June 27, 1967 N. GOLDSOBEL 3,328,513

ELECTRICAL FITTING ENTRANCE CAP

Filed Dec. 23, 1964 5 Sheets-Sheet 1

Fig. 1.

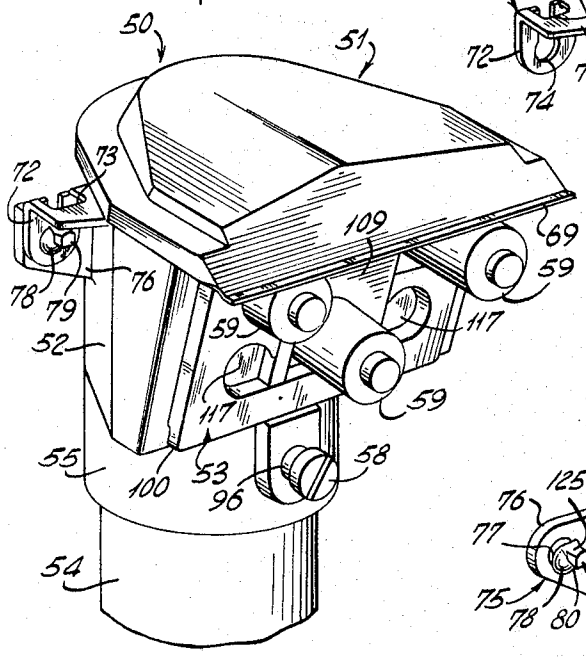


Fig. 2.

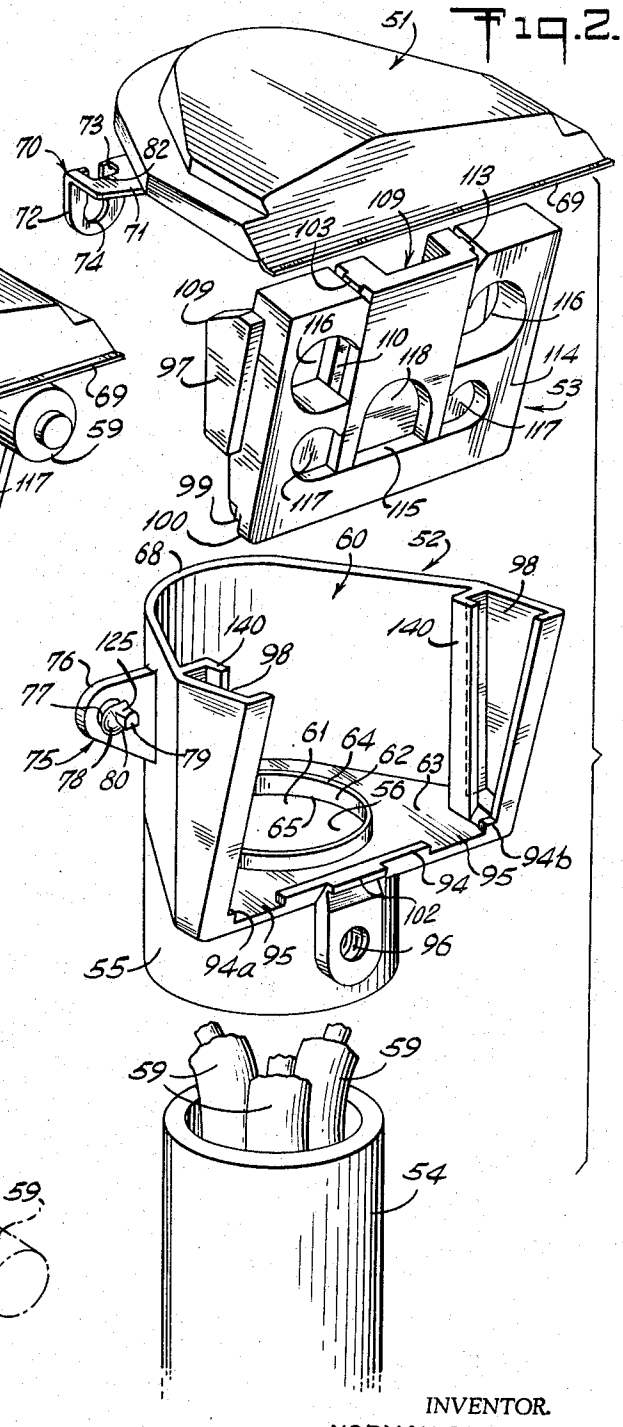
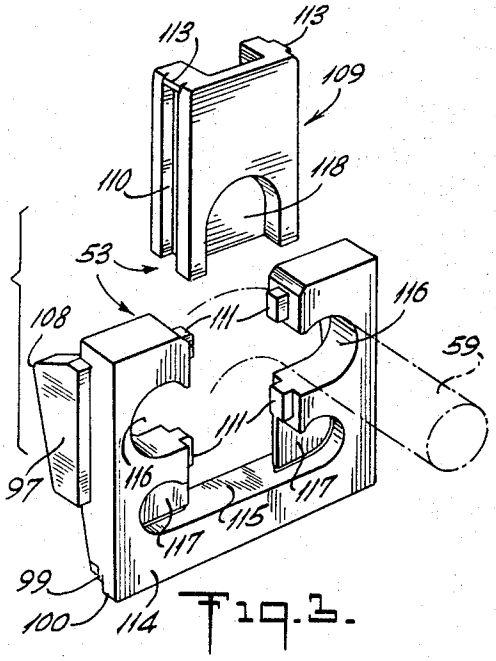


Fig. 3.



INVENTOR.
NORMAN GOLDSOBEL
BY
Lyman S. Lovette
ATTORNEY

June 27, 1967 N. GOLDSOBEL 3,328,513

ELECTRICAL FITTING ENTRANCE CAP

Filed Dec. 23, 1964 5 Sheets-Sheet 2

Fig. 4.

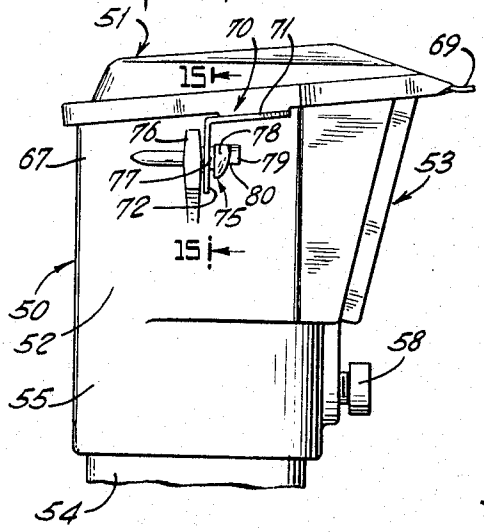


Fig. 5.

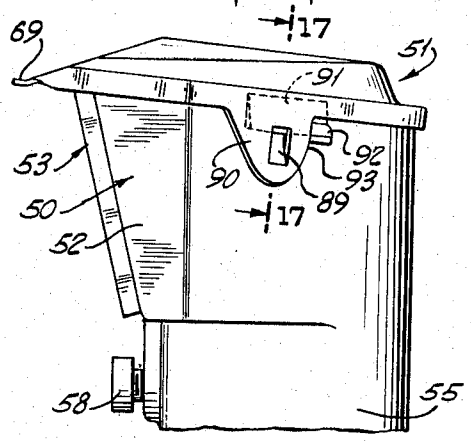


Fig. 16.

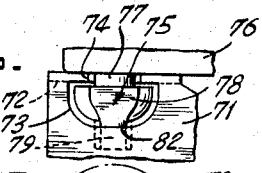


Fig. 6.

