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Tirrell

[11] **3,735,332**

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[54] **INSULATING MEANS FOR A JAW OF A STAB-MOUNTED ELECTRICAL METER OR THE LIKE**

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[52] **U.S. Cl.**.....**339/217 R,** 339/198 M, 339/31 B, 174/138, 200/166 E

[51] **Int. Cl.** **H01r 9/08**

[58] **Field of Search**.....339/217 R, 198 M, 339/31 B, 36; 200/166 E, 162; 317/104, 105, 106, 107, 111; 174/138 F

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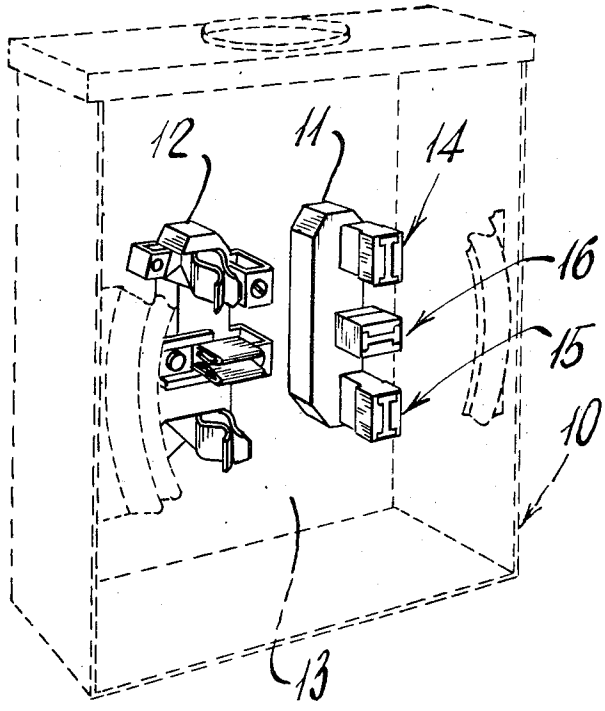
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Assistant Examiner—Robert A. Hafer
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[57] **ABSTRACT**

The invention contemplates an integral rectangularly prismatic cup-shaped insulating jacket having a cavity shape which is adaptable for end-wise insertion over the projecting end of a stab-type meter jaw or the like. The jacket has integral formations having detent interference with the jaw over which it is inserted, thereby rendering the jacket self-retaining in its assembled relation to the jaw. The "closed" end of the jacket is characterized by a limited stab-receiving and guiding opening, between end-wall portions which effectively cover the projecting outer limits of the jaw.

9 Claims, 9 Drawing Figures



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Fig. 1.

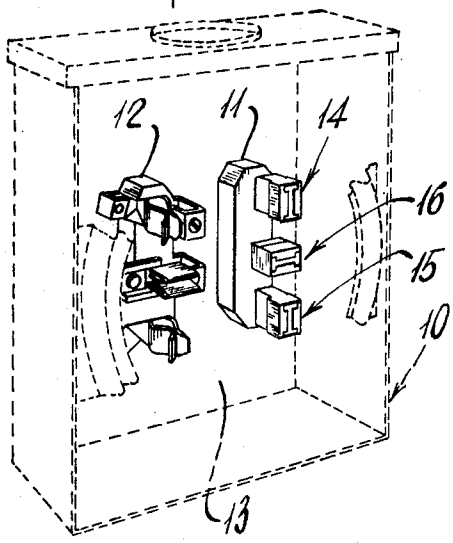


Fig. 2.

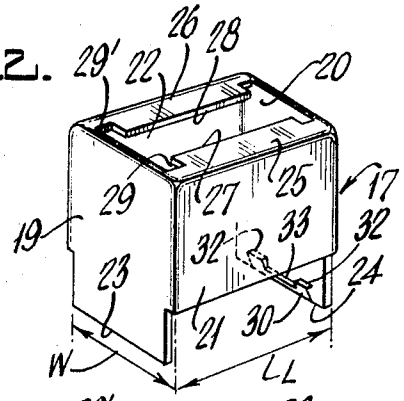


Fig. 6.

