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Apostoleris

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[54] **ELECTRICAL SNAP-IN TERMINAL AND BRUSH HOUSING AND METHOD OF ASSEMBLY**

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[73] Assignee: **Ford Motor Company,** Dearborn, Mich.

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[21] Appl. No.: **362,628**

[52] **U.S. Cl.** ..... **310/239,** 310/242, 310/249, 339/276 T

[51] **Int. Cl.** **H01r 39/38**

[58] **Field of Search** ..... 310/239, 242, 245, 246, 310/247, 249; 339/74 R, 256 R, 256 S, 276 T, 258 P, 176 MP, 255 R, 258 R

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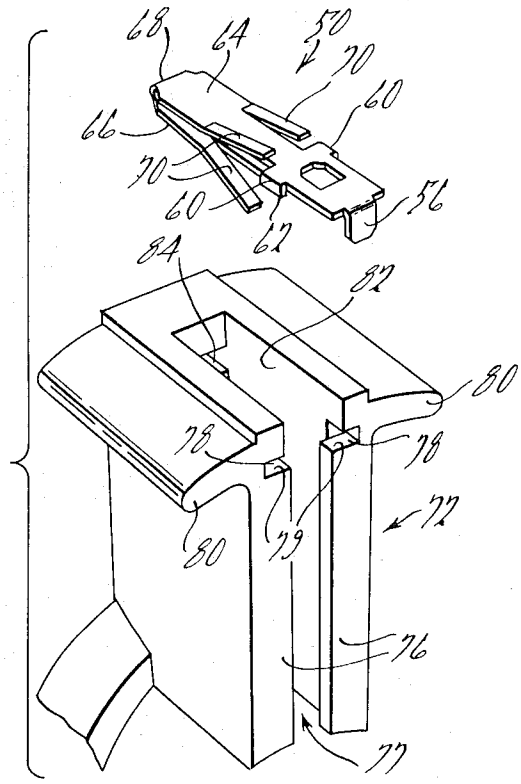
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Assistant Examiner—Patrick R. Salce
Attorney, Agent, or Firm—Robert A. Benziger; Keith L. Zerschling

[57] **ABSTRACT**

An electrical snap-in terminal and brush housing and method of assembly are disclosed. The terminal blade member is provided with a plurality of mutually opposed resilient tongues arranged to contactively abut wall means of the brush housing to retain, in a first or blade insertion direction, the terminal blade member within the brush housing. The terminal blade member is also provided with an enlarged shoulder portion to define the position of the terminal blade member within the brush housing in a second or brush insertion direction. In order to aid in the assembly of the brush means within the brush housing, the housing includes an open end portion having the dimensions of a substantial portion of the terminal blade member so that the terminal blade member may itself be used to compressively confine the brush biasing means and, once the biasing means are sufficiently compressed, the brush housing is provided with means to receive the terminal blade member within suitably provided structure comprising a slot and notches in the brush housing so that the terminal blade member will be removably secured within the housing.

11 Claims, 11 Drawing Figures



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Prior Art

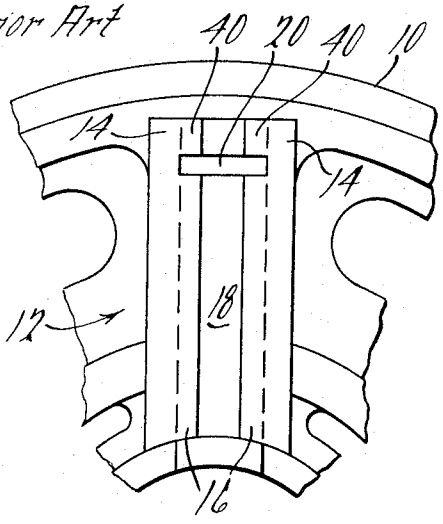


FIG. 1.

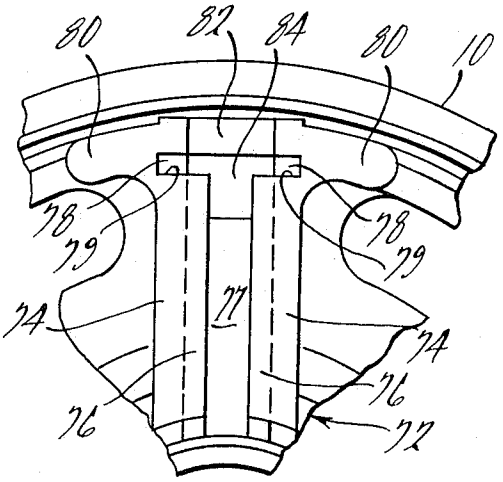


FIG. 6.