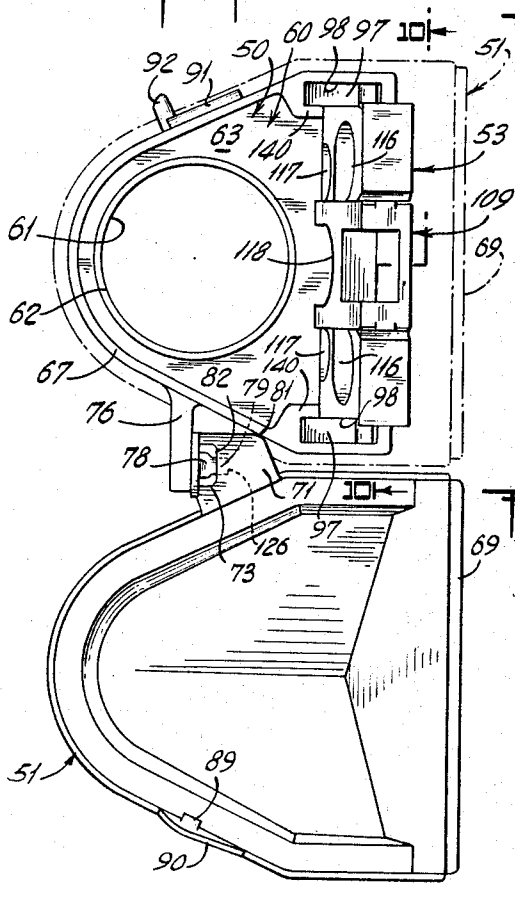


Fig. 15.

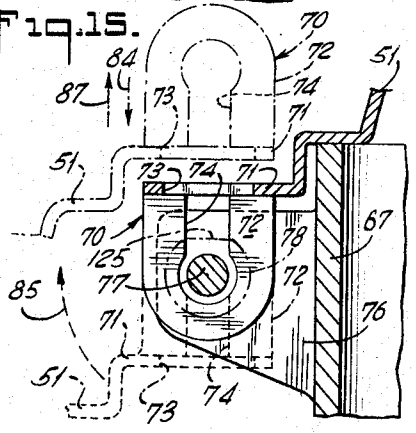


Fig. 14.

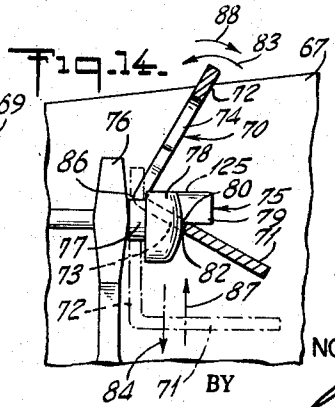
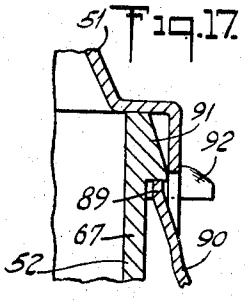


Fig. 17.



INVENTOR.
NORMAN GOLDSOBEL

BY

Eugene S. Lorette

ATTORNEY

June 27, 1967 N. GOLDSOBEL 3,328,513

ELECTRICAL FITTING ENTRANCE CAP

Filed Dec. 23, 1964 5 Sheets-Sheet 3

Fig. 7.

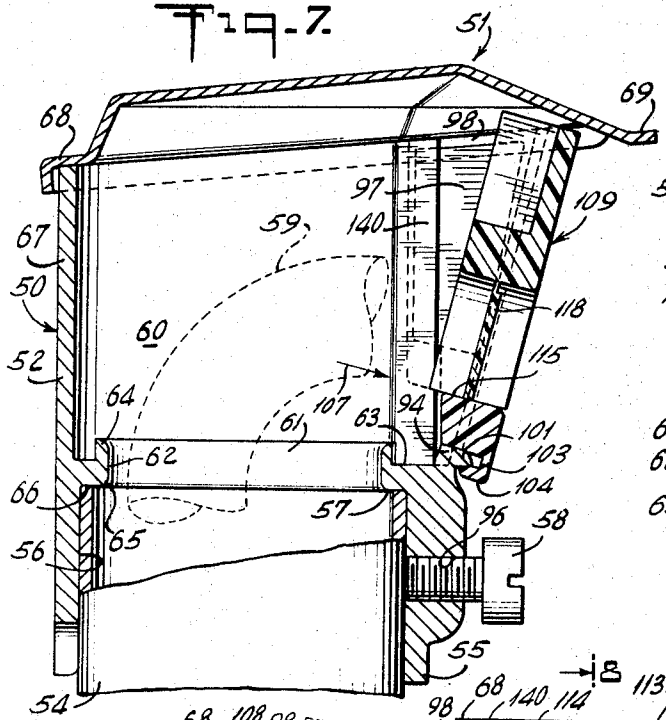


Fig. 8.

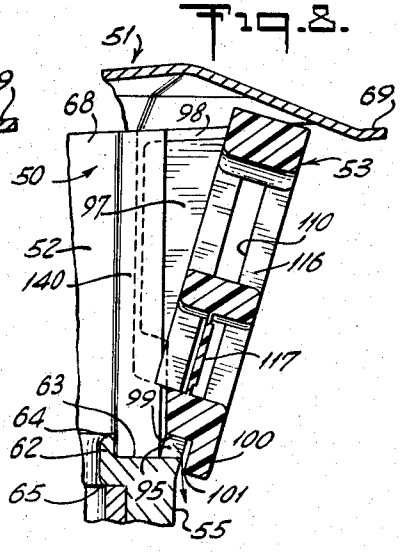


Fig. 9.

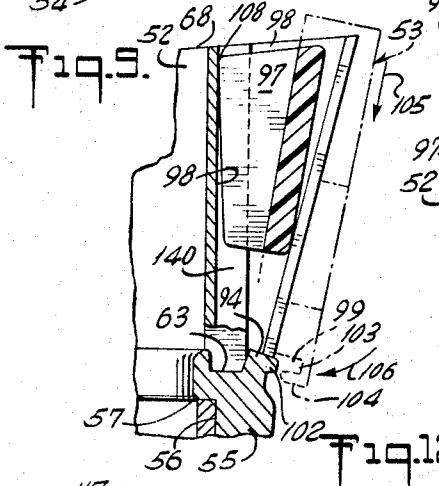


Fig. 10.

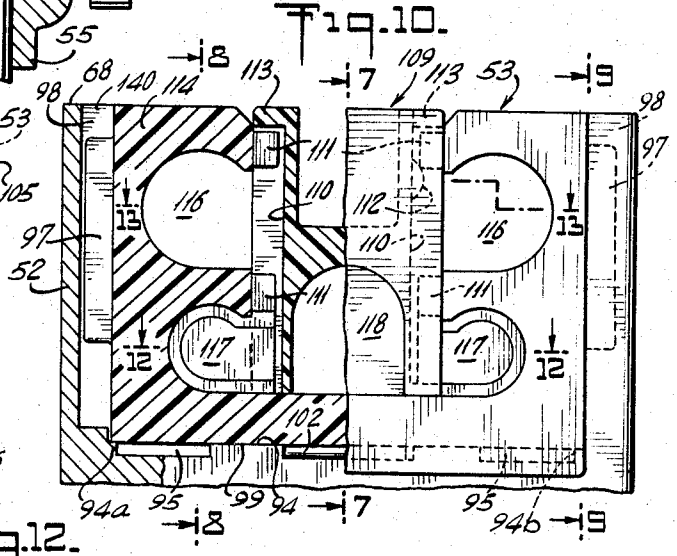


Fig. 12.

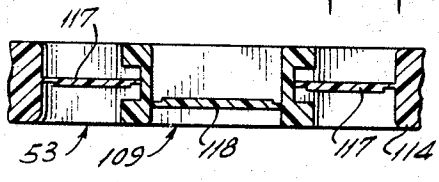


Fig. 11.

