Sept. 2, 1947. R. SIMPSON 2,426,712

INSTRUMENT HOUSING COMPRISING INNER AND OUTER HOUSINGS AND A FLEXIBLE CLOSURE THEREBETWEEN

Filed March 22, 1945

Fig. 1

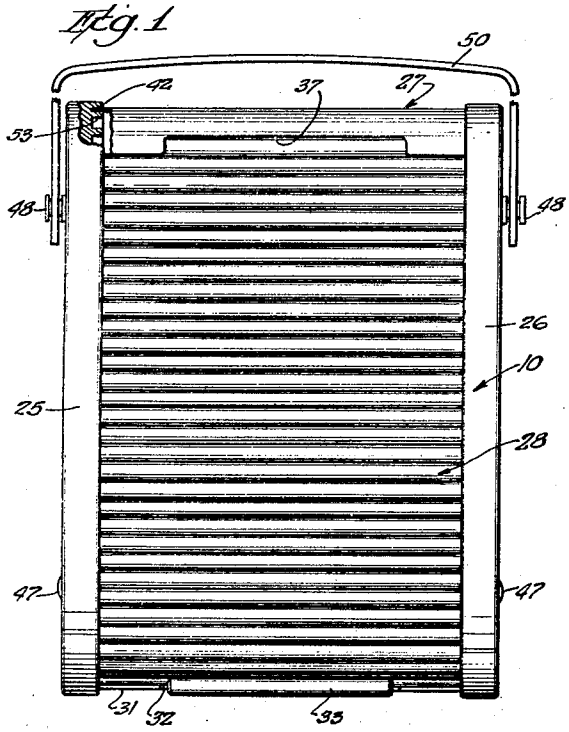


Fig. 3

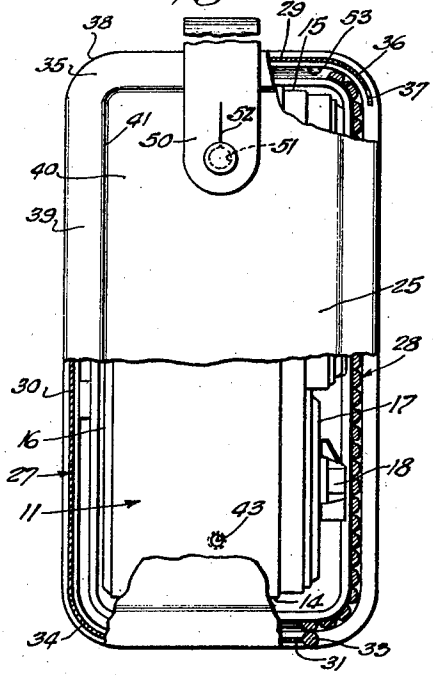


Fig. 4

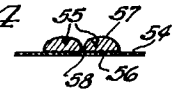


Fig. 2

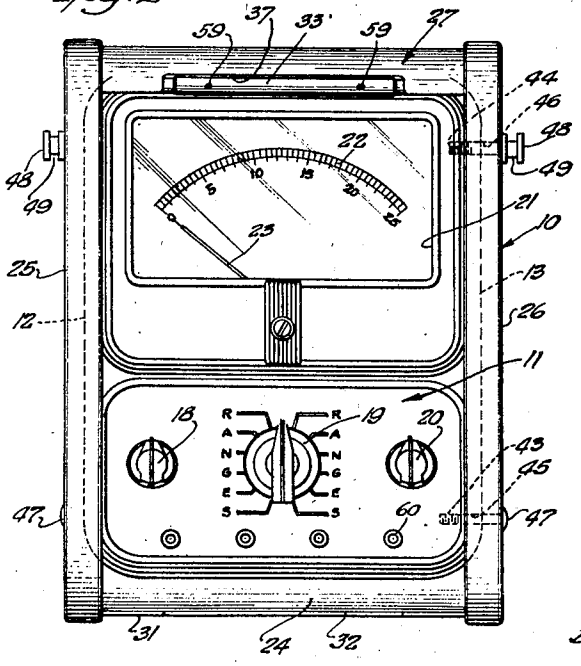
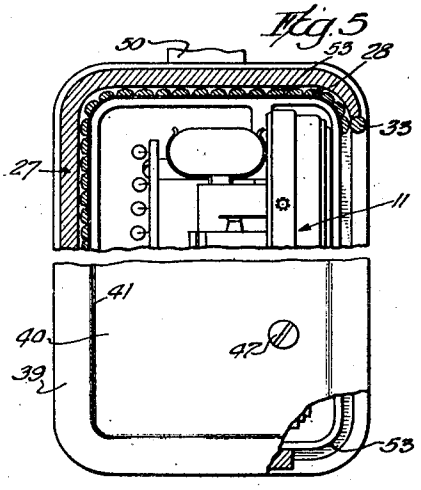