Prior Art

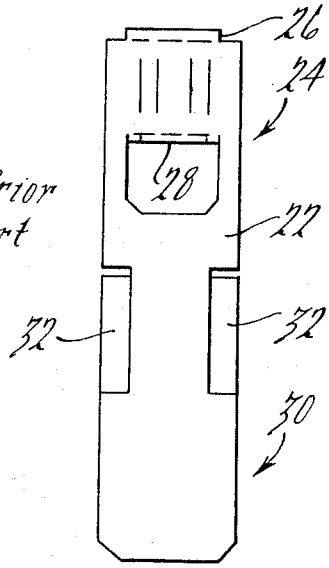


FIG. 2.

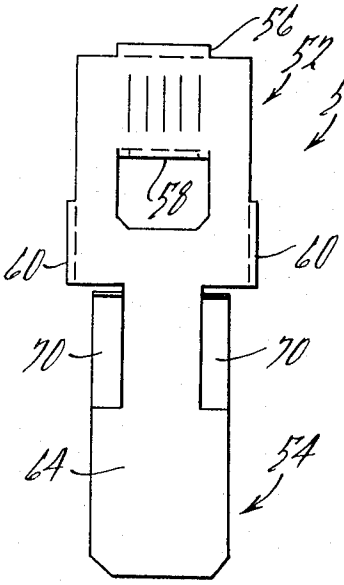


FIG. 4.

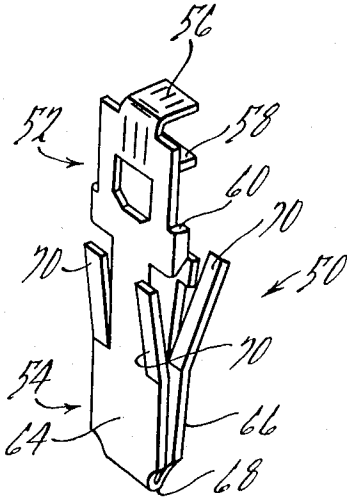


FIG. 5.

Prior Art

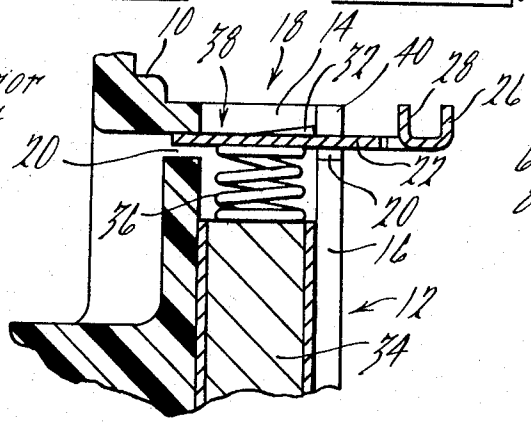


FIG. 3.

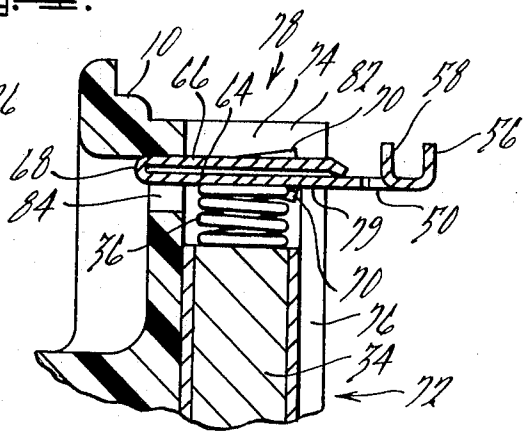


FIG. 7.

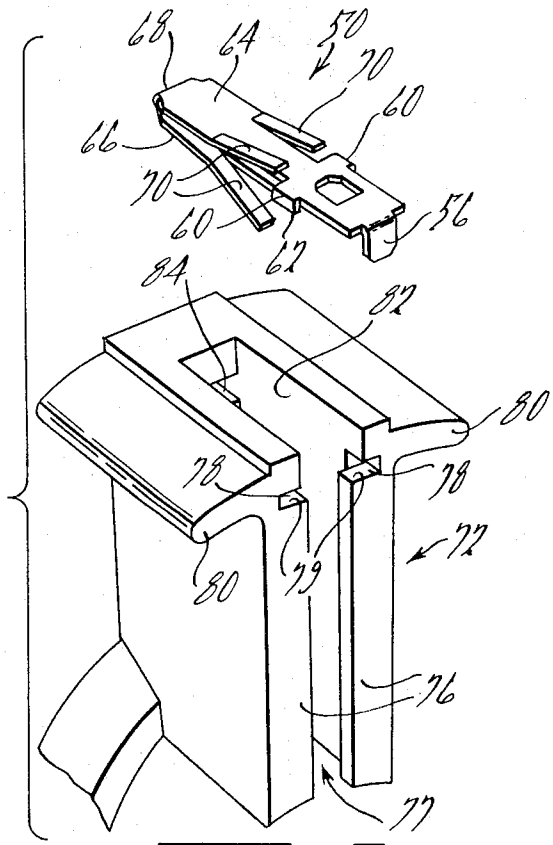


Fig. 8.