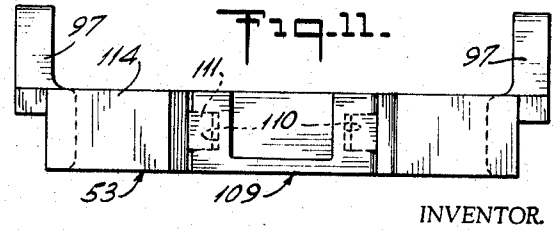
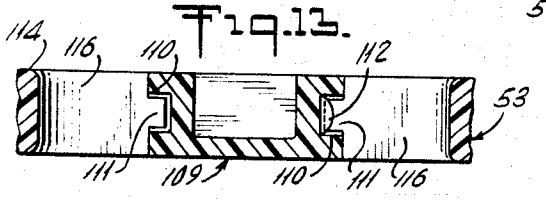


Fig. 13.



INVENTOR.
NORMAN GOLDSOBEL
BY Eugene S. Lovette
ATTORNEY

June 27, 1967 N. GOLDSOBEL 3,328,513

ELECTRICAL FITTING ENTRANCE CAP

Filed Dec. 23, 1964 5 Sheets-Sheet 4

Fig. 18.

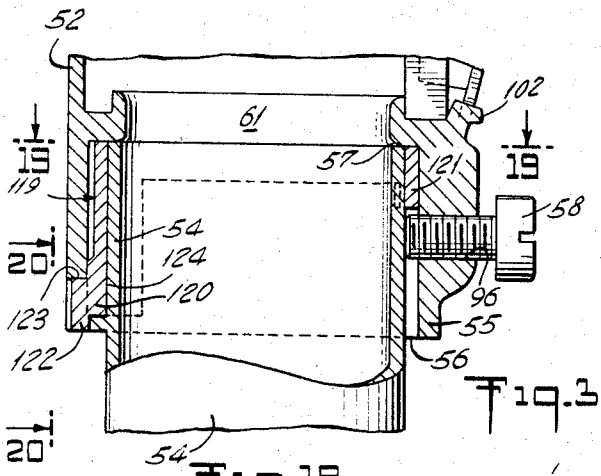


Fig. 19.

Fig. 21.

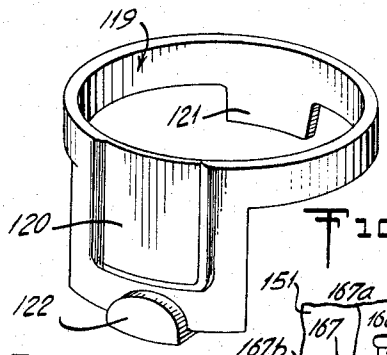


Fig. 31.

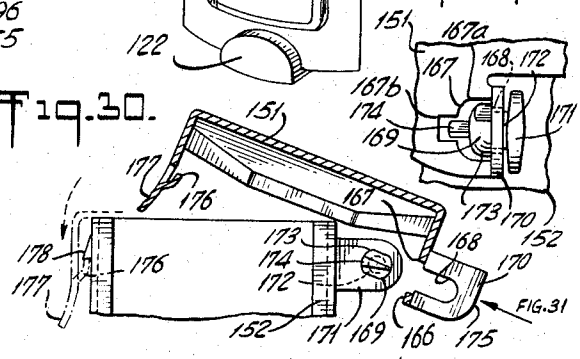


Fig. 30.

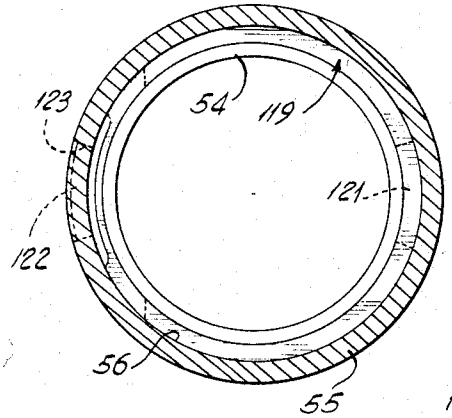


Fig. 35.

Fig. 32.

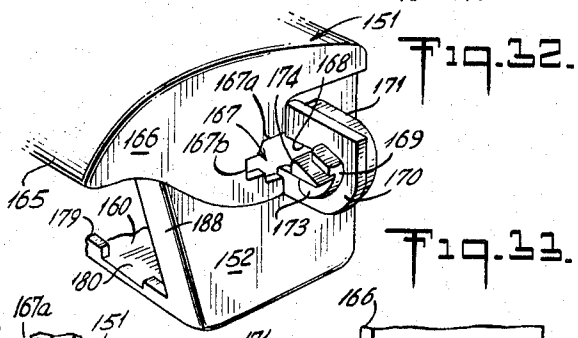
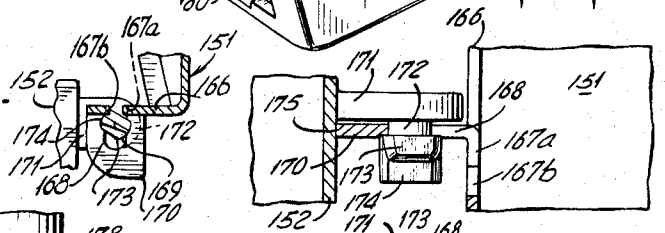


Fig. 33.



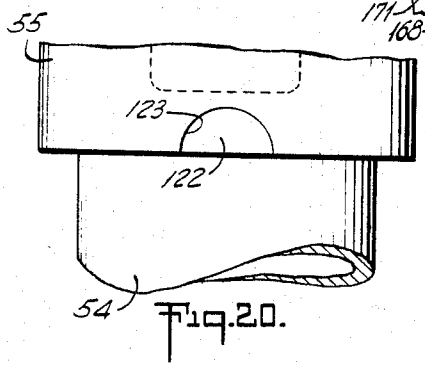


Fig. 20.

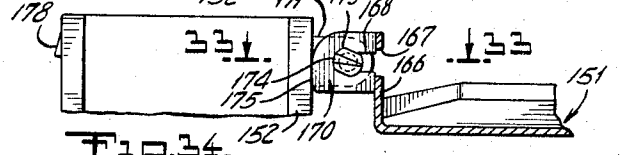


Fig. 34.

INVENTOR
NORMAN GOLDSOBEL
BY Eugene S. Lovelle
ATTORNEY

June 27, 1967 N. GOLDSOBEL 3,328,513

ELECTRICAL FITTING ENTRANCE CAP

Filed Dec. 23, 1964 5 Sheets-Sheet 5

Fig. 22.

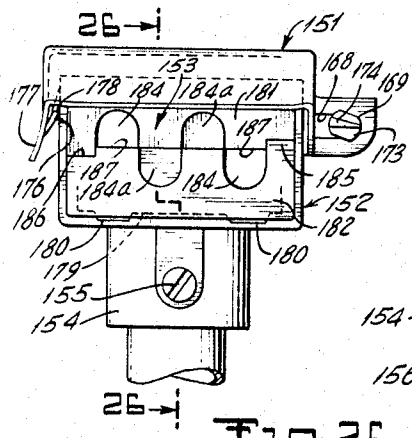


Fig. 23.

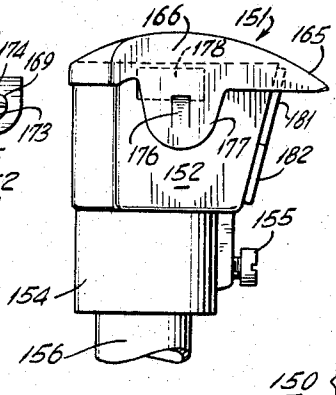


Fig. 24.

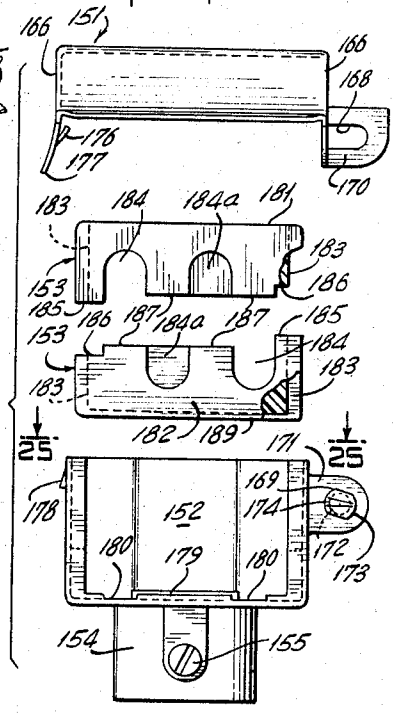


Fig. 26.