Fig. 5



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Patented Sept. 2, 1947 2,426,712

UNITED STATES PATENT OFFICE

2,426,712

INSTRUMENT HOUSING COMPRISING INNER AND OUTER HOUSINGS AND A FLEXIBLE CLOSURE THEREBETWEEN

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Application March 22, 1945, Serial No. 584,181

1 Claim. (Cl. 312—190)

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The present invention relates to instrument housings, and is particularly concerned with housings of the type adapted to be used for enclosing electric meters, such as volt meters, ammeters, resistance meters, etc.

With the meters of the prior art it has been customary to provide a cover which is hinged upon a pair of pintles that are rotatable and slidably mounted in a pair of complementary hinge members in such manner that the cover may be pivoted to open position, and it may then be moved laterally to withdraw the pintles from the hinge members to separate the cover from the housing.

This is inconvenient because a place must be found to lay the cover, as well as a place to support the instrument; and when the cover is to be remounted it involves considerable difficulty in getting the pintles simultaneously aligned with the bores in the hinge members. Also, there is a possibility of the cover being lost or misplaced or forgotten.

One of the objects of the present invention is the provision of an improved instrument housing which is provided with a cover that encloses and protects the glass window of the instrument, and which is so mounted that it may be moved into another position, where it is concealed in the housing itself.

Another object of the invention is the provision of an improved instrument housing that may be utilized for enclosing various types of instruments that are already provided with the usual instrument housing having a glass window for the purpose of eliminating the usual cover and protecting the glass window and providing additional storage space for leads, etc.

Another object of the invention is the provision of an improved instrument housing structure including a minimum number of parts that are secured together in the most simple way by merely having a pair of opposed housing members secured to the usual housing of the instrument, these opposed housing members embracing and securing all of the other parts of the auxiliary external housing.

Another object of the invention is the provision of an improved auxiliary instrument housing which is simple, capable of economical manufacture and adapted to be used for a long period of time without the usual inconvenience of a removable cover and without possibility of the enclosure for the open face being lost.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

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Referring to the single sheet of drawings accompanying this specification,

Fig. 1 is a front elevational view of an instrument housing embodying by invention;

Fig. 2 is a similar view, with the housing having its door or sliding closure in open position;

Fig. 3 is a side elevational view in partial section, showing the details of structure of the instrument housing;

Fig. 4 is a fragmentary sectional view, showing the structure of the sliding door; and

Fig. 5 is another fragmentary sectional view, showing the sliding door in the open position, in a modification in which the housing has its intermediate wall made of a molded material or of plywood suitably bent, as shown.

Referring to Figs. 1 and 2, 10 indicates in its entirety the auxiliary housing embodying my invention, which is preferably employed in connection with various types of instruments 11, such as electric meters which are already provided with the customary housing for excluding dust and other damaging influences from the movement of the meter.

The meter housing is preferably provided with the relatively flat sides 12 and 13 and with the usual end walls 14, 15 (Fig. 3) and the back and front walls 16, 17. In the case of special meters arranged for measuring resistance, A. C. and D. C. voltage, etc., the housing 11 may also enclose suitable switches actuated by knobs 18, 19, 20 and provided with suitable indicia for indicating the various ranges of the instrument for various positions of the switches.

The front wall 17 preferably includes the usual window 21, exposing to view one or more scales 22 cooperating with the pointer 23.

The present housing is preferably made substantially longer than the meter housing 11 so as to leave an open space 24 at one end of the auxiliary housing 10 for housing electric leads and other auxiliary apparatus.

The auxiliary housing 10 preferably includes a pair of side walls 25, 26, an intermediate wall member 27, and a sliding closure 28. The intermediate wall member is preferably made of sheet metal, and is preferably of such length and such shape that it is adapted to house the upper end with an end portion 29, the rear side with a rear wall portion 30, and the lower side (Fig. 3) with a lower wall portion 31. For this purpose the intermediate wall member 27 may be made of

a sheet of suitable material, such as metal, for example steel or brass; and the sheet may be of substantially uniform width from end to end.