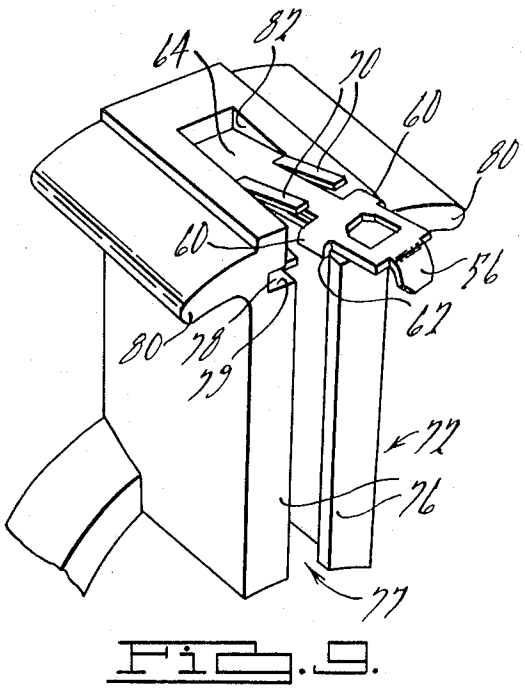


Fig. 9.

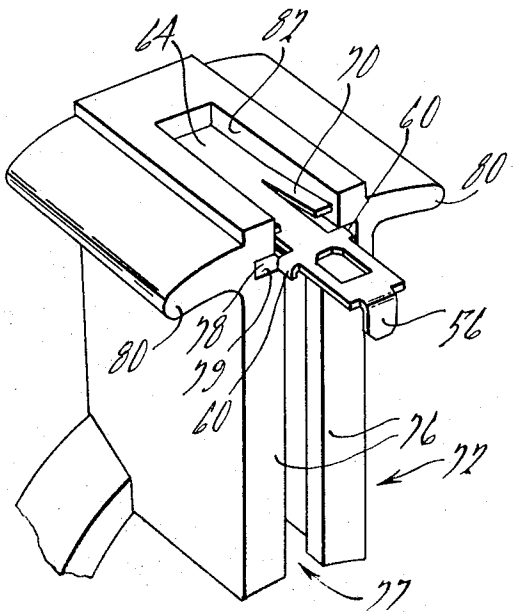


Fig. 10.

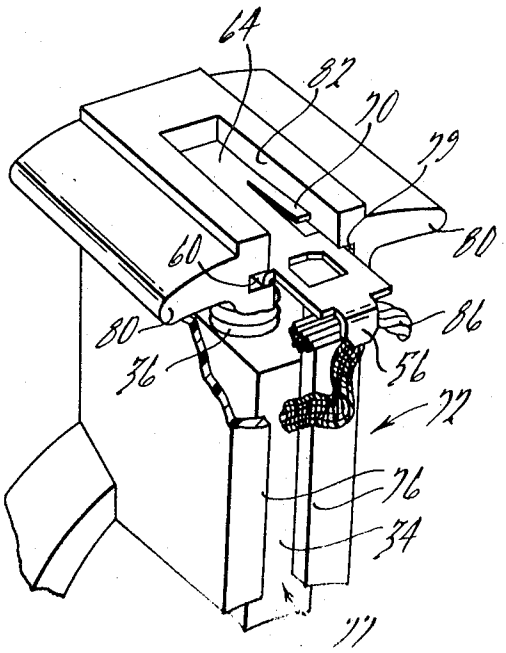


Fig. 11.

ELECTRICAL SNAP-IN TERMINAL AND BRUSH HOUSING AND METHOD OF ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is related to the field of brush housings and snap-in terminal blade members usable for example in dynamoelectric machines having externally loaded electrical brushes. In particular, the present invention is directed to a unitary terminal blade member which may be used as the compressing tool to compressively confine a resiliently biased electrical brush means within a brush housing and which is not orientation sensitive upon insertion into the brush housing.