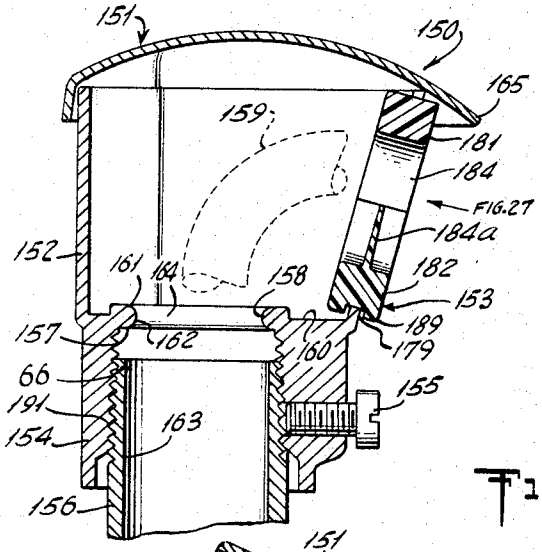


Fig. 25.

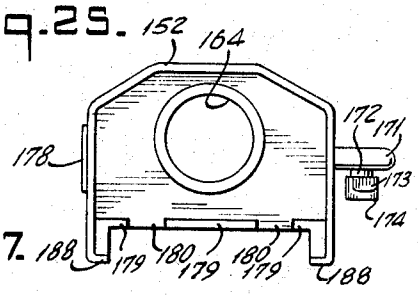
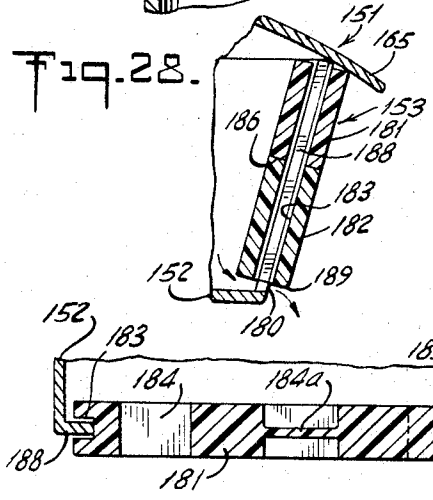


Fig. 27.

Fig. 28.



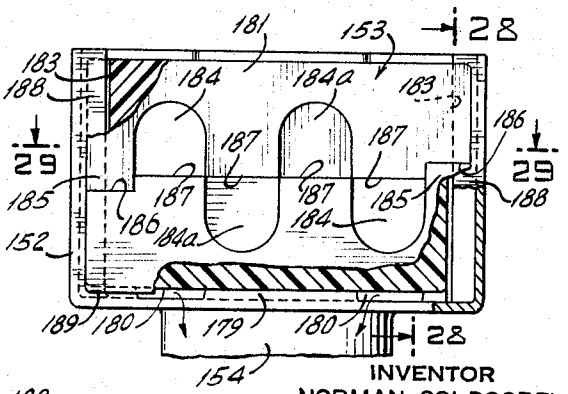


Fig. 29.

INVENTOR
NORMAN GOLDSOBEL
BY Eugene S. Goodell
ATTORNEY

United States Patent Office 3,328,513 Patented June 27, 1967

3,328,513

ELECTRICAL FITTING ENTRANCE CAP

Norman Goldsobel, Commack, N.Y., assignor to Electrical Fittings Corporation, East Farmingdale, N.Y., a corporation of New York

Filed Dec. 23, 1964, Ser. No. 420,582
8 Claims. (Cl. 174—81)

This invention relates to an electrical fitting for coupling outdoor transmission cables to an electrical conduit and, in particular, to an entrance cap fitting.

Essentially, this invention is an improvement over the electrical fitting illustrated and claimed in U.S. Patent No. 2,865,981.

It is the principal object of this invention to provide an improved electrical fitting entrance cap for coupling outdoor transmission cables to electrical conduit.

It is a further object of the invention to provide an entrance cap incorporating features, wherein moisture is prevented against accumulating in the entrance cap or flowing into the conduit connected to such entrance cap.

It is a further object of the invention to provide an improved electrical fitting entrance cap containing a pivotal cover, whereby the cover may be readily assembled to the entrance cap housing body or detached therefrom, but wherein said cover is rotatably captivated to said body for normal pivotal use; in addition, said cover employs snap-lock features for holding same in closed status.

It is a further object of the invention to provide an electrical fitting entrance cap designed for rigid conduit and electrical malleable tubing of the same trade size by means of a novel spacer ring.

It is a further object of the invention to provide an electrical fitting entrance cap having an insulator entrance window for receiving and nesting outdoor transmission cables, wherein said cables may be bent instantly into respective slots therefor without axially threading same through fully enclosed cable openings in the insulator window.

Further objects and advantages will become apparent from the following description of the invention taken in conjunction with the figures, in which:

FIG. 1 is a perspective view of an entrance cap employing the principles of the invention;

FIG. 2 is a perspective view showing the components of said entrance cap in exploded relationship;

FIG. 3 is a perspective view showing the components of the insulator window in exploded relationship;

FIG. 4 is a side elevation of the entrance cap showing its cover in closed position;

FIG. 5 is the opposite side elevation of said entrance cap;

FIG. 6 is a top plan view looking down into the entrance cap with the cover thereof in opened status;

FIG. 7 is a vertical section of said entrance cap along the plane of **7—7** of FIG. 10;

FIG. 8 is a fragmentary section along line **8—8** of FIG. 10;

FIG. 9 is a fragmentary section along line **9—9** of FIG. 10;

FIG. 10 is a section along line **10—10** of FIG. 6;

FIG. 11 is a top plan view of FIG. 10;

FIGS. 12 and 13 are sections taken along respective lines **12—12** and **13—13** of FIG. 10;

FIG. 14 is a fragmentary view for the purpose of illustrating the technique of assembling and disassembling the entrance cap cover with respect to the entrance cap body;

FIG. 15 is essentially a right side view of FIG. 14 and is a section along line **15—15** of FIG. 4;

FIG. 16 is a fragmentary top plan view of FIG. 15 illustrating the mating parts making up the means for rotatably captivating the entrance cap cover to its body;

FIG. 17 is a section along line **17—17** of FIG. 5;

FIG. 18 is a fragmentary view similar to FIG. 7 to illustrate the use of a spacer in the entrance cap;

FIG. 19 is a section along line **19—19** of FIG. 18;

FIG. 20 is a fragmentary side elevation in the direction of line **20—20** of FIG. 18;

FIG. 21 is a perspective view of an entrance cap spacer;

FIG. 22 is a front elevation of a second embodiment of an entrance cap employing the principles of the invention;

FIG. 23 is a side elevation of the left side of FIG. 22;

FIG. 24 is a front elevation illustrating the component parts of the entrance cap in exploded relationship;

FIG. 25 is a plan view of the entrance cap body looking down line **25—25** of FIG. 24;

FIG. 26 is a side elevation in section along line **26—26** of FIG. 22;

FIG. 27 is an enlarged front elevation partly in section with cover removed showing the window insert seated in the entrance cap body;

FIGS. 28 and 29 are fragmentary sections taken along respective lines **28—28** and **29—29** of FIG. 27;

FIG. 30 is a fragmentary and partly sectional view showing the relationship of the entrance cap cover with respect to its body for assembly and disassembly of said parts;

FIG. 31 is a side elevation along the arrow **31** of FIG. 30;

FIG. 32 is a perspective view illustrating the pivot means for connecting said parts;

FIG. 33 is a fragmentary and sectional view showing its parts assembled and is taken along line **33—33** of FIG. 34 with cover opened;

FIG. 34 is a front elevation of the parts shown in FIG. 33; and

FIG. 35 is a view of the pivot means showing the cover in upright opened status.

