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(54) Current collector terminal in electric batteries

(57) The invention relates to a current collector terminal in electric batteries for the connection of the cables in an automobile to the terminals of the corresponding battery. The terminal is formed from a solid metal base body having a general rectangular prismatic configuration, having a wide central hole dimensionally suitable for its coupling to the corresponding post of the battery, a side hole having a considerably smaller diameter, with a slightly narrowed inner mouth and a threaded outer mouth, opening towards said central hole, in which side hole there is a ball, a spring tending to project said ball towards the inside of the central hole, and an outer screw regulating the tension of the spring. A front threaded hole opens towards this side hole, in which front hole there is in turn a screw having a conical front laterally acting on the ball pressing it against the post of the battery when the former is housed in the central hole of the base body, to which post the cables of the vehicle are suitably fixed.

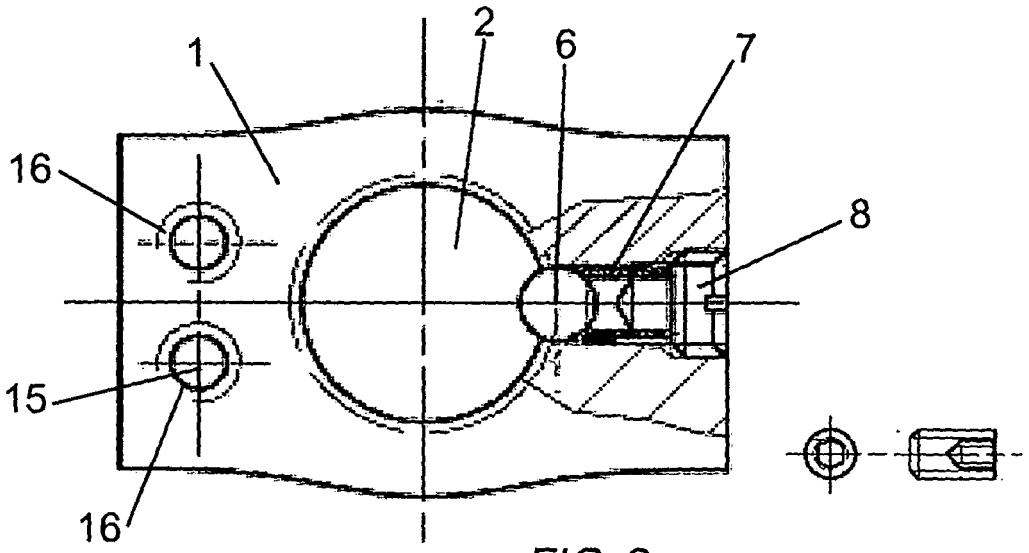

FIG. 2

EP 1 909 360 A1

Description

OBJECT OF THE INVENTION

[0001] The present invention relates to a terminal which has been especially designed to carry out the connection or current collector of an electric battery, especially a battery installed in an automotive vehicle.

[0002] The object of the invention is to obtain a fast and effective connection system between the vehicle wiring and the posts of the battery, ensuring an ideal electrical connection and an also ideal mechanical fixing, which remain unchanged over time, as well as a very easy and fast assembly without specific fixing tools.

[0003] The invention is therefore comprised in the field of the industry dedicated to the manufacture of automotive vehicles, also including the industry dedicated to the manufacture of electric components for automobiles.

BACKGROUND OF THE INVENTION

[0004] As is know, in the automotive field the connection terminals for connecting the vehicle wiring to the posts of the battery have evolved very little over time, the use of a metal clamp and a screw for each post of the battery being maintained for some time, which clamp is usually tightened by means of a fixing tool.

[0005] In addition to specific tools, this connection system requires a certain installation time.

[0006] Furthermore, over time this connection of the clamp to the post of the battery loosens with the vibrations derived from the operation of the engine, being a problem for the user who is forced to periodically check the posts of the battery, frequently having to tighten the mentioned clamps so as to ensure the proper operation of the battery.

DESCRIPTION OF THE INVENTION

[0007] The terminal proposed by the invention solves in a fully satisfactory manner the drawbacks explained above in relation to the different aspects discussed.