2. Description of the Prior Art

The prior art, particularly as illustrated in my copending commonly assigned patent application Ser. No. 306,778 titled "Dynamoelectric Machine End Plate And Mounting Means," and as reproduced in FIGS. **1, 2** and **3** of the instant patent application, illustrates a relatively simple, inexpensive and reliable terminal blade member construction and brush housing construction. The terminal blade member is comprised of a unitary stamping of suitable conductive metal such as, for example, copper or aluminum and is provided with a pair of resilient tongue or finger elements which extend from the side of the terminal blade member to provide an abutment engaging means for retaining the terminal blade member within the brush housing. The brush housing is provided with a brush channel extending therethrough in one direction and a terminal blade channel extending therethrough in a second direction which is substantially perpendicular to the one direction. The two channels are of substantially equal width.

This structure presents two major problems. Firstly, assembly of the brush, brush biasing means and terminal blade member within the brush housing is complicated. The brush and brush biasing means must be inserted within the brush channel. The brush biasing means must be compressed by the use of a blunt tool and while compressed, the terminal blade member must be inserted within the terminal blade channel. In the event of improper alignment or premature withdrawal of the compressing tool, the terminal blade member will be improperly received within the terminal blade member channel. In the instance of those brush housings which are formed of a molded plastic, improper insertion of the terminal blade may also result in fracturing of portions of the housing. The integrity of these housing portions is relied upon to provide the abutment member for the resilient terminal blade fingers or tongues to retain the terminal blade within the housing. This problem has resulted in a significant number of field failures of dynamoelectric machines using this structure since the fractured housing may not be immediately detectable.

The second problem, which is somewhat related to the first problem, resides in the fact that the unitary terminal blade member having the projecting resilient fingers tends to be a one directional device. That is, the terminal blade member must be inserted within the terminal blade member channel of the brush housing with the resilient fingers directed away from brush member so that the combination of forces from the brush biasing means and the resilient fingers cause those tongues or fingers to engage the abutment means of the walls of the brush housing. Insertion with an opposite orientation will result in the brush biasing means urging the resilient fingers away from the abutment means resulting in a loose or impositive terminal connection. This also results in a significant number of field failures making the resulting structure relatively expensive since field failure replacements involve replacing the entire dynamoelectric machine. It is, therefore, an object of the present invention to provide an improved terminal blade member. It is also an object of the present invention to provide an improved brush housing. It is a further object of the present invention to provide an improved method of assembly of the new terminal blade and the new brush housing. It is a specific object of the present invention to provide a unitary terminal blade member which may be inserted within the terminal blade member receiving channel or slots in any of the possible positions. It is also a specific object of the present invention to provide a terminal blade member which may itself replace the compressing tool in the assembly stage thereby simplifying the assembly process. It is also a specific object of the present invention to provide an improved brush housing structure which may be of molded plastic in which assembly forces and misalignment will not subject the housing to fracturing and resultant field failures.

SUMMARY OF THE PRESENT INVENTION

The present invention provides an improved terminal blade member which is of unitary structure. The terminal blade member comprises a brush biasing wall portion for receipt within the brush housing and a conductor receiving portion having a pair of shoulders extending laterally to a greater extent than the brush biasing wall portion. The brush biasing wall portion is provided with front and rear wall elements each of which is provided with at least one resilient finger or tongue member directed generally toward the conductor receiving portion and extending away from the terminal blade member. The conductor receiving portion of the terminal blade member is further provided with a pair of spacer elements which are directed generally perpendicular to the conductor receiving portion and located at the laterally extending shoulders.

The brush housing is provided with a brush channel and with a terminal blade channel. The brush channel is substantially open, or U-shaped, from the brush insertion end up to the terminal blade channel and is provided with a pair of cover wall means from the terminal blade channel inwardly to assist in confining the brush and brush biasing means. The terminal blade channel is further provided with a pair of outwardly facing notches. The notches cooperate with the shoulders of the conductor receiving portion and with the spacer elements to define the position of the terminal blade member within the housing in the brush insertion direction while the finger elements of the terminal blade member and the cover wall portion cooperate to define the position of the terminal blade member within the brush housing in the blade insertion direction. By providing a substantially open, or U-shaped, brush insertion region, the terminal blade member may be used as the compressing tool and when the resilient means are sufficiently compressed, the terminal blade member may be inserted so that its remote end is within a slot

provided therefor in the rear wall of the brush channel and the shoulders and spacer elements are within the notches provided therefor in the housing.

The terminal blade member according to the present invention thus can be seen to cooperate with the brush housing of the present invention to define an assembly in which the orientation of the terminal blade member with respect to the brush housing is bidirectional and which, following assembly is relatively rigid in character. It will also be appreciated that, until the final terminal blade snap-in, the forces encountered in the assembly process will be almost exclusively applied in the direction of the major axis of the brush channel thereby avoiding any application of forces of a character which could cause fracturing or splitting of the brush housing and the resulting field failures. By providing a terminal blade member having dimensions which substantially correspond to the dimensions of the receiving location provided therefor on the brush housing, misalignment problems resulting in field failures are readily avoided.