FIGS. 1 through 21 illustrate an embodiment of an entrance cap **50** incorporating the principles of the invention. Entrance cap **50** is made up of a cover **51** pivotally connected to an entrance cap housing body **52** and an insertable insulator window **53** in the front side of body **52**. Entrance cap **50** is usually mounted to an upright conduit **54**. Conduit **54** is generally secured along an exterior building wall. Body **52** has a depending tubular sleeve **55** provided with a cylindrical inner diameter bore **56** for receiving and making attachment to an end of conduit **54**. The upper end of conduit **54** bottoms against an annular wall **57** in body **52**. A set screw **58** secures entrance cap **50** to conduit **54**. In lieu of set screw means **58** for attachment, the upper end of the conduit and sleeve inner diameter bore **56** may be threaded to permit a threaded attachment of entrance cap **50** and conduit **54**.

As understood in the art, the electrical power feeder line consists of two or more cables **59**. These cables are received by entrance cap **50** by extending through window **53** and into an interior cavity **60** formed by the assembled entrance cap **50**. The cavity **60** allows the electrician to make a substantially 90° bend to the cables **59**, as shown in FIG. 7. Cables **59** continue down through a central opening **61** formed by an annular throat **62** to extend into the attached conduit **54**. In this manner, the feeder cables **59** are brought into the building to make connection with the building circuit.

As seen in FIG. 7, wall **57** partitions cavity **60** from the sleeve portion of body **52** with throat **62** extending upright from wall **57** and into the cavity region above the cavity floor **63**. Throat **62** is rounded at its ends **64**, **65** with smooth radii to prevent damage to the insulation of the cables passing through opening **61**. Wall **57** radially

overhangs the rigid conduit wall bottoming against same. In other words, the diameter of opening **61** is selected to be less than the inner diameter of the rigid conduit wall, as seen in FIG. 7. This prevents the electric cables making contact with the sharp edge **66** of the upper end of the conduit wall **54**. Such contact could cause damage to the cables. For the threaded connection between conduit **54** and body **52**, a tapered thread is used to render the connection substantially water tight. In this instance, the upper end **66** of the conduit does not necessarily bottom against wall **57**, although it will terminate close to such wall **57**. However, the relative sizes of these parts are such that the diameter of opening **61** is less than the inner diameter of conduit **54** to prevent the condiut wall extending across opening **61**.

The portion of body **52** above sleeve **55** is essentially a continuous upright curved wall **67** having an open front side. Body wall **67** has a flat top edge **68**. Insulator window **53** is designed to nest in body **52** to close the front side thereof. As seen in FIG. 7, when assembled, body top edge **68** and the top edge of window **53** are substantially coplanar.

The open top formed by body **52** and window **53** nested thereto is enclosed by an oversized cover **51** contoured to drain off snow, rain or melting ice and to prevent the drainage therefrom entering into the entrance cap interior and dripping down into conduit **54**. The front portion of cover **51** is provided with an overhanging lip **69** which acts as an eave, whereas the remaining edge of cover **51** is bent over to overhang below wall edge **68** to provide added protection against moisture dripping into the interior of the entrance cap.

Cover **51** is pivotally attached to body **52** by means of an ear **70** extending integrally from cover **51**. Ear **70** consists of a pair of flat wall members **71, 72**, each essentially at right angle relationship with respect to the other. Member **71** is in a plane substantially parallel to the plane of cover **51**, whereas member **72** is in a vertical plane as seen in FIG. 4. Ear members **71, 72** have interconnecting bayonet slots **73, 74**. Slot **74** is a lengthwise and narrow width bayonet slot in member **72** communicating with a C-shaped bayonet slot **73** of larger width in member **71**. Slots **73, 74** operationally engage a key **75** extending axially from an ear **76**, which ear **76** is an integral extension of body wall **67**. Key **75** comprises a small diameter shank **77**, an enlarged head **78** at the front of shank **77** and a small section forming a forward extension **79** of enlarged head **78**. The top of head **78** and its forward extension **79** are relatively flat at **125**, FIG. 2. The bottom of extension **79** is flat and forms a fulcrum at **80** where it joins with head **78**, see FIGS. 4 and 14. The purpose of fulcrum **80** will be explained hereinafter.

Bayonet slots **73, 74** and key **75** are complementary shaped to permit attachment and removal of cover **51** with respect to body **52**, but when these parts are engaged cover **51** is rotationally captivated to body **52** and cannot become accidentally detached therefrom during normal operational use, whether cover **51** is in opened or closed position or while swinging same from one to the other of such positions.

FIGS. 1 and 4 show cover **51** in closed position. Cover **51** is rotated counterclockwise, as viewed in FIG. 1, to an open position as shown in FIG. 6. Abutment of ear surface **81** with body **52**, see FIG. 6, acts as a limit stop. When cover **51** is attached to body **52**, bayonet slot **74** is rotatably captivated on shank **77** between ear **76** and enlarged head **78**. Enlarged head **78** is dimensionally wider than slot **74**.

FIGS. 14 through 16 illustrate the manner of attaching and disassembling cover **51** with respect to body **52**. Cover **51** is held upside-down with its ear member **72** in front of key **75** and with bayonet slot **74** substantially upright. Cover **51** is then tilted at about a 45° angle, as depicted in solid outline in FIG. 14, to permit the C-shaped bayonet slot **73** to mount over forward extension **79** and enlarged head **78**. At this stage of attachment, the edge **82** of slot **73** bears against fulcrum **80** formed by extension **79** and enlarged head **78**. Cover **51** is then pivoted about fulcrum **80** in the direction of arrow **83** (FIG. 14) to align ear member **72** parallel with body ear **76**. Cover **51** is then permitted to drop straight down in the direction of arrow **84** in FIG. 14. From this moment on, keyway slot **74** is captivated on shank **77** between ear **76** and enlarged head **78**. The corresponding broken on phantom outline of cover **51** in FIGS. 14 and 15 correspond to the status of said cover **51** with its slot **74** mounted on shank **77**. The upper phantom illustration in FIG. 15 illustrates an enlarged view of the position of cover **51** in such status. This phantom illustration also depicts the status of cover **51** just prior to mounting same on key **75**, that is to say, just prior to tilting cover **51** in a 45° angle so as to permit enlarged C-shaped slot **73** to mount over extension **79** and head **78**. Cover **51** may now be rotated about the axis of shank **77**, see arrow **85** in FIG. 15, to closed position and this is depicted in solid outline in FIG. 15.

FIG. 16 is a view looking down at the top of ear member **71** showing the relationship of the engaged parts when cover **51** has been turned to closed position. Inasmuch as the enlarged head **78** is greater than the width of slot **74**, once attached, cover **51** whether in its open or closed position and while being rotated from one to the other of such positions remains captivated to body **52**. The respective dimension of these coacting parts provide a clearance **86** (see FIG. 14) with respect to body ear **76** to permit tilting and pivoting of cover **51** as it is being mounted on key **75**, as shown in FIG. 15. It will also be noted that when cover **51** is in opened status (see FIG. 6), the forward end **126** of extension **79** axially overlaps slot edge **82** to captivate cover **51** in a vertical plane on key **75**, should cover **51** for any reason be raised in the direction of arrow **87** shown in FIG. 14.

To remove cover **51**, the above-described attachment process is essentially reversed. Cover **51** is opened and then raised in the direction of arrow **87**, FIG. 14, for slot edge **82** to engage fulcrum **80**. Then cover **51** is rotated clockwise in the direction of arrow **88**, FIG. 14, about 45° until the wide dimension of bayonet slot **73** clears enlarged head **78** and its extension **79** to permit removal of cover **51**.