[0008] To that end and more specifically, said terminal is carried out in a solid metal base body provided with a central hole for coupling to the corresponding post of the battery, this hole being slightly frustoconical or diverging from the front face of the body to the rear face so as to facilitate its coupling to the post.

[0009] A side hole having a slightly angled inner mouth opens towards this wide central hole, in which side hole there is a small ball pressed against by a spring supported on a regulating screw threaded in the side hole, such that said ball tends to penetrate into the central hole and, accordingly, radially act on the post when the base body is assembled thereon.

[0010] This side hole is crossed with a threaded front hole, which is preferably blind at its rear face, in which there is a screw having a conical front, the conical end of which acts by way of a came laterally acting on the ball, pressing it strongly towards the inside of the central hole, i.e. towards the post of the battery. To prevent this screw having a conical front from coming loose, said screw is oversized in length in relation to the hole it is located in, a substantial part thereof projecting and on which a bracket acting by way of a locknut is located.

[0011] Finally and as a complement of the described structure, it has been provided that the base body incorporates, preferably in its area opposite to the area of the fixing mechanisms for fixing the base body to the post of the battery, a through hole having a suitable diameter so as to allow access to its inside for the cable or group of cables which must be connected to the corresponding post of the battery, which through hole is crossed with two other threaded front holes, one of which is intended to house a set-screw for fixing the cable or cables, whereas the other one is intended to be used eventually, allowing the entrance of any system for checking the state of the battery.

[0012] As can be inferred from the foregoing, the terminal proposed by the invention reduces the time needed for its assembly on the post of the battery, in the assembly line and when carrying out tests on the vehicle in which it is necessary to constantly assemble and disassemble the posts of the battery, a simple screwdriver being sufficient for doing so.

DESCRIPTION OF THE DRAWINGS

[0013] To complement the description being made and for the purpose of aiding to better understand the features of the invention according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description in which the following is shown with an illustrative and non-limiting character:

Figure 1 shows an upper plan view of a current collector terminal in electric batteries carried out according to the object of the present invention.

Figure 2 shows a view similar to that of the previous figure, in which the base body of the terminal is partially sectioned in order to show its inner structure.

Figure 3 shows an elevational view of the terminal of the previous figures.

Figure 4 shows a cross section view of the terminal according to section line A-A of Figure 3.

Figure 5 shows another section view of a detail of the terminal, now according to section line B-B of Figure 1.

Figure 6 finally shows a perspective view of the same terminal duly opposite to a post of the battery and with the fixing screw for fixing it to said post being disassembled.

PREFERRED EMBODIMENT OF THE INVENTION

[0014] In view of the discussed figures, it can be seen

how the terminal described is formed from an approximately rectangular prismatic base body (1), having a wide central hole (2) having a diameter in accordance with the diameter of the post (3) of the battery (4) it is intended for, but with the particularity that it is slightly divergent towards its inner face, i.e. it adopts a slightly frustoconical configuration so as to facilitate its coupling on the post (3).

[0015] A considerably smaller side hole (5) opens radially towards the hole (2), the inner mouth of the side hole, the mouth of the opening towards the hole (2), being slightly narrowed and having a section close to its other threaded end, a ball (6) being housed inside this hole (5) which is able to partially penetrate the hole (2) pressed against by a spring (7) externally supported on a screw (8) threaded in the corresponding section of the hole (5).

[0016] Evidently the spring (7) makes the ball (6) be supported on the post (3) of the battery when the terminal is coupled to said post, but the force for the mechanical fixing of the base body (1) to the post is carried out with the aid of a screw (9) having a conical front (10) located in a front threaded hole (11) of the base body (1), which opens towards the hole (5) in which the ball (6) is located, laterally acting on the latter and forcing it, along the inclined plane of its conical front (10), to penetrate the central hole (2) and to strongly press against the post (3), thus mechanically fixing the post and base body (1).

[0017] The mentioned screw (9) having a conical tip (10) incorporates opposite to said tip a diametrical groove (12) for tightening it with a screwdriver, and furthermore the length of said screw is such that part of it is outside the base body (1) in a tightened situation, receiving a bracket (13) acting as a locknut so as to prevent the loosening of the screw (1) and, accordingly, the loosening in the tightness of the ball (6) against the post (3).

