

PLUG BLADE

BACKGROUND OF THE INVENTION

The present invention relates to a plug blade and, more particularly, to a plug blade having a shoulder preventing disengagement from an inner frame of a plug.

5 Plugs can be engaged with sockets to provide electric appliances or electric equipment with electricity in daily lives and industries. A type of plug includes three blades for electric connection with a hot wire, a neutral wire, and a grounding wire. A so-called British plug generally includes a fuse that melts in case of excessive current load, forming an open circuit to avoid damage.

10 In manufacture of the plug with a fuse, three blades are mounted to a frame to form an inner frame with a fuse seat. The inner frame is then placed in a mold, and a housing is integrally formed with the inner frame through injection molding. In an alternative approach known as "assembly type", the blades are mounted in a frame with a fuse seat. In either case, the fuse seat is exposed after engagement with the housing and
15 the inner frame to allow replacement of the fuse.

An example of the assembly type plug blade is shown in FIG. 6. The plug blade 1 includes a metal body 11 having, in sequence, a front, contact section 111 for engagement with a socket, an enveloped section 112 contiguous to and having a cross section slightly smaller than the front, contact section 111, and an engaging section 113
20 contiguous to the enveloped section 112. The engaging section 113 has a shoulder 114 abutting against an inner frame to avoid disengagement of the plug blade 1. Furthermore, an insulating layer 115 is provided to envelope the plug blade 1 except for the front, contact section 111, preventing a user from being injured. The plug blade 1 can be in electric connection with one of a hot wire, a neutral wire, and a grounding wire. The
25 shoulder 114 is generally made of the same metal as the body 11. However, the price of

metal on the international market increases dramatically. Use of the engaging section 113 with the shoulder 114 of the same metal material is a burden to the manufacturers.

Thus, a need exists for a plug blade using less metal material to save costs.

BRIEF SUMMARY OF THE INVENTION

5 The present invention solves this need and other problems in the field of saving material for plug blades by providing, in a preferred form, a plug blade including a metal body having, in sequence, a front, contact section, an enveloped section contiguous to the front, contact section, and an engaging section contiguous to the enveloped section. The front, contact section is adapted to be in electric connection with a socket. The
10 enveloped section has a cross section slightly smaller than the front, contact section. The enveloped section is enveloped by an insulating layer. The engaging section includes two opposite sides. A rib protrudes from each of the two opposite sides, forming a recessed portion on each of the two opposite sides. Each of the recessed portions is filled with a plastic layer. The plastic layer forms a shoulder protruding from each recessed portion,
15 such that the engaging section includes at least two shoulders. The shoulders are parallel to a protruding direction of each rib. The costs of the plug blade are reduced by changing the material of the shoulder from metal to plastics without adversely affecting the conduction of the plug blade. It can be appreciated that the catching effect of the plastic layer to the engaging section is enhanced by the recessed portions formed by providing
20 the ribs protruding from the two opposite sides of the body. The engagement strength is, thus, enhanced.

 The present invention will become clearer in light of the following detailed description of illustrative embodiments of this invention described in connection with the drawings.

DESCRIPTION OF THE DRAWINGS

The illustrative embodiments may best be described by reference to the accompanying drawings where:

FIG. 1A shows a side elevational view of a metal body of a plug blade according
5 to the preferred teachings of the present invention.

FIG. 1B shows another side elevational view of the metal body of the plug blade of FIG. 1A.

FIG. 2A shows a side elevational view of the plug blade according to the preferred teachings of the present invention.

10 FIG. 2B shows another side elevational view of the plug blade of FIG. 2A.

FIG. 3 shows a cross sectional view of the plug blade of FIG. 2A.

FIG. 4 shows an exploded, perspective view of an inner frame and a plurality of plug blades according to the preferred teachings of the present invention.

FIG. 5 shows a perspective view of a plug blade of another embodiment
15 according to the preferred teachings of the present invention.

FIG. 6 shows a perspective view of a conventional plug blade.

All figures are drawn for ease of explanation of the basic teachings of the present invention only; the extensions of the figures with respect to number, position, relationship, and dimensions of the parts to form the preferred embodiments will be
20 explained or will be within the skill of the art after the following teachings of the present invention have been read and understood. Further, the exact dimensions and dimensional proportions to conform to specific force, weight, strength, and similar requirements will likewise be within the skill of the art after the following teachings of the present invention have been read and understood.

DETAILED DESCRIPTION OF THE INVENTION

A plug blade 2 according to the preferred teachings of the present invention is utilized as a blade of a plug. The blade is in electric connection with a fire wire in the preferred forms shown in FIGS. 1-5. However, the blade can be in electric connection
5 with a neutral wire or a grounding wire.