By providing the terminal blade member with a first portion which substantially corresponds in dimensions to the insertion region of the brush channel, the terminal blade member readily functions initially as the biasing means compressing tool eliminating the need for an additional compression tool thereby facilitating assembly. Furthermore, by providing a substantially open U-shaped insertion region for the brush and brush biasing means, the assembly process is greatly facilitated while a source of field failure problems, that is, the relatively unsupported overhanging cover wall structure in this region according to the prior art brush housing, has been eliminated.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates, in a partial elevational view, a molded plastic brush housing according to the prior art.

FIG. **2** illustrates, in an elevational view, a terminal blade member for use with the brush housing of FIG. **1**.

FIG. **3** illustrates, in a sectional view, the terminal blade member of FIG. **2** and the brush housing of FIG. **1** in assembled relationship.

FIGS. **4** and **5** illustrate, in an elevational view and in a perspective view, a terminal blade member according to the present invention.

FIG. **6** illustrates, in a partial elevational view, a molded plastic brush housing according to the present invention.

FIG. **7** illustrates, in a sectional view, the terminal blade member of FIGS. **4** and **5** and the brush housing of FIG. **6** in assembled relationship.

FIGS. **8, 9, 10** and **11** illustrate, in perspective views the sequence of steps in the method of assembly of the terminal blade member of FIGS. **4** and **5** in the brush housing of FIG. **6** according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, FIG. **1** illustrates a partial elevational view of a dynamoelectric machine end plate structure **10** according to my above-noted co-pending patent application Ser. No. 306,778. The end plate structure **10** is formed of a molded resinous or plastic material and is provided with an electrical brush housing denoted generally as **12.** The brush housing **12** is comprised of a rear wall portion and a pair of upwardly extending L-shaped wall members **14** which are arranged to be facing one another so that the portions **16** which extend toward one another define cover wall means for a brushing channel **18.** A terminal blade channel **20** is formed by removing a small section of each of the cover wall means **16** and by forming a matching slot or hole in the rear wall portion in alignment with the removed sections of the cover wall means. The channels **18** and **20** extend generally perpendicularly to one another.

Referring now to FIG. **2,** a terminal blade member **22** according to the prior art is illustrated. The terminal blade member **22** is formed of a unitary piece of suitable metallic construction, such as for example, copper or aluminum and is arranged to be of substantially uniform width for insertion into the channel **20** of the brush housing **12** of FIG. **1.** The terminal blade member is provided with a conductor receiving portion denoted generally as **24** having a first and a second conductor securing portions **26, 28** which extend generally perpendicularly away from the conductor receiving portion **24.** Terminal blade member **22** is also provided with a brush retaining portion denoted generally as **30.** A pair of resilient finger elements or tongues **32** are formed integral with the retaining portion **30** and extend generally toward the conductor receiving portion **24.** Tongues **32** are at a slight angle with respect to the retaining portion **30** so that their free ends may extend laterally away from the main portion of terminal blade member **22.** The terminal blade member **22** is provided with a width dimension which substantially coincides with the width of the terminal blade receiving channel **20** to provide uniform biasing of the electrical brushes as described hereinbelow.

Referring now to FIG. **3,** the terminal blade member **22** is shown received within the terminal blade channel **20** of the brush housing **12** in a sectional view taken approximately along the middle of brush channel **18.** The view also illustrates a brush member **34** and a brush biasing means **36** received within brush channel **18.** In preparing the assembly illustrated in FIG. **3,** the brush **34** and brush biasing means **36** would be inserted within brush channel **18** from the insertion, or radially remote, end **38** with the brush **34** being in abuting contact with a slip ring member, not shown. "Radial" is intended to mean radial with respect to the axis of rotation of the associated slip ring. The brush biasing means **36** would be compressed through the use of a separate compressing tool to a depth sufficient to provide that the radially extreme end of biasing means **36** was below, relative to FIG. **3,** the terminal blade channel **20.** Terminal blade member **22** would be inserted within the opening of terminal blade channel **20** and would be inserted part way within housing **12** so as to engage a major portion of the end of brush biasing means **36.** The tool would than be removed and the terminal blade member **22** would be inserted the rest of the way through terminal blade channel **20.** As shown in FIG. **3,** resilient finger member **32** is arranged to abut wall portion **40** of the cover wall **16.** Due to the biasing action of resilient means **36,** terminal blade member **22** must be oriented with the finger elements **32** extending away from the brush member **34.** If the terminal blade member **22** were inserted with the finger elements **32** directed toward brush member **34,** the re-

action force of the brush biasing means **36** would prevent finger element **32** from engaging any abutment surface and the terminal blade member **32** would then rely solely upon frictional loading between the terminal blade member **22** and the side wall of terminal blade channel **20** for retention of terminal member **22** within terminal blade channel **20.** Furthermore, as discussed hereinabove. misalignment of terminal blade member **22** upon insertion into terminal blade channel **20** and-/or excessive assembly forces could result in fracturing of the brush housing channel particularly in the area of wall portion **40** of cover wall **16** so that the reaction force of brush biasing means **36** eventually would remove the material from this region and the brush would no longer be biased toward its associated slip ring.

