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Description

This invention relates to an electrical tab receptacle having a latch adapted positively to lock in an aperture in the tab to resist inadvertent separation of the tab and receptacle.

This Application is divided from our European Patent Application No. 82303054.9 to which reference is hereby directed.

In our U.S. Patents 3,976,348 and Reissue Patent 30,277, we have disclosed an electrical tab receptacle formed from sheet metal with a box-like body of generally rectangular section and open at an end, and including opposed spring arms defining between them a tab receiving space, a latch projection being formed on one of the spring arms and presenting a rear-facing shoulder in the tab receiving space arranged to engage a recess or aperture in a tab when received between the opposing spring arms to resist tab withdrawal.

The spring arm having the latch projection forms a tongue extends within the body, the free end of the tongue projecting externally of a rear end body, and the shoulder being within the body. In such arrangement the receptacle may be disengaged from the tab by depressing the exposed free end of the tongue, and in one embodiment the receptacle is contained within a housing capable of limited relative movement to the receptacle whereby a pull on the housing will actuate the housing to depress the free end of the tongue.

Tab receptacles of this kind have met with substantial commercial success, particularly in automotive applications, where the integrity of the electrical circuitry has been substantially improved. However, the use of such receptacles is limited to connectors having relatively few receptacles, and in which the alignment between the tabs and receptacles is relatively precise.

It is an object of the invention to obtain the advantageous positive locking feature in receptacles having a wider application and capable of providing low frictional forces on engagement and disengagement such that they can conveniently be employed in multi-way connectors.

According to the invention, an electrical tab receptacle as described in the third paragraph on page one is characterised in that the spring arms are arranged in pairs extending forwardly cantilever fashion from opposite sides of the body at that end, the spring arms converging forwardly and an end portion of at least one arm of each pair being bent outwardly to define a divergent entrance to the tab receiving space, a latch projection being formed on an inner side of one arm of each pair, said one arms being diagonally opposed across said tab receiving space, so that the projections engage a tab aperture at opposite sides and do not interfere.

An electrical tab receptacle according to the invention is capable of relatively wide application and providing low frictional forces on engagement and disengagement while the relative

disposition of the latch projections avoids their interfering with one another.

Suitably, the latch projections are formed on its arms having the outwardly-bent end portions and preferably all of the arms have outwardly-bent end portions to facilitate tab entry.

The bent out portions of the arms having the latch projections suitably provide release members for disengaging the latches. The receptacle may be mounted in a housing adapted for limited movement relative to the receptacle and formed with a projection arranged to engage the bent out end portions of the latch spring arms on relative rearward movement to effect release.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a fragmentary sectional elevation of a multi-way connector according to the invention;

Figure 2 is a section taken on the line 2—2 of Figure 1 but with the connector housing omitted; and,

Figure 3 is a sectional elevation of the housing of the connector viewed from the right of that Figure.

In the embodiment of Figures 1 and 2, a multi-way connector housing 1 has a plurality of cavities for tab receptacles 2. Each receptacle 2 comprises a box-like body 3 having an open seam 4 and at a rear end being integrally formed with a crimping portion secured to a conductor wire. The body 3 is formed on the side opposite the seam 4 with a latch 24 for releasably securing the receptacle in the housing by engagement with a forward facing shoulder 6. At the forward end, the body 3 is formed with a pair of spring arms 25, 26 at both of a pair of opposite sides of the body. The spring arms 25, 26 converge forwardly to define a tab receiving space, and at their forward ends 29 are bent out in divergent manner to define an entrance for a tab 17 inserted between the arms. One arm 26 of each pair is formed at a side adjacent the other arm 25 with a latch projection 27 of generally triangular form and bent inwardly to define a rear facing shoulder for locking engagement in a tab aperture 28. The arms 26 are diagonally opposed as seen in Figure 2 so that the latching projections 27 are disposed at opposite sides of the tab aperture 28, and do not interfere.