At its lower wall portion 31 it is formed with a cut-out 32 of sufficient width to house the projecting handle 33 of the sliding closure 28, which engages the base of the slot or cut-out 32. The lower wall portion 31 is flat, but is bent at substantially right angles at 34 with an easy bend, describing a portion of a cylinder, and integrally supporting the rear wall portion 30 (Fig. 3).

The rear wall 30 is also substantially flat, but it is again bent at right angles at the upper left corner (Fig. 3) at 35, with an easy bend that joins the rear wall 30 integrally to the top wall 29 (Fig. 3).

The top wall portion 29 (Fig. 3) preferably terminates in another easy bend 36, and at its extreme end it is again provided with a slot 37 for receiving the handle portion 33 of the sliding closure 28.

The two side walls 25 and 26 are preferably made of insulating material; but in some embodiments of the invention may also be made of suitable metal, such as the light metals, aluminum or magnesium, or in some cases paramagnetic metals may be used for the purpose of shielding the instrument.

In the preferred embodiment of the invention side walls 25, 26 may be molded of insulating materials, such as a phenolic condensation compound. Each of these side walls comprises a plate of insulating material of substantially rectangular form, but provided with the rounded corners 38.

For purposes of ornamentation the exterior plane surfaces 39, 40 of the side walls are provided with an offset shoulder 41 describing a rectangle so as to give the inner plane surface 40 the appearance of a separate panel.

In order to support the intermediate wall portion 27, each of the side wall members 25, 26 is formed adjacent its outer edge with the groove 42 of sufficient width and depth to enclose and secure the sheet metal intermediate wall member 27 over its full length in the side walls 25, 26.

The intermediate wall member 27 can be slid edgewise into the groove 42, which is of the same shape, as seen in elevation, as the edge of the wall 27.

In order to secure the entirety together with a minimum amount of labor and expense the meter housing 11 is provided on each side with a pair of threaded bores 43, 44. The side walls 25, 26 are also provided with the registering apertures 45, 46 so that the threaded members 47, 48 may pass through the side walls 25, 26 and be threaded into the meter housing 11 in the bores 43, 44.

When these threaded members 47, 48 are driven home, the annular shoulders beneath their heads engage the side walls 25, 26 and draw the side walls tightly against the edges of the intermediate wall member 27 in the grooves 42. The edges of the intermediate sheet metal wall member 27 engage the bases of the grooves 42, and the assembly becomes quite rigid and is, of course, at the same time secured fixedly to the meter housing 11.

The threaded member 47 may consist of an ordinary small headed screw bolt, but threaded member 48 preferably consists of a screw bolt of the type having an enlarged head with an annular groove 49 for receiving one of the ends of the leather handle 50.

The leather handle has its ends provided with an aperture 51 communicating with a slit 52 so that the aperture 51 may be opened widely by means of the slit 52, and the head 48 may be inserted until the handle 50 engages in the annular groove 49.

In addition to the groove 42 for receiving the edges of the sheet metal intermediate wall 27, each side wall member 25, 26 is provided with another groove 53 located inwardly of the groove 42 and uniformly spaced from the edges of the side walls 25, 26.

The groove 53 runs across the front wall forwardly of the front wall of the meter housing 11 and extends backwardly near the top wall portion 29, but inside of it and downwardly inside the back wall portion 30 to such a point that the sliding closure 28 may be housed completely inside the top and rear portions of the auxiliary housing 10.

As a matter of convenience the groove 53 may be extended fully about each side wall member 25, 26 following the outline of the edges of these walls, but spaced therefrom sufficiently to be inside the intermediate sheet metal wall 27.

The depth of the groove 53 is sufficient to receive a substantial edge portion of the sliding closure 28 and to leave a sliding clearance, and the width of the groove 53 is sufficient to receive the sliding closure 28, while leaving a suitable clearance for sliding movement.

The sliding closure 28 may consist of a sheet of flexible fabric, such as a form of imitation leather or strong woven cloth, such as canvas impregnated with a suitable waterproof flexible compound. This sheet preferably terminates short of the edges of the sliding closure 28 so that the sheet 54 does not engage in the grooves 53, and the sheet is not subjected to this wear.

Furthermore, the separate rigid members or slats 55 are adapted to slide more readily in the groove 53 than the fabric sheet 54.