Referring now to FIGS. **4** and **5,** the terminal blade member according to the present invention and designated generally as **50** is shown in an elevational view, FIG. **4,** and in a perspective view FIG. **5.** Terminal blade member **50** is also comprised of a conductor receiving portion **52** and a brush retaining means **54.** Conductor receiving portion **52** includes a pair of elements **56, 58** which extend generally perpendicularly away from the main portion of the conductor receiving portion **52** and are analogous to the elements **26, 28** described hereinabove with reference to FIG. **2.** Conductor receiving portion **52** is further provided with a pair of extending shoulders **60** which extend substantially beyond, in terms of width, the brush retaining means **54.** Shoulders **60** are further provided with a pair of spacer elements **62** which are formed to extend substantially at right angles from shoulders **60** and whose function will be more fully described hereinbelow.

Retaining means **54** is provided with a front wall portion **64** and a rear wall portion **66.** The terms "front" and "rear" are merely for purposes of differentiation. The front and rear wall portions **64, 66** are formed by bending or folding a substantially planar terminal blade portion, as at **68,** through a substantially 180° bend to form the front and rear wall portions **64, 66** of retaining portion **54.** Retaining portion **54** is provided with a plurality of finger elements or tongues **70** with each of the front and rear wall portions **64, 66** being provided with preferably two each of finger elements **70.** The finger elements **70** are substantially analogous to the prior art finger elements **32** and are similarly situated and formed.

Terminal blade member **50** retains the ease of formation of the prior art terminal blade member **20** (FIG. **2**). Spacers **62** extending from the conductor receiving portion **52** in the same general direction as the conductor retaining portions **56, 58** may be formed in the same formation process. Finger elements or tongues **70** may be formed in a fashion similar to the formation of the tongues **32** of the FIG. **2** terminal blade member. The terminal blade member **50** would be provided with the bend **68** as a final formation step. This process can be readily automated on existing equipment by well known techniques.

Referring now to FIG. **6,** the brush housing **72** according to the present invention is illustrated. As shown the brush housing is formed of a molded resinous or plastic material on an end plate member **10** which is substantially identical with that illustrated in FIG. **1.** The brush housing **72** has a back wall member, a pair of side wall members **74** and a pair of cover wall members **76.** The cover wall members **76** extend toward one another from the side wall **74** to define a pair of substantially L-shaped wall structures. A brush channel **77** is thereby formed. In order to accomplish the specifics of the present invention, the cover wall members **76** do not extend radially to the brush insertion region **82.** Further, side wall members **74** are provided with a pair of notches **78** each of which have an inner edge **79** in alignment with the radially outer edge of the associated cover wall member **76.** In order to provide additional lateral support for the brush housing, each side wall **74** is provided with a support wall **80** circumferentially located on the end plate member **10** in the vicinity of the notches **78.** It can be seen by inspection, comparing the FIGS. **1** and **6,** that whereas the side walls **14** of the prior art brush housing were uninterrupted, the side walls **74** of the brush housing according to the present invention are notched as at **78** to receive portions of the snap-in terminal blade member and in particular the shoulders **60** and the spacing elements **62** of the terminal blade member **50** according to the present invention. Furthermore, to facilitate assembly and avoid field failure problems, the cover wall means **76** do not extend radially beyond the inner edge **79** of notches **78** whereas the prior art taught that the cover walls extend into the brush insertion region **82** (where they are identified as **40** in FIG. **1**).

Referring now to FIG. **7,** the terminal blade member **50** is illustrated in assembled relationship within the brush housing **71.** FIG. **7** is a sectional view taken approximately along the radial center line of brush channel **77** similarly to the FIG. **3** view. FIG. **7** also shows a brush member **34** and a brush biasing means **36** received within brush housing **72** and confined by terminal blade member **50.** The portion of terminal blade member **50** in the vicinity of the 180° fold **68** is received within a suitably provided slot or void **84** within the rear wall of brush housing **72** comparable to that illustrated in FIG. **3** but having a substantially larger radial dimension. The resilient finger member **70** which is in proximity to the biasing means **36** is shown to be in abutting contact with the cover wall means **76** while the finger element **70** which is more remote from the biasing means **36** is not in use. Shoulders **60** and spacer elements **62** of the terminal blade member according to FIGS. **4** and **5** are received within notches **78** to define in cooperation with the resilient finger **70** in contact with the cover wall means **76** a relatively rigid removably secured position for the terminal blade member **50** within brush housing **76** which does not rely upon the resilient bias of the biasing means **36** or any frictional contact to maintain position.