Cover **51** is snap-latched to body **52** by a detent finger **89** punched from a tab **90** depending integrally from cover **51**. Body wall **67** includes an outstanding boss **91**, whereby upon closing cover **51**, the upper edge of finger **89** spring-snaps under boss **91**. A guide stud **92** at the rear of boss **91** extends outwardly from body wall **67**. The rear edge **93** of tab **90** is designed to bear against stud **92**. This bearing engagement maintains cover **51** properly aligned with respect to body **52** for latching and unlatching cover **51**. Cover **51** is easily unlatched to open same by prying a screwdriver blade or like object under tab **90** to lift same up, whereby finger **89** clears boss **91**.

Cavity **60** has a relatively flat floor **63**. The upper portion of the collar-like throat **62** projects above the plane of floor **63** to prevent any moisture collecting in cavity **60** against draining into conduit **54**. A slightly raised upper ledge **94** extends along the front of body **52**. Sections of ledge **94** are cut-away to provide drain ducts **95** level with floor **93**. Any water moisture collecting in the interior of the entrance cap will drain off through such ducts **95**, thus preventing water being trapped in the entrance cap interior. Since ducts **95** are cut-out sections of ledge **94**, two small side sections of ledge **94** remain at **94*a***, **94*b***. Body **52** includes a threaded hole **96** for receiving set screw **58**.

Window **53** is essentially a rectangular shaped member of suitable structural thickness and has similarly shaped wedge-like ears **97** on each side. Each ear **97** is designed to nest slideably into a complementary shaped channel **98** on the opposite sides of body **52** for captivating window

53 to body 52. The bottom of window has a ledge 99 designed to bottom against body ledge sections 94, 94a, 94b. Window 53 has a depending skirt 100 designed to overhang below body ledge 94 to close the opened side of body 52. Skirt 100 is spaced from body 52 to provide a sufficient clearance 101, as seen in FIG. 8, to permit water draining out from the entrance cap via ducts 95 after window 53 is assembled to body 52. Body ledge 94 includes an outwardly extending lip 102. Window skirt 100 includes a recess 103 forming a lip 104 which is designed to snap over body lip 102, whereby window 53 is snap-locked to body 52 upon assembly of these parts and as shown in FIG. 7. The arrow 105 in FIG. 9 illustrates the direction of motion for inserting window 53 into body 52. Arrow 106 shows the direction of motion for snap-locking window 53 to body 52.

Window 53 is removable by applying finger pressure against the back of the window in the direction of arrow 107 (FIG. 7) to disengage the snap-locked lips 102, 104. This substantially pivots window 53 in a direction reversed to arrow 106. In order to reach into the back of window 53 to remove same, cover 51 must be open. Upon disengagement of lips 102, 104, window 53 is raised from its channels 98 opposite to the direction of arrow 105. The dimensions of ears 97 and the mating channels 98 provide suitable play to allow manual insertion of window 53 into body 52 and the removal therefrom. As seen from FIG. 9, an upper edge portion 108 of wedge ears 97 may cam against a channel surface as window 53 is being snap-locked in place and disengaged therefrom. The complementary shaped contours of ears 97 and channels 98 permit mating of window 53 to body 52 only in one direction, so as to prevent incorrect upside-down or reversed insertion of window 53 into body 52.

Window 53 includes an insertable center member 109 having side grooves 110. Each groove 110 slides over guide projections 111 provided by the U-shaped main section 114 of window 53 for assembling center member 109 in its position. Center member 109 also includes a suitable boss 112 in one of its grooves 110 which snap-locks below one of the guide projections 11, see FIG. 10, upon inserting center member 109 in its fully registered position. The rear of insulator window 53, including its center member 109, is suitably braced by ribs for structural strength. Grooves 110 are closed at the upper ends by lateral ribs 113, thereby permitting insertion of center member 109 into window main section 114 in one direction only. It will be understood that the material constituting the window sections 109 and 114 and the mating dimensions thereof provide sufficient play and resilience to allow manual insertion of center member 109 into its window position and removal therefrom. When center member 109 is fully inserted, its bottom edge bottoms against the top edge 115 of window skirt 100.

Window main section 114 includes two normally open ended wire holding slots 116 for tightly nesting individual cables 59. Window main section 114 also includes two normally closed thin sectioned knockouts 117. Removal of knockouts 117 provide another pair of open ended cables holding slots. In the illustrated embodiment, the lower pair of slots serve to nest smaller diameter wire than the upper pair of slots. Center member 109 includes a normally closed knockout 118, thus making available a fifth open ended cable slot. The open ended slots permit insertion of a cable in any slot by laterally pushing the cable sidewise into its slots via its open end in contrast to axially threading a cable through a closed hole as it is customary in the prior art devices.

In use, cover 51 is rotated open. Center member 109 is removed completely from its position to permit use of slots 116. The open space created by removal of center member 109 allows one to side-slip cables in the open ended slots 116. Thereafter, center member 109 is snapped back into place, thus locking the cables in place. If additional cables are involved, any one of the other three knockouts may be removed. If the center member slot is used, member 109 is lifted. The cable is bent over window edge 115 and then center member 109 is snapped thereover. Thus, in each instance, it is seen that each cable is nested in an individual slot without axially threading same through a closed hole. After closing down center member 109, cover 51 is snapped closed. The closed cover maintains the assembly securely in locked relationship. The entrance width of the slots in U-shaped section 114 are preferably narrower than the diameter of the slots. This may require squeezing the cable laterally through the narrow entrance to nest such cable in the slot. The narrow entrance serves to hold the cables in their slots unless deliberately pulled out by the electrician. At all times during use of the entrance cap, including the time the electrician is feeding cables therethrough, cover 51 remains rotatably captivated to body 52.

If for any reason a cable 59 already nested in a slot of the U-shaped main section 114 requires removal, center member 109 is lifted from its closed position and the cable 59 is then manually pulled out sidewise from its slot through the open end thereof. Removal of a cable 59 from any of the slots of main section 114 normally applies a collapsing force on this U-shaped insulator member. The collapsing force is in a direction to draw together the two upright legs of the U-shaped main section 114. This is counteracted by the structurally sturdy enlarged size of the wedge-shaped window ears 97 and the fact that channels 98 engaging same have bent over lengthwise edges 140 captivating ears 97 in the respective channels 98. The arrangement is such to relieve insulator window section 114 of any collapsing stress and strain, and also serves to counteract any stress and strain upon insertion of a cable 59 into any slot in main section 114.

Each entrance cap is preferably designed for a single trade size conduit. As an example, a one inch trade size conduit contemplates a rigid wall conduit having a one inch outside diameter. However, electrical malleable tubing conduit, referred hereinafter as "emt," of corresponding trade size has a slightly smaller outside diameter. The inside diameter of sleeve bore 56 is normally designed to center properly the rigid wall conduit therein with respect to opening 61, so that cable wires 59 passing from cavity 60 through throat 62 and into conduit 54 cannot make contact with the upper edge 66 of the conduit. In other words, when conduit 54 is properly centered in sleeve bore 56, the conduit wall does not extend across opening 61, but is radially overlapped by wall 57 against which the conduit bottoms. Use of emt conduit in the same sleeve bore 56 will result in a slight off-centering of the conduit with respect to opening 61 upon tightening of set screw 58 against such conduit. This will cause the wall of the smaller outside diameter conduit to extend across opening 61, and thus introduces the possibility of cable contact with the upper edge 66 of the conduit wall.