With reference to FIGS. 1A, 1B, 2A, and 2B, the plug blade 2 includes a metal body 21 having, in sequence, a front, contact section 211, an enveloped section 212 contiguous to the front, contact section 211, and an engaging section 214 contiguous to the enveloped section 212. The front, contact section 211 is adapted to be in electric
10 connection with a socket. The enveloped section 212 has a cross section slightly smaller than the front, contact section 211. With reference to FIGS. 2A, 2B, and 3, the enveloped section 212 is enveloped by an insulating layer 213 for safety purposes. In assembly, the engaging section 214 is received in a frame 3 of an inner frame shown in FIG. 4.

With reference to FIGS. 1A, 1B, 2A, and 2B, the engaging section 214 includes
15 an abutting edge 219 protruding from a periphery of a distal end thereof to provide enhanced catching effect. Furthermore, the engaging section 214 includes a rib 215 protruding from each of two opposite sides thereof, forming a recessed portion 216 on each of the two opposite sides. Each recessed portion 216 is filled with a plastic layer 217. The plastic layer 217 forms a shoulder 218 protruding from each recessed portion
20 216, such that the engaging section 214 includes at least two shoulders 218. The shoulders 218 are parallel to a protruding direction of each rib 215. It can be appreciated that each shoulder 218 can further extend in a direction perpendicular to the protruding direction of each rib 215, such that the plastic layer 217 protrudes beyond the whole periphery of the engaging section 214, as shown in FIG. 5.

25 Each rib 215 is inverted T-shaped in the preferred forms shown in FIGS. 1-5. Each rib 215 provides two sections perpendicular to each other for the plastic layer 217

to catch while forming two recessed sections 216 spaced from each other. Thus, a better catching effect is provided for the plastic layer 217. The shoulder 218 abuts against the inner frame to avoid the plug blade 2 from disengaging from the inner frame, meeting safety requirements and providing safety effect.

5 With reference to FIGS. 2A and 2B, each rib 215 can be exposed to one of the two opposite sides after the plastic layer 217 is filled into the recessed sections 216. Thus, the plastic layer 217 does not cover the entire ribs 215, providing a better catching effect and rigidity.

 With reference to FIGS. 2A and 2B, the plastic layer 217 is integrally formed
10 with the insulating layer 213 as a single continuous monolithic piece by injection molding, allowing easy manufacturing.

 With reference to FIG. 4, the plug blade 2 can be placed in a frame 3 together with a blade 2A for connection with a neutral wire and a blade 2B for connection with a grounding wire, forming an inner frame with a fuse 31.

15 Thus since the invention disclosed herein may be embodied in other specific forms without departing from the spirit or general characteristics thereof, some of which forms have been indicated, the embodiments described herein are to be considered in all respects illustrative and not restrictive. The scope of the invention is to be indicated by the appended claims, rather than by the foregoing description, and all changes which
20 come within the meaning and range of equivalency of the claims are intended to be embraced therein.

CLAIMS

1. A plug blade (2) comprising a metal body (21) including, in sequence, a front, contact section (211), an enveloped section (212) contiguous to the front, contact section (211), and an engaging section (214) contiguous to the enveloped section (212), with the front, contact section (211) adapted to be in electric connection with a socket, with the enveloped section (212) having a cross section slightly smaller than the front, contact section (211), with the enveloped section (212) being enveloped by an insulating layer (213), with the engaging section (214) including two opposite sides, with a rib (215) protruding from each of the two opposite sides, forming a recessed portion (216) on each of the two opposite sides, with each of the recessed portions (216) being filled with a plastic layer (217), with the plastic layer (217) forming a shoulder (218) protruding from each of the recessed portions (216) such that the engaging section (214) includes at least two shoulders (218), with the shoulders (218) being parallel to a protruding direction of each of the ribs (215).

2. The plug blade as claimed in claim 1, wherein the plastic layer (217) is integrally formed with the insulating layer (213) as a single continuous monolithic piece.

3. The plug blade as claimed in claim 1, wherein the engaging section (214) a distal end having a periphery, and an abutting edge (219) protrudes from the periphery of the distal end of the engaging section (214).

4. The plug blade as claimed in claim 1, wherein each of the ribs (215) is inverted T-shaped.

5. The plug blade as claimed in claim 1, wherein each of the shoulders (218) further extends in a direction perpendicular to the protruding direction of each of

the ribs (215), such that the plastic layer (217) protrudes beyond the whole periphery of the engaging section (214).