The housing for the receptacle is suitably provided with projections 30, having rearwardly facing inclined surfaces 31 at opposite sides of the receptacle cavity to engage both spring arms 26 on relative rearward movement of the housing, to effect outward flexure and release of the latching projections from the tab aperture 28.

As seen in Figure 3, the projections 30 are suitably recessed at sides 32 adjacent ends of arms 25, so that the projections only act on the arms 26 on the rearward movement of the housing relative to the receptacle.

The receptacle 2 is assembled into the housing with the latch 24 engaging shoulder 6 and positioned in a forwardly extending housing slot 19. Shoulders 20 at opposite sides of the forward end

of the receptacle body 3 are spaced rearwardly of housing shoulders 21, whereby relative movement of the housing 1 rearwardly of the receptacle 2 is possible in order to engage the inclined surfaces 31 of the housing projections 30 with the spring ends 24 for release of the latch projections 27 from the tab apertures 28 by cam action as has been described.

Claims

1. An electrical tab receptacle (2) formed from sheet metal with a box-like body (3) of generally rectangular section and open at an end, and including opposed spring arms (25, 26) defining between them a tab receiving space, a latch projection (27) being formed on one of the spring arms (25 or 26) and presenting a rear-facing shoulder in the tab receiving space arranged to engage a recess or aperture (28) in a tab (17) when received between the opposing spring arms (25, 26) to resist tab withdrawal, characterised in that the spring arms (25, 26) are arranged in pairs extending forwardly cantilever fashion from opposite sides of the body (31) at that end, the spring arms (25, 26) converging forwardly and an end portion (29) of at least one arm (25 or 26) of each pair being bent outwardly to define a divergent entrance to the tab receiving space, a latch projection (27) being formed on an inner side of one arm (26) of each pair, said one arms being diagonally opposed across said tab receiving space so that the projections (27) engage a tab aperture (28) at opposite sides and do not interfere.

2. A tab receptacle as claimed in Claim 1, characterised in that the latch projections (27) are formed on the arms (26) having the outwardly-bent end portions (29).

3. A tab receptacle as claimed in Claim 1 or in Claim 2, mounted in a housing cavity and retained between forward (6) and rearward (3a) housing shoulders arranged to permit limited relative movement between the housing and the receptacle (2) in the tab receiving direction, characterised in that the forward shoulder (30) is formed on its rear face (31) with a ramp arranged to engage the or an arm (26) of the receptacle on relative rearward movement of the housing, to flex the arm (25, 26) with its latch projection (27) transversely outwardly.

4. A tab receptacle and housing as claimed in Claim 3, characterised in that the housing is formed with forward shoulders (30) at opposite sides of the cavity, arranged to engage arms (26) at opposite sides of the receptacle, the shoulders (30) being recessed adjacent the arms (25) so that only the arms (26) formed with latch projections (27) are flexed transversely outwards on relative rearward movement of the housing.

Patentansprüche

1. Elektrische Flachsteckerbuchse (2), die aus Metallblech mit einem kastenförmigen Körper (3)

von allgemein rechteckigem Querschnitt und einem offenen Ende geformt ist, mit gegenüberstehenden Federarmen (25, 26), die zwischen sich einen Flachsteckeraufnahmeraum begrenzen, wobei ein Riegelvorsprung (27) an einem der Federarme (25) oder (26) geformt ist und in dem Flachsteckeraufnahmeraum eine nach hinten weisende Schulter bildet, die derart angeordnet ist, daß sie mit einer Ausnehmung oder einer Öffnung (28) in einem Flachstecker (17) in Eingriff tritt, wenn dieser zwischen den gegenüberstehenden Federarmen (25, 26) aufgenommen ist, um dem Herausziehen des Flachsteckers entgegenzuwirken, dadurch gekennzeichnet, daß die Federarme (25, 26) in Paaren angeordnet sind, die sich von gegenüberliegenden Seiten des Körpers (31) an diesem Ende in freikragender Weise nach vorne erstrecken, daß die Federarme (25, 26) nach vorne konvergieren und ein Endabschnitt (29) wenigstens eines Arms (25) oder (26) jedes Paares nach außen gebogen ist, um einen divergierenden Eingang zum Flachsteckeraufnahmeraum zu begrenzen, daß ein Riegelvorsprung (27) an einer inneren Seite eines Arms (26) jedes Paares geformt ist, und daß dieser eine der Arme über den Flachsteckeraufnahmeraum hinweg diagonal gegenübersteht, so daß die Vorsprünge (27) an entgegengesetzten Seiten mit einer Flachsteckeröffnung (28) in Eingriff treten und sich nicht stören.

