(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 472 163 B1**

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification : **09.08.95 Bulletin 95/32**

(51) Int. Cl.[6] : **H01R 9/09,** H01R 43/20

(21) Application number : **91113934.3**

(22) Date of filing : **20.08.91**

(54) **Press-fit contact.**

(30) Priority : **22.08.90 DE 9012094 U**

(43) Date of publication of application : **26.02.92 Bulletin 92/09**

(45) Publication of the grant of the patent : **09.08.95 Bulletin 95/32**

(84) Designated Contracting States : **FR GB IT**

(56) References cited :
EP-A- 0 132 664
EP-A- 0 236 186
US-A- 4 191 440

(73) Proprietor : **MOLEX INCORPORATED**
2222 Wellington Court
Lisle Illinois 60532 (US)

(72) Inventor : **Schempp, Otto**
Raubachstrasse 23
D-74906 Bad Rappenau (DE)

(74) Representative : **TER MEER - MÜLLER - STEINMEISTER & PARTNER**
Mauerkircherstrasse 45
D-81679 München (DE)

EP 0 472 163 B1

Note : Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

The invention relates to a press-fit contact produced as a turned part for establishing an electrical connection, for example in a plated-through hole of a printed circuit board, for plug-in connections or else as an attachment point for a soldered connection.

In the case of conventional press-fit contacts of said type, as even a contact pressure as possible or an even contact-making over the entire region of contact between the pressed-in contact and the surrounding contact medium is desired. Owing to production inaccuracies and/or tolerances or else on account of not quite axially aligned pressing-in of the contact, differing bearing pressures occur in the contact zone and consequently partially differing current loading or wearing in the connection region between the contact pin and the contact hole.

EP-A-0 236 186 discloses a press-fit pin, wherein the press-in zone is designed cylindrically hollow at the inside and is provided with two axially parallel longitudinal slits. This pin comprises a contact section for engagement with a hole having a conductive surface. The contact section comprises a pair of elongated beams extending in the longitudinal direction of the pin, each beam having a generally C- shaped cross section. An electrical and mechanical contact between the pin and the hole takes place only at end portions and at central portions of the "C", resulting in rather high local contact pressure.

The invention is based on the object of improving a press-fit contact of said type in such a way that an even bearing pressure and even contact-making are ensured over the entire contact zone.

In the case of a press-fit contact made as a turn part, the invention comprises that the press-in zone is shaped in the form of a barrel in its outer contour. the greatest diameter region lying in the region of the highest bending moment.

It is advantageous to design the lower, free edge of the press-fit contact, which edge is to be inserted into the contact hole, in the form of a solid ring with peripheral edge bevel.

An embodiment of the invention is explained below with reference to the drawing, in which,

Fig. 1 shows a press-fit contact having features according to the invention, in greatly enlarged representation, and

Fig. 2 shows on about half-scale, a cross-sectional representation of the press-fit contact according to Fig. 1.

The press-fit contact 1 may be provided in its upper region with a peripheral cross-sectional widening 3 with supporting shoulders 2 and at the upper end with an attachment stub 4, for example for producing a soldered contact, a contact pin or a contact spring. In the region of the press-in zone 10, the press-fit contact 1 is, according to the invention, shaped in the form of a barrel in its outer contour 8 and turned or drilled out hollow-cylindrically in the inner region 9. The barrel-formed contour is interrupted by a plurality of, for example four, axially parallel longitudinal slits 6.

However, the longitudinal slits 6 preferably do not run over the entire length of the press-in zone 10, but only over a subregion, in such a way that an annular insertion edge 5, which is provided on the outside with an insertion bevel 11, remains at the lower, free end, the insertion region.

Due to the barrel-formed shaping of the press-in zone 6, on the one hand pressing-in is made easier in conjunction with the insertion bevel 11. On the other hand, the contact region 10 is loaded approximately evenly over its entire length in all cross-sectional regions, the greatest diameter region lying in the region of the highest bending moment.

In accordance with the definition of the object, with the invention the pressing-in of such press-fit contacts is made easier and a substantially even contact-making over the entire press-in zone is achieved.

Claims

1. A press-fit contact produced as a turned part, wherein the press-in contact zone (10) is designed cylindrically hollow on the inside and is provided with a plurality of axially parallel longitudinal slits (6), **characterized in** that the press-in zone (10) is shaped in the form of a barrel in its outer contour (8), the greatest diameter region lying in the region of the highest bending moment, so that an even bearing pressure and an even contact-making are ensured over the entire contact zone (10).

2. The press-fit contact as claimed in claim 1, wherein the longitudinal slits (6) run only over a subregion of the press-in zone (10), in such a way that there is an insertion edge (5) in the form of a solid ring at the free end of the press-in zone.

3. The press-fit contact as claimed in claim 2, wherein the insertion edge (5) in the form of a solid ring has an insertion bevel (11) on the outside.

