Nov. 30, 1965 W. L. CHERRY 3,221,094

HOUSING ASSEMBLY FOR AN ELECTRICAL DEVICE

Filed Feb. 25, 1963

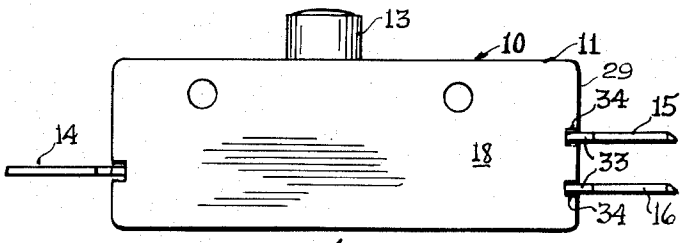


Fig. 1.

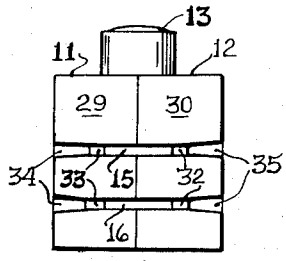


Fig. 2.

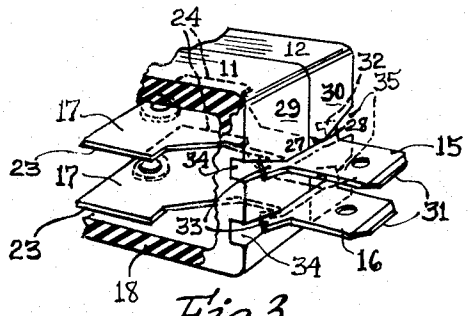


Fig. 3.

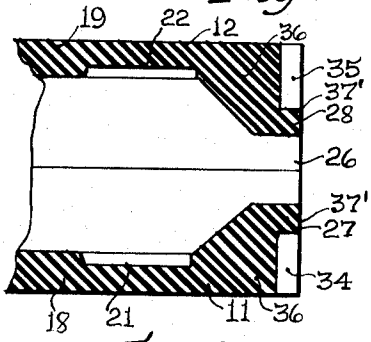


Fig. 6.

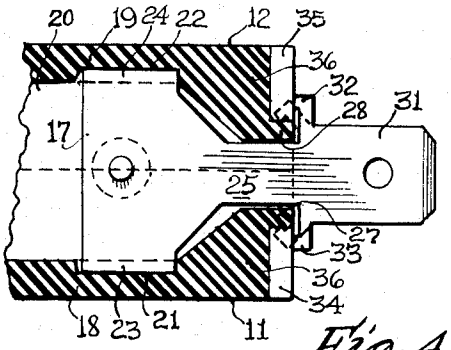


Fig. 4.

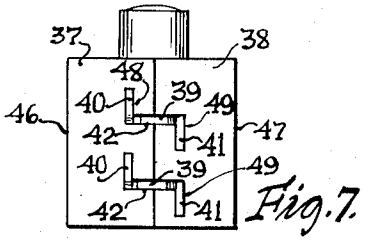


Fig. 7.

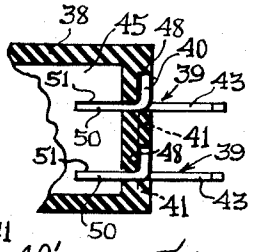


Fig. 8.

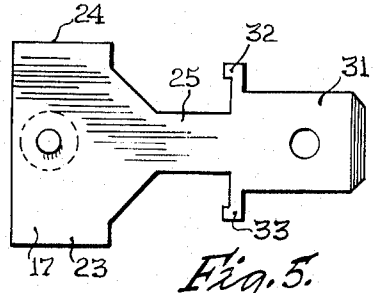


Fig. 5.

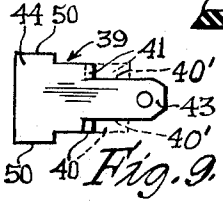


Fig. 9.

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HOUSING ASSEMBLY FOR AN ELECTRICAL DEVICE

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5 Claims. (Cl. 174—59)

This invention relates to a new and useful improvement in a housing assembly for an electrical device and more particularly to a new and novel means for assembling a plurality of parts into an integral electrical unit such as a plug, terminal block, switch and the like.

An important object of this invention is to provide a new and improved housing whereby the parts of the housing and its associated wire terminal members are connected together through structural cooperation.

A further object of this invention is to provide a connecting means for securing together into a housing complementary parts of such housing and associated switch parts without the use of additional elements such as rivets, screws, studs, or the like.

Another object of this invention is to provide in a switch housing a terminal member which is so constructed that it will secure together mating sections of the housing, and at the same time, provide a standard type external terminal for the switch mechanism contained in the housing.