2. Flachsteckerbuchse nach Anspruch 1, dadurch gekennzeichnet, daß die Riegelvorsprünge (27) an den Armen (26) geformt sind, welche die auswärts gebogenen Endabschnitte (29) haben.

3. Flachsteckerbuchse nach Anspruch 1 oder 2, die in einem Gehäusehohlraum montiert ist und zwischen vorderen (6) und hinteren (30) Gehäuseschultern gehalten ist, die derart angeordnet sind, daß sie eine begrenzte Relativbewegung zwischen dem Gehäuse und der Buchse (2) in der Flachsteckeraufnahmerichtung gestatten, dadurch gekennzeichnet, daß die vordere Schulter (30) an ihrer hinteren Fläche (31) mit einer Rampe versehen ist, die derart angeordnet ist, daß sie mit dem oder einem Arm (26) der Buchse in Eingriff tritt, und zwar bei einer Relativbewegung des Gehäuses nach hinten, um den Arm (25, 26) mit seinem Riegelvorsprung (27) quer nach außen zu biegen.

4. Flachsteckerbuchse und Gehäuse nach Anspruch 3, dadurch gekennzeichnet, daß das Gehäuse mit vorderen Schultern (30) an gegenüberliegenden Seiten des Hohlraums geformt ist, die derart angeordnet sind, daß sie mit Armen (26) an gegenüberliegenden Seiten der Buchse in Eingriff treten, daß die Schultern (30) in der Nähe der Arme mit Ausnehmungen versehen sind, so daß nur die mit Riegelvorsprüngen (27) geformten Arme (26) quer nach außen gebogen werden, wenn eine Relativbewegung des Gehäuses nach hinten stattfindet.

Revendications

1. Crosse femelle (2) pour fiche plate électrique,

formée à partir de métal en feuille, comprenant un corps (3) en forme de caisson de section globalement rectangulaire et ouvert à une extrémité, et comprenant des lames à ressort opposées (25, 26) définissant entre elles un espace de réception d'une fiche plate, une saillie (27) de verrouillage formée sur l'une des lames à ressort (25 ou 26) et présentant, dans l'espace de réception d'une fiche plate, un épaulement tourné vers l'arrière agencé pour s'engager dans un évidement ou une ouverture (28) d'une fiche plate (17) lorsqu'elle est reçue entre les lames à ressort opposées (25, 26) afin de résister au retrait de la fiche plate, caractérisée en ce que les lames à ressort (25, 26) sont agencées par paires s'étendant vers l'avant, en porte-à-faux, de côtés opposés du corps (31) à cette extrémité, les lames à ressort (25, 26) convergeant vers l'avant et un tronçon extrême (29) d'au moins une lame (25 ou 26) de chaque paire étant coudé vers l'extérieur pour définir une entrée divergente vers l'espace de réception de fiche plate, une saillie de verrouillage (27) étant formée sur le côté intérieur d'une première lame (26) de chaque paire, lesdites premières lames étant opposées diagonalement en travers dudit espace de réception de fiche plate, de façon que les saillies (27) s'engagent dans une ouverture (28) de la fiche plate, sur des côtés opposés, et qu'elles ne se touchent pas.

2. Cosse femelle pour fiche plate selon la

revendication 1, caractérisée en ce que les saillies (27) de verrouillage sont formées sur les lames (26) comportant les tronçons extrêmes (29) coudés vers l'extérieur.