Patentansprüche

1. Als Drehteil hergestellter Preßfit-Kontakt, bei dem die Einpreßkontaktzone (10) an der Innenseite hohlzylindrisch ausgebildet ist und eine Mehrzahl von achsparallelen Längsschlitzen (6) aufweist, **dadurch gekennzeichnet**, daß die Einpreßkontaktzone (10) in ihrer Außenkontur (8) tonnenförmig gestaltet ist, wobei der größte Durchmesser in dem Bereich des größten Biegemoments liegt. so daß ein gleichförmiger Auflagerdruck und ein gleichförmiger Kontakt über die gesamte Einpreßkontaktzone (10) sichergestellt ist.

2. Preßfit-Kontakt nach Anspruch 1, **dadurch gekennzeichnet**, daß die Längsschlitze (6) nur über einen Teilbereich der Einpreßzone (10) verlaufen, derart, daß am freien Ende der Einpreßzone ein vollringförmiger Einführrand (5) vorhanden ist.

3. Preßfit-Kontakt nach Anspruch 2, **dadurch gekennzeichnet**, daß der vollringförmige Einführrand (5) außenseitig eine Einführschräge (11) aufweist.

Revendications

1. Broche de contact à insertion à force réalisée sous la forme d'une pièce tournée, dans laquelle la zone (10) de contact par insertion à force a intérieurement la forme d'un cylindre creux et comporte une pluralité de fentes longitudinales axialement parallèles (6), **caractérisée** en ce que la zone (10) d'insertion à force a un contour extérieur (8) en forme de fût, la région de plus grand diamètre se trouvant dans la région de plus grand moment de flexion, de façon qu'une pression d'appui régulière et un établissement de contact régulier soient assurés sur toute la zone de contact (10).

2. Broche de contact à insertion à force selon la revendication 1, dans laquelle les fentes longitudinales (6) ne s'étendent que sur une partie localisée de la zone (10) d'insertion à force, de telle manière qu'un bord d'insertion (5) sous la forme d'un anneau plein se trouve à l'extrémité libre de la zone d'insertion à force.

3. Broche de contact à insertion à force selon la revendication 2, dans laquelle le bord d'insertion (5) sous la forme d'un anneau plein comporte extérieurement un chanfrein d'insertion (11).

Fig. 1

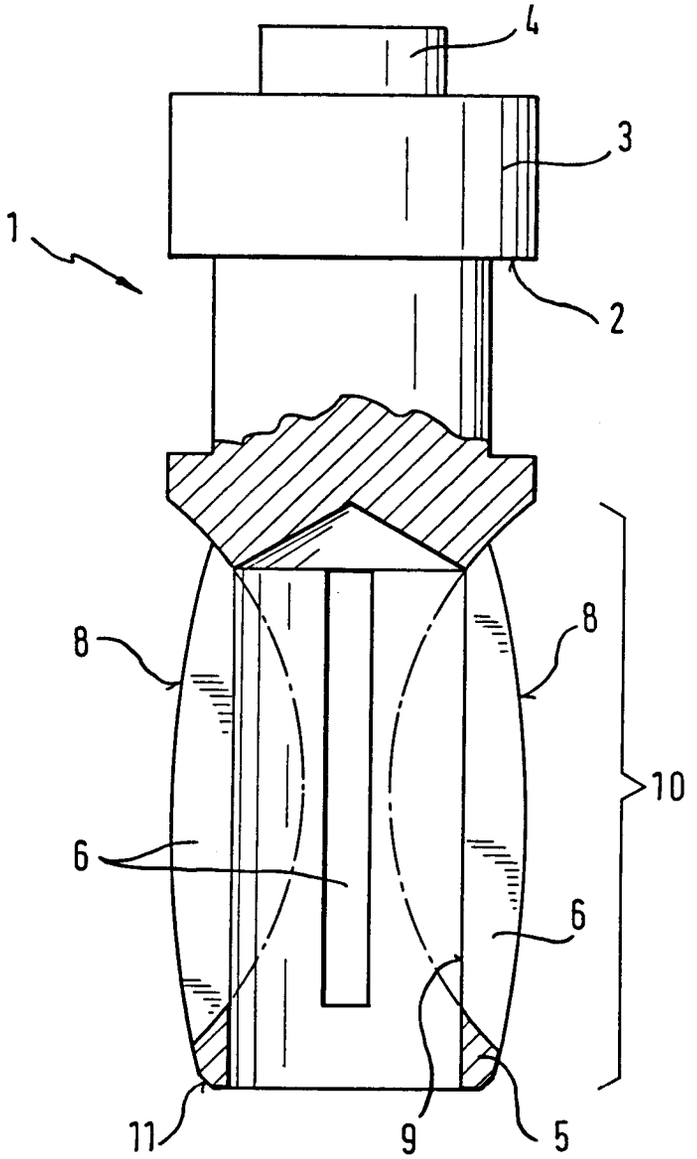


Fig. 2