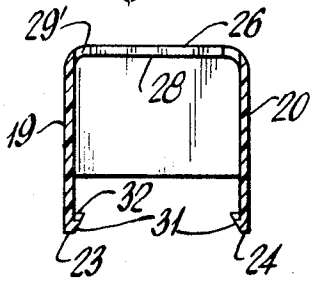


Fig. 3.

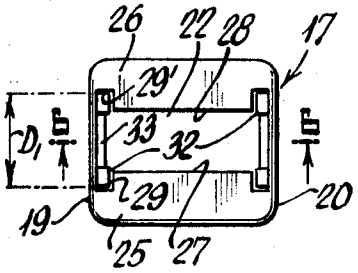


Fig. 7.

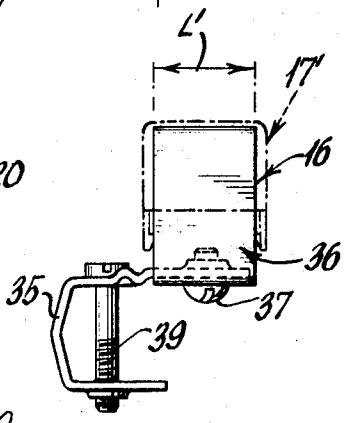


Fig. 8.

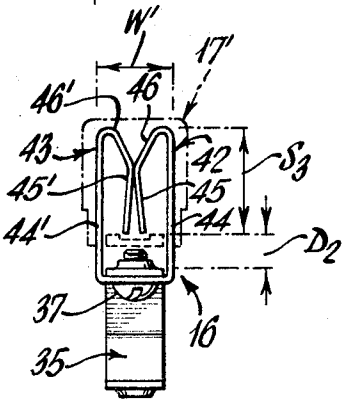


Fig. 4.

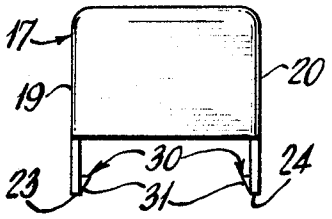


Fig. 9.

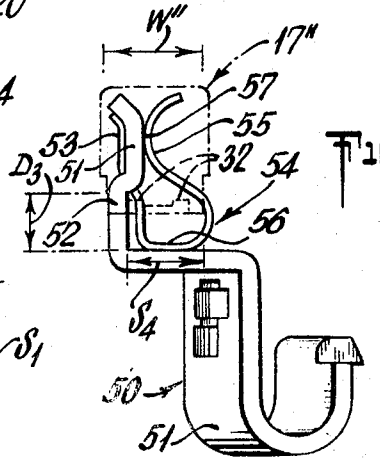
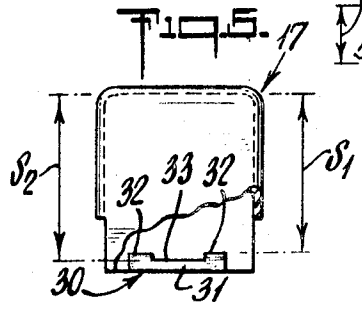


Fig. 5.



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INSULATING MEANS FOR A JAW OF A STAB-MOUNTED ELECTRICAL METER OR THE LIKE

This invention relates to the protection of electrical meter or the like mounting jaws, as for receiving stabs of a standard electrical watt-hour meter.

It is an object of the invention to provide improved insulative protective means for mounting jaws of the character indicated.

Another object is to provide an individual insulator cap or jacket insertable over and self-retained in assembled relation with a mounting jaw.

A further object is to achieve the foregoing objects with a construction which in no way impairs removable meter or the like mounting to one or more jaws equipped with individual jackets of the character indicated.

A general object is to meet the above objects with a construction of elemental simplicity and low cost, which lends itself to production by injection-molding of suitable plastic material, which is adaptable to a variety of jaw-shape variations for a stab-mounted meter or other electrical device of given rating, and which requires no modification of existing installed meter-mounting jaw structure.

