG. 2) generally rectangular in contour with lateral projections B the margins of which are doubled on lines D to form reinforcing tabs 3. The remainder of the blank is folded along lines F into a deep U frame. Most of the wide area wing-like portions 5 are pressed into contact with each other while the central portions 6 are maintained or distorted so as to be spaced apart, thus forming a pocket 1 of box cross section with one end closed and the other end open (FIG. 3).

Integral annular extrusions 7 (FIG. 4) are formed on wings 5 and are internested and then folded back against wings 5, as shown at 8 (FIG. 5), to form securing elements each similar to a hollow rivet with one flat head projecting from the surface of the wing a distance which does not exceed the thickness of the two wings. The device is then inserted in a plastic envelope E of insulating fiber material.

The unit thus completed may be surrounded by the winding W of a motor so that the coils of the latter closely surround the entire outside area of the wings and at the same time one end of pocket 1 opens outwardly of the winding. Liquid or plastic material may then be applied over the winding without interfering with transmission of heat to the interior of pocket 1 into and from a bimetal thermostat or sensor T which is readily inserted or removed without affecting winding W. When the temperature in the motor winding rises above a predetermined point the thermostat or sensor acts to open the motor circuit and prevents overheating of the motor.

In FIGS. 6 and 7, corresponding generally to FIGS. 4 and 5, each wall of the device consists of several layers 1, 12, 13 of thin sheet material and the integral extrusions nest one within the other, as indicated at 9 (FIG. 7), to form a secure fastening, the diameter of which approximates the thickness of the housing multilayer wall. Internested extrusions as described above are formed simultaneously in the juxtaposed sheets, but another modification, shown in FIG. 8, utilizes extrusions 16 in one sheet 17 inserted through holes in the other sheet or sheets 18 and then riveted over.

The details of the structure may be varied otherwise from that shown and described without departing from the spirit of the invention, and the exclusive use of modifications coming within the scope of the claims is contemplated.

I claim:

1. A structure for insertion in a motor field coil comprising a plurality of thin sheets of heat-conducting material having wide area flattish portions in face-to-face contact for insertion between the strands of the coil, and other portions offset from said flattish portions and forming a box-like housing with spaced walls adapted to house a thermostat device, at least one of said sheets including a tubular extrusion extending through another sheet with its outer end spread and flattened against the latter sheet and forming a rivet-like head securing the sheets together and closing the joint between the sheets.

2. A structure as described in claim 1 in which the extrusion is of annular contour and forms a hollow rivet-like shank.

3. A structure as described in claim 1 in which the internested portion of the extrusions are pressed tightly together and into contact with the adjacent flat portions of the sheets to hold the latter in tight contact.

4. A structure as described in claim 1 in which the

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outer ends of two internested extrusions are folded one over the other and form a double thickness rivet-head-like structure.

5. A structure as described in claim 1 in which each wall of the housing comprises a plurality of thin internested sheets all compressed together by the flattened extrusions.

6. A structure as described in claim 5 in which each rivet-head-like structure comprises internested extrusions from a corresponding plurality of thin sheets.

7. A structure as described in claim 1 in which the housing is elongated and there are a plurality of spaced extrusions at intervals alongside the housing and forming a series of rivet-like heads.

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