To maintain proper centering of emt conduit in sleeve bore 56 so as to eliminate the foregoing problem, the invention provides a ring-like spacer 119 of suitable material. Spacer 119 has diametrically opposite depending tabs 120, 212. The larger sized tab 120 includes a semicircular exterior protrusion forming a key 122. The outside diameter of spacer 119 is selected to nest slidably in sleeve bore 56, whereby spacer 119 bottoms against annular wall 57, as shown in FIG. 18. Sleeve has a round keyway slot 123 diametrically opposite set screw 58. Spacer key 122 engages keyway 123 to prevent rotation of spacer 119 when securing the conduit by set screw 58. Spacer 119 may be assembled at the factory with set screw 58 threaded axially in to pass adjacently, but under the bottom of small tab 121. This prevents spacer 119 from dropping straight out of sleeve 55. As seen from FIG. 18, the length of tab 121 permits set screw 58 to

clear under such tab when screw **58** is threaded into sleeve bore **56**. Spacer **119** may be removed without withdrawal of set screw **58** by mutually gripping the back wall of spacer **119** at its key **122** and simultaneously tilting spacer **119** and pulling same out to permit small tab **121** to withdraw from under set screw **58**. When spacer **119** is used for emt conduit, the conduit is inserted within spacer **119** so that the upper end of the conduit wall bottoms against wall **57**. The spacer inner diameter is selected to fit properly over the outside diameter of the emt conduit. Upon tightening set screw **58**, conduit **54** is clamped against the inside face **124** of the large tab **120**. As seen from FIG. 18, use of spacer **119** maintains emt conduit **54** suitably centered so that the conduit wall does not extend across throat opening **61**.

FIGS. 22 through 35 illustrate a second embodiment of an entrance cap **150** incorporating the principles of the invention. Entrance cap **150** is made up of an oversized cover **151** pivotally connected to an entrance cap housing body **152**. An insertable insulator window **153** is captivated to the front side of the body **152** to close same. Body **152** includes a depending sleeve **154** having a set screw **155** for securing the conduit **156** in sleeve **154** in the same manner as described hereinbefore. The instant embodiment illustrates a threaded connection for attaching conduit **156** to body sleeve **154**. Hence, the upper end of the conduit **156** is threaded and so is the sleeve bore **191**. As noted before, tapered threads are employed to make this connection water tight. Consequently, the upper edge of conduit **156** does not of necessity bottom against the internal annular wall **157**. A throat **158** extends up from wall **157** into the entrance cap cavity **159**. The upper end of throat rises above the floor surface **160** of the housing cavity **159** to prevent drainage of moisture into conduit **156**. Throat ends **161**, **162** are rounded. The dimensions of the mating parts comprising the inner diameter of the conduit bore **163**, annular wall **157** and the diameter of throat opening **164** are such to center properly the secured conduit **156** without any part of the upper end of the conduit wall extending across throat opening **164**. It will be understood that the inner diameter of conduit bore **163** is greater than the diameter of throat opening **164**.

The oversized cover **151** has an overhanging lip **165** and side edges **166** bent over to enclose completely the open top of cavity **159** formed by housing body **152** and window **153** assembled thereto. Cover **151** is pivotally captivated to body **152** by interconnected bayonet slots **167**, **168** rotatably engaging an axial stud-like key **169**. Slot **167** is in the wall of a depending extension of the cover side wall. Slot **167** at its inner end **167***a* is substantially C-shaped, and then narrows to become a closed ended and small width section **167***b* at the far end of slot **167**. An ear **170** is an integral extension of the cover side wall and is bent outwardly to lie in a vertical plane extending 90° from the side of cover **151**, as seen in FIGS. 24 and 30. Slot **168** is closed at one end and extends lengthwise in the wall of ear **170** to communicate with the C-shaped slot section **167***a* along the line where ear **170** joins with the cover side wall. The width of slot **168** is slightly less than the width of the interconnected C-shaped slot section **167***a*. Key **169** extends axially from an ear **171**, which ear is an integral extension of the side wall of body **152**. Key **169** comprises a small diameter shank **172**, an enlarged head **173** at the front of shank **172**, and a small triangular-shaped section **174** forming a forward extension of head **173**. As seen in FIGS. 30 to 32, the apex of the triangle points away from the side wall of body **152**, whereas the wider base of the triangle confronts the side wall of body **152**.

Bayonet slots **167** ,**168** are complementary shaped to permit attachment and removal of cover **151** with respect to body **152**. However, after these parts are engaged, cover **151** is rotationally captivated to body **152** and cannot become accidentally detached therefrom during normal operational use, whether cover **151** is in open or closed position or while swinging same from one to the other of such positions.

FIGS. 22 and 23 show cover **151** in closed position. Cover **151** is rotated clockwise as viewed in FIG. 22 to an open position. FIGS. 33 and 34 show cover **151** in open position. Abutment of ear surface **175** with body **152**, see FIGS. 33 and 34, acts as a limit stop. Since the size of keyhead **173** is dimensionally wider than slot **168** and overlaps the closed end of slot **168**, as seen in FIG. 34, cover **151** when properly mounted on key **169** is captivated in the vertical and horizontal planes of FIG. 34 by reason of the dimensional relationship of the coacting parts. When cover **151** is attached to body **152**, slot **168** is rotatably captivated on shank **172** between ear **171** and enlarged head **173**.

FIGS. 30 through 32 illustrate the manner of attaching and disassembling cover **151** with respect to body **152**. For attachment, cover **151** is held at an angle over body **152**, as depicted in FIG. 30. In this position, cover ear **170** is in a vertical plane in front and parallel to the vertical plane of body ear **171**. The lengthwise axis of slot **168** is substantially aligned with the apex of forward extension **174**. Essentially, the triangular-shaped forward extension **174** serves as a locating arrow with which the axis of slot **168** is aligned for mounting of cover **151** to body **152**. Cover **151** is then moved laterally toward body **152** so that slot section **167***b* passes over key extension **174**, while C-shaped section **167***a* passes over enlarged head **173**. This maneuver by the relative relationship of the parts, see FIG. 31, causes slot **168** to mount over shank **172**, whereby cover ear **170** becomes rotatably captivated thereon. From FIG. 31, it is seen that the profile of slot **167**, made up of sections **167***a*, **167***b*, complements the profile of key sections **173** and **174**. Cover **151** now may be rotated to open or closed positions, as desired. In order to disassemble the parts, the reversed procedure is followed. Cover **151** is pivotally maneuvered to align slot sections **167***b* and **167***a* with the complementary contoured extension **174** and head **173**, see FIG. 31, whereupon cover **151** is drawn away from body **152**. As cover **151** is drawn away from body **152**, slot sections **167***a* and **167***b* pass over and clear respective key sections **173** and **174**. During this withdrawal maneuver, cover **151** is substantially tilted with respect to body **152**, as shown in FIG. 30.

FIG. 35 depicts cover in an upright status between its open and closed positions. It is seen from this figure that the width dimensions of key extension **174** and head **173**, relative to the width dimensions of slots **167** and **168**, maintain cover **151** captivated on shank **172** for this position as well as the other positions contemplated herein.

Cover **151** is snap-latched to body **152** by a detent **176** extending inwardly from a cover side wall tab **177**, which tab **177** snaps under a protruding boss **178** in the side wall of body **152**. Body **152** has a relatively flat floor surface **160** and includes a slightly raised upper ledge **179**. Ledge **179** includes moisture draining ducts **180** level with floor surface **160** to allow moisture to drain from the interior of the enclosed entrance cap, thereby preventing any moisture being trapped therein. It will also be noted that throat **158** projects upright above the level of floor surface **160** to prevent seepage of moisture into conduit **156**.

Window **153** is made up of two substantially similar insulator sections **181**, **182**, which sections mate to form an assembled substantially rectangular window for enclosing the open side of body **152**. A continuous channel groove **183** extends along the outer edge of each window half section **181**, **182**. The half sections **181**, **182** provide open ended U-shaped and laterally spaced apart wire cable slots **184**. One slot in each section **181**, **182** is normally closed by a removable knockout **184***a*. The other insulator slot of each section is normally open. The mating surfaces of half sections **181**, **182** are complementary stepped,

whereby a long leg **185** along one side of each section **181, 182** mates with a recessed step **186** of the other half section. This arrangement interlocks window sections **181, 182** when assembled in body **152**. Upon such assembly, the individual slots **184** of each section **181, 182** are laterally off-set with respect to the individual slots of the other section. The web edges **187** in the mating face of each section **181, 182** close the adjacent open ended slots **184** of the other section upon mating of window sections **181, 182**. The foregoing stepped arrangement permits assembly of window **153** as illustrated herein, whereas reversed assembly of one window section with respect to the other is prevented by the stepped configuration of the mating surface edges thereof. The mating faces of sections **181, 182** contain the open ends of the cable slots.