Yet another object of this invention is to provide a means for securing together matching portions of a switch housing, which means is simple in construction and assembly and inexpensive to produce, thus reducing the cost of the finished switch product which requires a minimum of component parts, thus utilizing standard switch parts; and which is highly effective in its use.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

FIG. 1 is a side elevational view of a completed switch housing embodying my invention;

FIG. 2 is an end elevational view of the switch housing of my invention;

FIG. 3 is a fragmentary perspective view of my switch housing and its terminal connecting means;

FIG. 4 is a fragmentary plan detailed sectional view of my switch housing and its connecting means;

FIG. 5 is a plan view of the connecting terminal member;

FIG. 6 is a fragmentary detailed sectional view of the switch housing without the connecting terminal member;

FIG. 7 is an end elevational view of a modified form of a switch housing connection;

FIG. 8 is a fragmentary detailed sectional view of one end of my modified switch housing and connecting terminal; and

FIG. 9 is a plan view of the modified connecting terminal member, prior to its assembly.

In the manufacturing of many electrical devices including switches and particularly snap action switches, there is employed a molded body which normally comprises complementary hollow sections which are joined through a vertical plane extending throughout the longitudinal length of the switch housing. In the past, it has been necessary to join the mating sections of the housing together, after the electrical components have been operatively placed therein, by means of screws,

rivets, or the like. This operation necessitated the forming of horizontally aligned openings in each of the sections of the housing and required that the screws or rivets which extended into these openings be positioned in such a manner that they would not interfere with the internal operation of the electrical device.

My present invention relates to a new and novel method of connecting the mating sections of the housing together through the use of a terminal member which is a standard part of many of the electrical devices.

Referring to FIG. 1, I disclose the application of my invention to a switch housing or casing **10** of insulating material which comprises a pair of substantially identically formed elongated casing parts or housing sections **11** and **12**. Extending laterally from opposite ends of the switch housing **10** are terminal members **14**, **15** and **16**. Extending vertically through an opening formed in the top wall is a switch actuator **13**. The switch actuator **13**, as well as the terminal members **14**, **15**, and **16**, are standard parts of a snap-action switch and are identical with those of Patent No. 3,073,923, except for the differences in the terminal members which are hereinafter made apparent.

As seen in FIG. 5, each of these terminal members includes a substantially rectangularly shaped enlarged head portion **17** which lies in a horizontal plane and extends transversely between the confronting sections **11** and **12** of the housing **10**. The inner surfaces of the opposite side walls **18** and **19** of each of the sections **11** and **12** which define the hollow cavity **20** of the housing **10**, are provided with aligned recesses **21** and **22** which receive the opposite corresponding edge portions **23** and **24** of the head **17** of the terminal. The terminal member as illustrated in FIG. 5, which is of the same configuration as those identified by numeral **15**, **16** and **17**, provides a reduced neck portion **25** which extends out of a slot **26**, which is formed between wall abutments **27** and **28** provided by the corresponding end walls **29** and **30** of each of the sections **11** and **12** respectively.

The terminal member provides an exposed tail **31** which is of a width slightly greater than the reduced neck **25**. This tail **31** is adapted to be exposed externally from its associated end of the switch housing **10** as seen in FIG. 1. Between the tail **31** and the reduced neck **25** of the terminal member there are provided interlocking elements in the form of L-shaped arms **32** and **33** extending laterally in opposite directions with respect to each other through the normal plane of the terminal, as seen in FIG. 5.

The end walls **29** and **30** of each of the sections **11** and **12** of the housing **10** are provided with slots **34** and **35** respectively. These slots are tapered inwardly in the direction of their respective abutments **27** and **28**, for the purposes hereinafter made apparent.

In connecting the mating sections **11** and **12** of the switch housing **10** together, the terminal member is positioned within the cavity **20** formed by the mating sections **11** and **12** in such a manner that the edge portions **23** and **24** of the enlarged head **17** will sit in their respective aligned recesses **21** and **22** formed in the opposite inner surfaces of the side walls **18** and **19** of the sections **11** and **12** respectively as seen in FIG. 4. The neck portion **25** will extend out of the slot **26**.

By a special tool (not shown) the laterally extending arms **32** and **33** are bent through their normal horizontal plane in the direction of the enlarged head **17** of their terminal member. These arms **32** and **33** will move through their respective horizontal aligned slots **34** and **35** formed in the end walls **29** and **30** of the sections **11** and **12** respectively, until they engage in a pinching manner the wall abutments **27** and **28**.

Adjacent the wall abutments 27 and 28, the side walls 18 and 19 of the sections 11 and 12 are so formed that they provide a re-inforced thick corner structure 36. This prevents damage to the sections 11 and 12 during the pinching movement of the arms 32 and 33. It should be also noted that the wall abutments 27 and 28 have their outer corners relieved as at 37', to prevent breakage as the arms 32 and 33 are pinched into engagement therewith.

By such an arrangement the sections 11 and 12 of the housing 10 are prevented from laterally separating while the terminal member is connected to the housing 10 in such a manner that it cannot move horizontally in either direction. This form of connection removes the necessity of employing connecting screws or rivets, and materially reduces the cost of the switch, while at the same time permits a simple and yet highly effective connection for the mating sections 11 and 12 of the switch housing 10.