Other objects and various further features of novelty and invention will be pointed out or will occur to those skilled in the art from a reading of the following specification, in conjunction with the accompanying drawings. In said drawings, which show, for illustrative purposes only, a preferred form of the invention:

FIG. 1 is a simplified view in perspective of a panel box containing electrical meter-mounting receptable means, carrying protective devices of the invention;

FIG. 2 is an enlarged view in perspective of one of the protective devices of FIG. 1;

FIG. 3 is a plan view of the device of FIG. 2;

FIGS. 4 and 5 are views in elevation, for adjacent side walls of the device of FIG. 2, FIG. 5 being partly broken away to reveal internal detail;

FIG. 6 is a sectional view taken at 6—6 in FIG. 3;

FIG. 7 is a view in elevation of one type of jaw to which the invention is applicable, an assembled jacket of FIG. 2 being indicated by superposed phantom outline;

FIG. 8 is an end elevation of the jaw of FIG. 7, with similar phantom showing of an assembled jacket; and

FIG. 9 is a view similar to FIG. 8, for the case of a different jaw construction.

In FIG. 1, the invention is shown in application to a panel box 10 for mounting a stab-type electrical watt-hour meter. Front-plate structure is omitted, to reveal mounting means comprising two like spaced insulating blocks 11–12 carried by the back plate 13 of the box 10. Each mounting block is shown with three stab receptacles or jaws, which for the case of block 11 are identified as spaced live jaws 14–15 and a neutral or "fifth" jaw 16. In accordance with conventional practice, each of the jaws 14–15–16 will be understood to be made of stiffly compliant formed metal strip material, and to consist of opposed jaw members presenting a stab-guiding entrance to a stab-engaging region. In the stab-engaging region, the jaw members are resiliently deflected or displaced to assure that an inserted stab will be compressionally loaded as it is wiped by the jaw members in the course of mounting engagement,

thus assuring reliable mounting and negligible electrical resistance at contact. In general, the jaws 14–15–16 may each be said to be characterized by an overall planform which is rectangular or which fits substantially within a rectangular planform outline, for which a length dimension extends in the direction of the plane of the inserted stab and for which a width dimension extends transverse to the length dimension. The overall jaw outline is completed by a height dimension, namely the extent to which the jaw rises above the plane of its base (e.g., its mounting block).

Structure as thus far described is in common use; it is characterized by plural upstanding jaws several of which are live (for any given box 10) and which thus present a hazard as long as a meter has been removed or has not yet been installed, or in the installation of the meter itself. The hazard is greatest when a meter has been removed to permit repairs in or near the open box, in that personnel or conductive material may contact a live jaw.

In accordance with the invention, the noted hazard is reduced to insignificance by applying an electrically insulated jacket 17 to each of the jaws 14–15–16. Such a jacket is shown in detail in FIGS. 2 through 6. Jacket 17 is preferably a single integral piece of a suitable thermo-plastic, for example Lexan.

The jacket 17 comprises a cup-shaped box, open at one longitudinal end, and virtually closed at the other longitudinal end. The box defines an inner cavity accommodating the length and width dimensions of the jaws and having a depth extending substantially the vertical height of the jaws. As shown, the box has thin-walled sides and is thus also generally rectangularly prismatic. It comprises first opposed parallel side walls 19–20 which extend in the width direction (W) of the jaw planform, and second opposed parallel side walls 21–22 which extend in the length direction (L) of the jaw planform. The side walls are continuously joined at their adjacent edges, the walls 19–20 being longer and thus defining downwardly projecting ends 23–24 at the open end of the cup-shape. The "closed" end of the jacket comprises end-wall portions 25–26 which extend toward each other in the width (W) direction and which terminate short of the central region of the width dimension, thereby defining, between opposed adjacent edges 27–28 a stab-receiving central slot opening. This slot opening extends the full length dimension L between side walls 19–20, and is of width exceeding standard stab thickness; it is also preferably enlarged locally along walls 19–20, as at lobes 29–29′, so that walls 19–20 are capable of resilient outwardly bulging deformation, as may be involved in careless stab insertion and removal and in stab piloting.