The opposite side walls at the front of body **152** are turned inwardly toward each other to form substantially lengthwise upright ledges **188**. Insulator halves **181, 182** are inserted into position by slideably nesting the grooves **183** along the sides thereof over respective ledges **188**. This captivates window **153** in its nested position in body **152**. The portion of groove **183** along the bottom edge of the lower insulator half **182** fits over the sections of body ledge **179**. However, it will be noted from FIGS. 27 and 28 that the skirt **189** formed along the lower portion of the bottom insulator section **182** provides sufficient clearance in the region of drainage ducts **180** to permit drainage of moisture through such ducts from the interior of the entrance cap during use of the assembled entrance cap.

In use, cover **151** is opened. The upper insulator section **181** is lifted to permit the electrician to bend the cable wire **59** to nest same into a selected slot **184** in lower member section **182**. When an upper section slot **184** is used, cable wire **59** is bent over to rest on one of the web edges **187** of lower section **182** so that upon dropping the upper section **181** into position, its slot **184** captivates such cable wire **59**. Again, it will be noted that cable wire **59** is not axially threaded through an enclosed hole of insulator window **153**. Upon closing of cover **151**, the entire assembly is secured in closed latched status. It is seen from FIGS. 26 and 28, that the inner surface of cover **151** overlies adjacent the top of window **153** to prevent removal or disassembly of window sections **181, 182** when cover **151** is in closed latch status. However, cable wire **59** may be removed merely by opening cover **151** and lifting up upper half section **181**.

The entrance cap window parts **109, 114** and **181, 182** may be made of any suitable plastic material of any other suitable insulator material to serve the purposes contemplated herein. The covers **51, 151** of the disclosed embodiments may be made of suitably stamped metal, such as aluminum, steel or brass. The entrance cap bodies **52, 152** of the disclosed embodiments may be made of suitable die-cast metal, such as aluminum or zinc. Spacer **119** may be made of any suitable die-cast metal, such as zinc.

It is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. An entrance cap for receiving electrical cable from the exterior thereof and for channeling said cable to a conduit comprising, a housing body having an open face, window means for nesting in said body open face for enclosing same, means pivotally connected to said body for opening and closing the top of said body, said body including means for connecting said entrance cap to the conduit and for channeling the cable from said entrance cap to said conduit, and said window means having a plurality of open-ended slots for nesting and passing cable from the exterior into said entrance cap, the cable being threaded through a window slot by entry of the cable into a slot by way of its open end, wherein said pivotal means being an entrance cap cover, said housing body and cover having mutually engageable means for rotatably captivating said cover to said body for normal opening and closing of said cover with respect to said body, said rotatably captivating means including a plurality of spacially related slots and a multisection key, said key having tandem sections complementary in shape with respective sections of said slots, whereby said cover is attachable to and detachable from said body when said cover undergoes a given positional status relative to said body, but otherwise said cover is securely rotatably captivated to said body for normal open and close use of said cover.

2. Apparatus as defined in claim **1**, wherein said cover having a pair of surfaces in right-angle relationship, each surface having a respective one of said related slots, said related slots being in communicating relationship, and key including a back wall extending integrally from said body, the multiple sections of said key extending axially from said back wall and including a shank section connected to a relatively enlarged section, said shank section being adjacent said back wall, said cover slots being complementary shaped with respect to said sections, whereby one of said slots remains rotatably captivated on said shank section between said back wall and said enlarged section during normal use of said cover.

3. In an entrance cap for receiving electrical cable from the exterior thereof and for channeling said cable to a conduit, the combination comprising, a housing body including window means having passages for passing cable from the exterior into said entrance cap, said body forming an interior between said window and conduit for channeling cable therebetween, said body including means for connecting said entrance cap to said conduit, said last-mentioned means including means for partitioning said body interior from said conduit and also including an interior bore for receiving the end of said conduit, said partitioning means having an opening for allowing passage of cable from said housing body cavity to said conduit, and a ring-shaped spacer nesting in said bore for centering the end of said conduit therein, said conduit being insertable into said spacer for connection with said entrance cap, the relative dimensions of said spacer and said opening and said conduit being predetermined to prevent the wall of said conduit adjacent said opening against extending across said opening, and mutually engaging means between said body and spacer for latching said spacer against rotation in said body bore upon connection of said conduit to said body, said spacer having an inner surface adjacent the conduit insertable in said spacer, and means for clamping said conduit to said body.

4. Apparatus as defined in claim **3**, wherein said clamping means including a set screw, said spacer having a tab adjacent said set screw, said set screw clearing under said tab upon operation of said screw in a direction to tighten said conduit.

5. Pivot means for an electrical fitting or the like comprising, a fitting body, a cover pivotally connected to said body for opening and closing said electrical fitting, said cover and body having first and second mutually engageable means for rotatably captivating said cover and said body, said first means including a plurality of spacially related communicating slots, said second means including a back wall having a multisectioned key extending axially from said wall, said key having tandem sections complementary in shape with respective sections of said related slots, whereby said cover is attachable to and detachable from said body upon said cover assuming a given positional status relative to said body, but otherwise said cover is securely rotatably captivated to said body for operatively opening and closing said cover, said key including a shank section intermediate said back wall and a relatively enlarged section at the forward end of said shank section, said key also including an extension forward of said enlarged section for forming a fulcrum, and means along one of said slots for engaging said fulcrum when said cover is in the aforementioned positional relationship for pivoting said cover to effect captivating at-

tachment of said cover with respect to said body and disengagement therefrom.

6. Apparatus as defined in claim 5, wherein said back wall being an integral extension of said body, said cover having a pair of surfaces in right angle relationship and each of said surfaces having respective ones of said slots, one of said slots being in rotatable captivated relationship on said shank between said key back wall and said enlarged section during normal use of said cover.

7. Pivot means for an electrical fitting or the like comprising, a fitting body, a cover pivotally connected to said body for opening and closing said electrical fitting, said cover and said body having first and second mutually engageable means for rotatably captivating said cover to said body, said first means including a plurality of spacially related communicating slots, said second means including a back wall having a multi-sectioned key extending axially from said wall, said key having tandem sections complementary in shape with respective sections of said related slots, whereby said cover is attachable to and detachable from said body upon said cover assuming a given positional status relative to said body, but otherwise said cover is rotatably captivated to said body for operatively opening and closing said cover, said key including a shank section intermediate said back wall and a relatively enlarged section at the forward end of said shank section, said key also including a protrusion at the forward end of said enlarged section for guiding and aligning said cover relative to said body for attachment and detachment of said cover with respect to said body, said slots having profile edges complementary in shape with the profile shape of said enlarged section and the forward protrusion thereof to pass said slots over said key for attachment of said cover to said body and for detachment therefrom.

8. Apparatus as defined in claim 7, wherein said back wall being an integral extension of said body, said cover having a pair of surfaces in right angle relationship and each of said surfaces having respective ones of said slots, one of said slots being in rotatable captivated relationship on said shank between said key back wall and said enlarged section during normal use of said cover.

References Cited

UNITED STATES PATENTS

230,290	7/1880	Lilly	174—155
1,577,413	3/1926	Volk	174—81
1,888,645	11/1932	Vibber	174—81 X
2,865,981	12/1958	Budnick	174—81
3,115,543	12/1963	Morrison	174—187 X

LEWIS H. MYERS, *Primary Examiner.*

H. HUBERFELD, J. F. RUGGIERO,
Assistant Examiners.