By providing the terminal blade member **50** with the widened shoulders **60** and the generally radially directed spacer elements **62** and by further providing a brush housing **72** having notches **78** for receipt of the shoulders **60** and spacer elements **62** the present invention provides maximum support (in the radial direction) for the terminal blade member **50** while avoiding the exposure of relatively delicate cantilever plastic material to any stresses which might tend to fracture that material. These elements cooperate to permit the radially generated forces (generated by brush biasing means **36**) to be uniformly distributed over relatively thick portions of the side walls **74.** By arranging the resilient fingers **70** to engage the cover wall **76** radially inwardly from the terminal blade member **50,** the fingers **70** engaging cantilever plastic structure which is

structurally stronger since it is of substantially greater length and is not subject to radially directed reaction forces.

Referring now to FIGS. **8, 9, 10** and **11,** the method of assembly of the terminal blade member **50** within the brush housing **72** is illustrated in a sequence of perspective views which illustrate the various steps involved. For convenience, the brush **34,** brush biasing means **36** and electrical connective wiring have been removed from the views in FIGS. **8, 9** and **10** while a portion of the brush housing **72** has been broken away in FIG. **11** to show the final assembly positioning. With the terminal blade member **50** removed from the brush housing **72,** as shown in FIG. **8,** brush **34** and brush biasing means **36** would be inserted within the brush housing **72** through the entry portion **82** of brush channel **77** so that the brush **34** is in electrical contact with its associated slip ring. Either wall **64, 66** of terminal blade member **50** would then be placed in contact with the free end of brush biasing means **36** and the terminal blade member **50** would be moved in the radial direction to compress brush biasing means **36** at least to the imaginary plane established by inner edges **79** and notches **78.** This would place the folded portion **68** of terminal blade member **50** in substantial alignment with the slot or void **84** provided therefor in end plate **10.** When the brush biasing means **36** have been sufficiently comprssed, as illustrated by the relative position of terminal blade member **50** in FIG. **9,** terminal blade member **50** can then be moved to insert folded portion **68** within the slot **84** in the rear wall of the brush housing **72** while concomitently aligning shoulders **60** and spacer elements **62** with the notches **78** as shown in FIG. **10.** For ease of assembly, the length of the retaining means **54** of terminal blade member **50** from shoulders **60** to fold **68** should be slightly greater or slightly less than the distance from the top of the notches **78** to the slot or void so that the terminal blade member **50** may have its fold **68** and shoulders **60** inserted within the slot and notches **78** respectively, one at a time. Preferably the length of the retaining means portion **54** will be greater than the distance between the slot and the notches.

Following insertion of folded portion **68** into the void **84,** further insertion pressure will compress the resilient finger elements **70** which are on the side of the terminal blade member **50** in the direction of brush **34** so that the terminal blade member **50** can be fully inserted. At full insertion shoulders **60** and spacer elements **62** will be received within notches **78** and the resilient fingers **70** will no longer be compressed and the free ends of the finger elements **70** will move toward the brush **34** to thereby move behind cover wall means **76.** Terminal blade member **50** will thereby become removably secured within the brush housing **72.** FIG. **11** illustrates the final assembled position relationship in a perspective view with a portion of brush housing **72** broken away. Conductor means **86** in the conductor receiving portion **52** is included in this view.

It can be seen that the structure according to the present invention provides a terminal blade member **50** which may be inserted within the brush housing **72** in either of two directions making it position insensitive while further providing a structure which permits the use of terminal blade member **50** as the compressing tool for compressing the resilient brush biasing means **36** thereby facilitating assembly of the terminal blade member brush housing.

What I claim is:

1. An electrical terminal for a snap-in brush box comprising a unitary blade member having a conductor receiving portion and a brush biasing wall portion, the blade member having a longitudinal dimension and a width dimension with the conductor receiving portion and the brush biasing wall portion being longitudinally separated, the conductor receiving portion having a width dimension larger than the width dimension of the brush biasing wall portion, the brush biasing wall portion including a plurality of finger elements longitudinally directed toward the conductor receiving portion and having free ends extending away from the brush biasing wall portion in proximity to the conductor receiving portion and arranged to be on opposite sides of the blade member so that the free ends of a portion of the finger elements are directed generally away from the free ends of the other finger elements.