The fabric sheet 54 supports a multiplicity of closure slats 55, which may be made of rigid material, such as wood; and in some embodiments of the invention the side walls 25, 26 may also be made of a molded condensation compound, and each slat preferably has a flat lower surface 56 and an upper curved surface 57.

The slats are adhesively secured to the fabric 54 by a suitable waterproof glue, such as a glue including a solvent and a phenolic condensation compound as its base in such manner as to permit the bending of the fabric at the points 58 between the respective slats 55.

Sufficient slats are employed to extend from the edge of the lower wall portion 31 to a point beneath the upper easy bend 36 of the upper wall portion 29. At one end the sliding closure assembly is preferably provided with a suitable handle 33, and this handle may consist of a short rod which is provided with a pair of through bores for receiving the wood screws 59 which are threaded into the end slat 55.

The length of the handle rod 33 is such that it corresponds substantially to the cut-outs 32 and 37. Thus, when the sliding closure 28 is open, the handle is housed in the upper cut-out 37 (Fig. 3) as shown in Fig. 2; and the handle determines the upper limit of movement of the sliding closure 28. When the sliding closure is in the closed position, shown in Figs 1 and 3, the handle 33 is housed in the cut-out or slot 32; but the slats extend down behind the lower edges of the wall portion 31.

The operation of the auxiliary housing is as follows: The sliding closure **28** may be grasped by means of the handle **33**, which projects sufficiently to be engaged by the fingers and may be slid upwardly in Fig. 1 or 3 to the position of Fig. 2. During this upward sliding movement the slats **55** of sliding closure **28** are actuated around the easy bends in the slot **53**, and the flexible fabric **54** permits a bending at the points **58** between the slats until finally the sliding closure **28** is housed inside the upper wall portion **29** and rear wall portion **30**, as shown in Fig. 5.

The engagement of the handle **33** in the upper slot **37** finally limits the movement of the sliding closure **28** to the position of Fig. 2. This exposes the meter window **21** and all other parts of the meter to which access is needed, and it also exposes the storage space **45** for the leads, which may be used for connection with the jacks **60**.

Thus the cover itself is permanently attached to the auxiliary housing; but, when open, it does not project from the housing, so that it is never in the way.

When it is desired to close the housing, the operator may grasp the handle **33** and draw the sliding closure down from the position of Fig. 2 to that of Fig. 1, until the sliding closure handle **33** engages in the lower slot **32** in the end wall portion **31**.

The friction incident to the sliding of the slats **55** in the groove **53** holds the sliding closure in any of its adjusted positions, fully open or fully closed, or in any intermediate position. Much time is saved, as the present auxiliary housing is quickly opened and closed, and there is no necessity to waste the time which is incident to getting the pintles in the hinges with the covers and housings of the prior art. Furthermore, there is no danger of the cover being lost, and the present closure is more apt to be closed than the covers of the prior art because it is more easily closed. Thus adequate protection is given to the window and other instrument parts at all times, and much time of the operator is saved over that used with the devices of the prior art.

Referring to Fig. 5, this is a fragmentary elevational view in partial section, showing a modification which is similar in construction to that previously described, except that the thin metal wall **29** has been replaced by a relatively thicker intermediate wall of molded material, such as a phenolic condensation compound or a piece of plywood suitably bent. Except for its thickness, this wall is combined with the end walls in exactly the same manner previously described, and is similar to the intermediate wall **29** previously described.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claim.

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

In an instrument housing having an open face provided with a movable closure, the combination of a pair of side wall members of substantially rectangular shape, the said side wall members being relatively thick and provided on their inner faces, along three of the edges of said side wall members, with inwardly extending grooves located adjacent the periphery of each side wall member, said grooves joining at the corners in an easy bend and forming a continuous recess for the reception of an intermediate wall member, the intermediate wall member extending around three sides and having its edges located in said grooves, an inner housing for an instrument, having substantially flat sides and engaging said side wall members, said inner housing having threaded sockets for receiving threaded members, and threaded members extending through said side wall members and clamping the side wall members to the inner housing, whereby the intermediate wall is confined in said grooves, leaving the outer housing with an opening at said face, each of said side wall members being provided with an auxiliary groove on its inner face and extending along the opening in said outer housing and having a further extension of each of said grooves inside said intermediate wall, and a closure member comprising a plurality of transversely extending slats joined together and secured to a flexible base member in such manner that the flexible base can bend between the slats, said closure being slidable in said auxiliary groove from the closed position into a position in which it is housed inside said intermediate wall.

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