Referring to FIGS. 7, 8 and 9, I disclose a modified means for connecting the mating sections 37 and 38 of a switch housing together. Referring to FIG. 9, this modified means includes a terminal member 39 which provides latching fingers 40 and 41 which are separated throughout their longitudinal length from the end 43 of the terminal 39 by slits 40' cut therein. This terminal 39 has an enlarged head portion 44 which is adapted to be positioned within the cavity 45 (FIG. 8) formed by the mating sections 37 and 38. This enlarged head 44 is adapted to extend between the inner surfaces of the opposite side walls 46 and 47 of the respective sections 37 and 38, and has its opposite edges 50 projected into recesses 51 formed therein.

The corresponding end walls of the mating sections 37 and 38 when in assembled position provide a horizontal slot 42 out of which projects the exposed end 43 of the connecting terminal 39.

This slot 42 formed in the mating end walls of the sections 37 and 38 terminates into oppositely extending recesses 48 and 49 formed at right angles to such slot 42, as seen in FIGS. 7 and 8.

When the terminal 39 is placed within the cavity 45 of the housing the latching fingers 40 and 41 are forcibly bent at right angles to the normal plane of the terminal 39 from the dotted line position seen in FIG. 9 until they project into the oppositely extending recesses 48 and 49 formed in the end walls of the sections 37 and 38 (see FIGS. 7 and 8). By this arrangement the terminal 39 is fixedly positioned with respect to the housing and the sections 37 and 38 are prevented from separating.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In a housing for an electrical device having a split hollow casing of insulating material, means for securing the part of said casing into an assembled relation to provide a hollow housing, comprising

(a) an electrical conducting member extending axially of said casing parts and transversely to the line of separation therebetween and having an enlarged head having edge portions disposed within inner recesses of said hollow casing and an elongated element extending exteriorly thereof, and

(b) locking means on said exterior element of said member engaging the split parts of said casing when in said assembled relation and securing said parts together into an integral housing and attaching said member thereto in a predetermined position,

(c) said locking means comprising substantially L-shaped arms extending laterally in opposite directions from opposite parallel edges of said exterior element of said electrical conducting member.

2. In a housing for an electrical device having a split hollow casing of insulating material, means for securing the split parts of said casing into an assembled relation to provide a hollow housing, comprising

(a) an electrical conducting member extending axially of said casing parts and transversely to the line of separation therebetween and having an enlarged head having edge portions disposed within inner recesses of said hollow casing and an elongated element extending exteriorly thereof,

(b) each of the parts of said casing providing opposed spaced apart abutments extending parallelly to the line of separation between said parts and between which said member extends, and

(c) locking means on said exterior of said member engaging said abutments when in assembled relation with respect to each other and securing said split parts together into an integral housing and attaching said member thereto in a predetermined position.

3. In a housing for an electrical device having a split hollow casing of insulating material, means for securing the split parts of said casing into an assembled relation to provide a hollow housing, comprising

(a) an electrical conducting member extending axially of said parts and transversely to the line of separation therebetween and having an enlarged head portion disposed within and between the parts of said hollow casing and having head edge portions disposed in inner recesses of said hollow housing and an elongated element extending exteriorly thereof,

(b) each of the parts of said casing providing opposed spaced apart abutments extending parallelly to the line of separation between said parts and between which said member extends, and

(c) locking means on said exterior of said member engaging said abutments when in assembled relation with respect to each other securing said split parts together into an integral housing and attaching said member thereto in a predetermined position,

(d) said locking means comprising substantially L-shaped arms extending laterally in opposite directions from opposite parallel edges of said exterior element of said electrical conducting member.

4. An electrical device including complementary hollow sections which when assembled form a hollow housing,

(a) each of said hollow sections providing in corresponding end walls thereof spaced apart abutments which when said sections are in an assembled relation with respect to each other define therebetween an opening,

(b) an elongated terminal member having an enlarged head portion and having head edge portions disposed in inner recesses of said hollow housing and a connecting end extending out of the opening formed in the end walls of the housing axially of said sections and transversely to the line of separation therebetween, and

(c) interlocking elements carried by said connecting end of said terminal exteriorly of and normally spaced from the end walls of said sections when said member and said sections are in an assembled relation and bent through their normal plane in the direction of said end walls of said sections into engagement with said abutments securing said sections together in said assembled relation and connecting said terminal member in a fixed position with respect to the said housing.

5. An elongated device including complementary hollow sections which when assembled form a hollow housing,

(a) each of said hollow sections providing in corre-

sponding end walls thereof spaced apart abutments which when said sections are in an assembled relation with respect to each other define therebetween an opening,

(b) an elongated terminal member having a portion within the hollow housing and a connecting end extending out of the opening formed in the end walls of the housing axially of said sections and transversely to the line of separation therebetween, and

(c) interlocking elements carried by said connecting end of said terminal exteriorly of said end walls of said sections when said member and said sections are in an assembled relation and said interlocking elements securing said sections together in said assembled relation and connecting said terminal member in a fixed position with respect to the said housing, said terminal member and its interlocking elements being normally within a single plane disposed transversely to said line of separation,

(d) said interlocking elements comprising substantially L-shaped arms extending laterally in opposite directions from opposite parallel edges of said connecting end of said electrical conducting terminal member and bent through their normal plane in the direction of said end walls of said sections and into engagement with said abutments.

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