3. Cosse femelle pour fiche plate selon la revendication 1 ou la revendication 2, montée dans une cavité de boîtier et retenue entre des épaulements de boîtier avant (6) et arrière (30) agencés pour permettre un mouvement relatif limité entre le boîtier et la cosse femelle (2) dans la direction de réception de la fiche plate, caractérisée en ce que l'épaulement avant (30) comporte, sur sa face arrière (31), une rampe agencée pour entrer en contact avec la ou une lame (26) de la cosse femelle lors d'un mouvement relatif vers l'arrière du boîtier, afin de faire fléchir la lame (25, 26) avec sa saillie (27) de verrouillage transversalement vers l'extérieur.

4. Cosse femelle pour fiche plate et boîtier selon la revendication 3, caractérisés en ce que le boîtier comporte des épaulements avant (30) situés sur des côtés opposés de la cavité, agencés pour porter contre des lames (26) situées à des côtés opposés de la cosse femelle, les épaulements (30) étant évidés à proximité immédiate des lames (25) afin que seules les lames (26) comportant des saillies (27) de verrouillage fléchissent transversalement vers l'extérieur lors d'un mouvement relatif vers l'arrière du boîtier.

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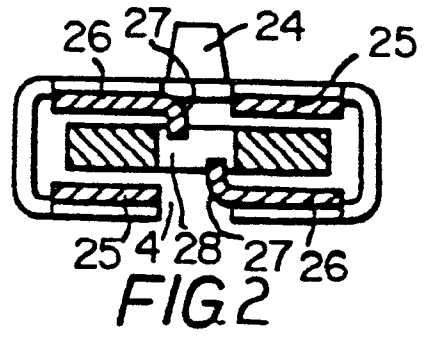
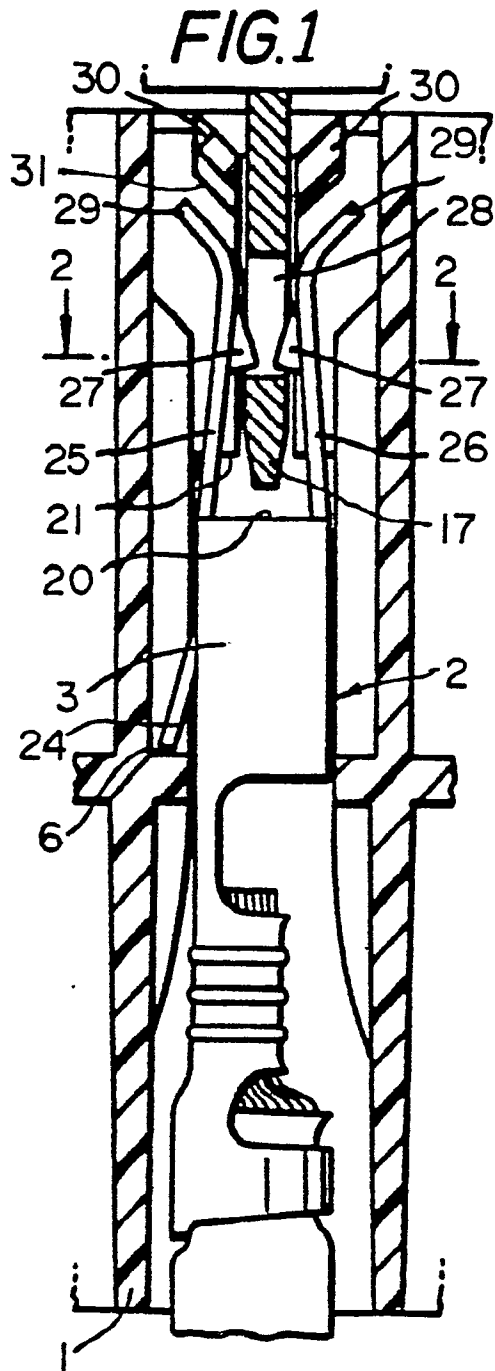


FIG.3