For self-retention of an assembled jacket 17 on a jaw, the invention provides an integral formation or formations 30 on the inner surface of one or more of the side walls, and having snap-detent engagement with a standard jaw end, ledge, offset or other characteristic contour. As shown, such detent means 30 is provided as an inward projection on each of the downwardly projecting ends of the side walls 19–20. For more universal applicability to different jaw shapes, the extent of detent means 30 in the width direction W, along walls 19–20, is substantial, being shown over the distance D_1 (FIG. 3). For ease of insertion, the entrance surfaces 31 of the detent means 30 are downwardly divergent (FIG. 4). The ends 32 of each detent formation are locally

enlarged, thus defining a central and lesser detent projecting region 33 (with span S_1 to the "closed" end of the cavity) between two outer and greater detent projecting regions 32 (with slightly lesser span S_2 to the "closed" end of the cavity).

The center jaw 16 represents one common jaw design configuration, and the outer jaws 14–15 represent another, but both are equally well suited to snap-on assembly to and retention of the same insulating jacket 17. This feature will be explained in connection with FIGS. 7–8, and FIG. 9, respectively.

In FIGS. 7–8, the "fifth" jaw 16 is seen to comprise two formed sheet or strip metal parts 35–36, secured by an assembly screw 37. The lower part 35 is bent to generally J-shape, to provide aligned apertures 38–38' (in opposed arms) for clamping by means 39 to a portion of mounting block 11. The longer arm 40 provides an anchoring platform for the base portion 41 of the second part 36. As shown, the second part 36 is bent to define the upstanding opposed members 42–43 of the jaw 16. Thus defined are first or lower upstanding wall regions 44–44', second or stab-receiving and wiping regions 45–45' (offset the distance D_2 from base portion 40), and divergent stab-guiding upper end portions 46–46'. The overall planform length (L') and width (W') dimensions of jaw 16 are equal to or less than the corresponding L and W dimensions of the applied-jacket cavity, as suggested by the surrounding profile 17' of an applied jacket 17, and the detent clearance S_1 of jacket 17 is selected to equal or exceed the overall effective height span of the stab-engaging portions 45–45' and flared ends 46–46'. The central detent region 33 thus has detent action with the lower (outer) edge corners of portions 45–45', and the larger detent end formations 32 locate in the clearance between portions 45–44 and 45'–44', respectively. Self-retention is thus assured, with the stab-insertion slot (between edges 27–28) aligned with the adjacent surfaces of the jaw members 42–43; at the same time, the end-wall portions 25–26 overstand the outermost ends of jaw members 42–43.

FIG. 9 provides a similar illustration of application of the same jacket 17 to an outer jaw, such as 14 or 15, of configuration different from the jaw 16, the assembled jacket outline being suggested by phantom outline 17''. The jaw of FIG. 9 is seen as a bent heavy "frame" strip 50 having a terminal or wire-connecting end 51 and an upstanding jaw-member end 52. The latter is pierced to receive the resiliently loaded inserted assembly of one arm 53 of a metal spring clip 54 having a widened opposite upstanding arm 55, which defines the second jaw member. The overall width dimension W'' of the jaw of FIG. 9 is equal to or less than the dimension W of the jacket cavity, and the overall length dimension L'' of the jaw of FIG. 9 will be understood to be equal to or less than the corresponding dimension L of the jacket cavity. Jacket retention is by way of the enlarged detent ends 32.

In spite of the obvious differences in structure and appearance, as between the jaws of FIG. 7 and 9, the jaw members 52–54 of FIG. 9 will nevertheless be recognized as having first wall structure near the base portion 56 and of span S_4 which is a substantial fraction of the width dimension (W''), and second wall structure (55–57) of substantially the length dimension (L'') and spaced by the offset distance D_3 from the base portion (56). That being the case, and the vertical and lateral offset positioning of detents 32 (within the jacket cavity) being such as to snap into the jaw space D_3–S_4, the same jacket 17 is detent-retained in its jaw-applied position 17''.