2. The electrical terminal of claim **1** wherein said conductor receiving portion and said brush biasing wall portion have a common surface defining a plane and the longitudinal dimension and the width dimension lie in the defined plane.

3. The electrical terminal of claim **1** wherein said plurality of finger elements are arranged at the sides of said brush biasing wall portions with their free ends positioned in proximity to, and longitudinally separated from, the conductor receiving portion cooperative with the width dimension to define means for retaining the terminal blade member in an operative position.

4. The terminal of claim **3** wherein the brush biasing wall portion comprises front and back wall elements interconnected by a substantially 180° fold in the blade member, each of said wall elements having a pair of finger elements with the free ends of the back wall elements being directed away from the front wall and the free ends of the front wall finger elements being directed away from the back wall.

5. The terminal of claim **2** wherein the conductor receiving portion includes a pair of spacer elements each situated along an edge of the conductor receiving portion, the edges being at the maximum width of the conductor receiving portion, said spacers being arranged to be substantially parallel to each other and generally perpendicular to the width of the conductor receiving portion.

6. The terminal of claim **3** wherein the brush biasing wall portion comprises front and back wall elements interconnected by a substantially 180° fold in the blade member, each of said wall elements having a pair of finger elements with the free ends of the back wall elements being directed away from the front wall and the free ends of the front wall finger elements being directed away from the back wall.

7. A terminal receiving brush housing comprising a back wall member, and a pair of side wall members arranged to define a brush channel extending in a first direction, the back wall member having means defining a slot having an inner edge and an outer edge, the edges of the slot being directed generally perpendicular to the first direction, each of said pair of sidewall members having a notch formed in the surface of the sidewall remote from the back wall, adjacent the brush channel, said notches having inner and outer edges substantially parallel to the inner and outer edges, respectively, of

the slot and a pair of cover wall means extending from the side wall members toward one another to at least partially cover the brush channel, said pair of cover wall means having edges forming extensions of the inner edge of the notches.

8. A brush housing and terminal assembly comprising in combination:

a housing comprising a back wall member, and a pair of side wall members arranged to define a brush channel extending in a first direction, the back wall member having means defining a slot having an inner edge and an outer edge, the edges of the slot being directed generally perpendicular to the first direction, each of said pair of side wall members having a notch formed in the surface of the sidewall remote from the back wall, adjacent the brush channel, said notches having inner and outer edges substantially parallel to the inner and outer edges, respectively, of the slot and a pair of cover wall means extend from the side wall members toward one another to at least partially cover the brush channel, said pair of cover wall means having edges forming extensions of the inner edge of the notches; and

a terminal member comprising a unitary blade member having a conductor receiving portion and a brush biasing wall portion, the blade member having a longitudinal dimension and a width dimension with the conductor receiving portion and the brush biasing wall portion being longitudinally separated, the conductor receiving portion having a width dimension larger than the width dimension of the brush biasing wall portion, the brush biasing wall portion including a plurality of finger elements longitudinally directed toward the conductor receiving portion and having free ends extending away from the brush biasing wall portion in proximity to the conductor receiving portion and arranged to be on opposite sides of the blade member so that the free ends of a portion of the finger elements are directed generally away from the free ends of the other finger elements whereby at least a portion of the free ends of said plurality of finger elements engage said cover wall means and said enlarged width dimension is received within said notches.

9. The assembly of claim **8** wherein the brush biasing wall portion comprises front and back wall elements interconnected by a substantially 180° fold in the blade member, each of said wall elements having a pair of finger elements with the free ends of the back wall elements being directd away from the front wall and the free ends of the front wall finger elements being directed away from the back wall whereby said 180° fold is received within said slot.

10. The assembly of claim **8** wherein the conductor receiving portion includes a pair of spacer elements each situated along an edge of the conductor receiving portion, the edges being at the maximum width of the conductor receiving portion, said spacers being arranged to be substantially parallel to each other and generally perpendicular to the width of the conductor receiving portion whereby said spacer elements are received within said notches to substantially immobilize said terminal within said housing.

11. A terminal receiving brush housing comprising a back wall member, and a pair of side wall members arranged to define a brush channel extending in a first direction, the back wall member having means defining a slot having an inner edge and an outer edge, the edges of the slot being directed generally perpendicular to the first direction, each of said pair of sidewall members having a notch formed in the surface of the sidewall remote from the back wall, adjacent the brush channel, said notches having inner and outer edges substantially parallel to the inner and outer edges, respectively, of the slot, said outer edge of the slot and the outer edges of the notches lying in a common plane, said common plane being generally perpendicular to the first direction, and a pair of cover wall means extend from the side wall members toward one another to at least partially cover the brush channel, said pair of cover wall means having edges forming extensions of the inner edge of the notches.

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