It will be seen that the insulating cap means of the invention meets all stated objects and that it lends itself to various applications. For example, it may be factory-assembled to the jaws, or it may be assembled to the jaws after field-mounting of the panel box. Also, it provides an important guide and location function, rendering much simpler the field-insertion of a watt-hour meter into the receptacle; this is otherwise in essence a blind operation, so that meter-installation or replacement time is substantially reduced by the invention.

While the invention has been described in detail for the preferred form, application and method of construction, it will be understood that modifications may be made. For example, the insulating cap may be made by a method other than injection-molding; the "fifth jaw" in FIGS. 1, 7, 8 may be in a live-jaw position, while some other jaw configuration is used in the "fifth jaw" position of the receptacle block (11, 12); still further, the insulating cap of the invention will fit and locate on other commercial jaws, of design different from the illustrative different jaws in FIGS. 7–8 and in FIG. 9, respectively.

What is claimed is:

1. In combination, a stab receptacle element comprising a mounting base portion and upstanding jaw means electrically conductively united to said base portion and rising from said base portion, said jaw means comprising two opposed jaw members having outwardly diverging upper stab-receiving ends and including adjacent portions short of said ends and resiliently compressionally stressed when in wiping contact with an inserted meter stab, the plan aspect of said jaw means being characterized by an overall length dimension in the direction of the plane of stab insertion and by an overall width dimension transverse to said length dimension, whereby said jaw means may be said to be encompassed by a rectangular prismatic outline having said length and width dimensions and additionally having a height dimension characterized by the rise of said jaw means above said base portion, each jaw member being of stiffly compliant formed sheet metal of thickness materially less than said width dimension and formed to include (a) first wall structure near said base portion and of substantially said width dimension and (b) second wall structure of substantially said length dimension and spaced from said base portion and including said adjacent portions substantially centrally positioned within said width dimension; and a single cup-shaped protective jacket assembled to said jaw means, said jacket being of cured hardenable electrically insulating material having a cavity shaped substantially in conformance with said dimensions and with an open end characterized substantially by said length and width dimensions, the end opposite said open end integrally including opposed end-wall portions extending toward each other in the width direction and terminating short of the central region of the width dimension, thereby defining a stab-receiving central slot opening substantially alignable with an inserted stab when said jacket is assembled to said jaw means, said jacket including inwardly projecting integral detent means near the open end thereof and on at least one of the side walls which extends in the width direc-

tion, said detent projection being of inwardly projecting extent and interferring with one of said jaw members in the course of insertion over said jaw means, said detent projection also being offset from said end-wall portions to an extent which at least equals the minimum distance between (i) the upper upstanding limit of said jaw means and (ii) the effective lower limit of said second wall structure, thereby allowing the detents to engage said jaw means below said second wall structure.

2. The combination of claim **1,** in which said jacket is generally rectangularly prismatic in surrounding conformance with said cavity.

3. The combination of claim **1,** in which said jacket is of integral injection-molded plastic construction.

4. The combination of claim **1,** in which said detent means comprises inwardly extending opposed detent formations on each of the jacket side walls which extend in the width direction.

5. The combination of claim **1,** in which said one side wall projects downwardly of adjacent side walls at the open end of said jacket, said detent means being integrally carried by the downwardly projecting part of said side wall.

6. The combination of claim **4,** in which each of the side walls which extend in the width direction project downwardly of adjacent side walls at the open end of said jacket, said opposed detent formations being integrally carried by the respective downwardly projecting side-wall parts.

7. The combination of claim **5,** in which said detent means is formed along the inner surface of said one side wall for a substantial fraction of the width dimension of the cavity.

8. The combination of claim **7,** in which said detent means terminates short of the opposite outer limits of the width dimension by an amount which is at least equal to the maximum thickness of jaw-member sheet metal.

9. The combination of claim **1,** in which said end-wall portions include adjacent regions which project toward each other in lateral clearance relation with those adjacent side walls which extend in the width direction, thereby defining a central compliant region of each of the side walls which extend in the width direction.

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