[0018] Located on the opposite side of the base body (1) there is a transverse through hole (14) having a suitable diameter so as to allow the passage therethrough of the cable or group of cables to connect to the post (3), which cables are fixed with the aid of a set-screw (15) threaded in a hole (16) perpendicular to the hole (14) and opening towards the latter.

[0019] A second threaded hole (17) similar and close to the previous hole (15) allows the entrance of any element for checking the state of the battery.

Claims

1. A current collector terminal in electric batteries, particularly for the connection of the cables in an automobile to the terminals of the corresponding battery, **characterized in that** it is formed from a solid metal base body having a general rectangular prismatic configuration, having a wide central hole dimensionally suitable for its coupling to the corresponding post of the battery, a side hole having a considerably smaller diameter, with a slightly narrowed inner mouth and a threaded outer mouth, opening towards said central hole, in which side hole there is a ball, a spring tending to project said ball towards the inside of the central hole, and an outer screw regulating the tension of the spring, with the particularity that a front threaded hole opens towards this side hole, in which front hole there is in turn a screw having a conical front laterally acting on the ball pressing it against the post of the battery when the former is housed in the central hole of the base body, to which post the cables of the vehicle are suitably fixed.

2. A current collector terminal in electric batteries according to claim 1, **characterized in that** the screw having a conical front is oversized in length in relation to the threaded hole it is coupled to such that it substantially projects to the outside where it receives a bracket acting as a locknut preventing the loosening of said screw.

3. A current collector terminal in electric batteries according to the previous claims, **characterized in that** the wide central hole of the base body is slightly frustoconical, diverging towards its lower or rear face, so as to facilitate its coupling to the post of the battery.

4. A current collector terminal in electric batteries, according to the previous claims **characterized in that** the base body incorporates, preferably in the area opposite to the location of the ball and its accessories, a transverse through hole suitable for internally receiving the cable or group of cables to connect to the corresponding post of the battery, which are fixed with the aid of a set-screw located in a front threaded hole which opens towards the mentioned through hole, the existence of a second threaded hole having been provided close and similar to the previous one for introducing elements for testing the state of the battery.

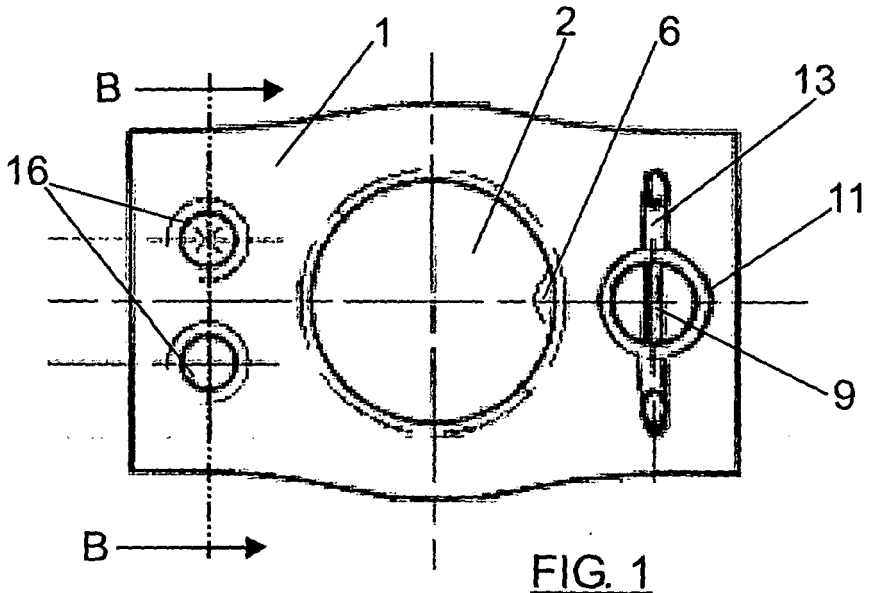

FIG. 1

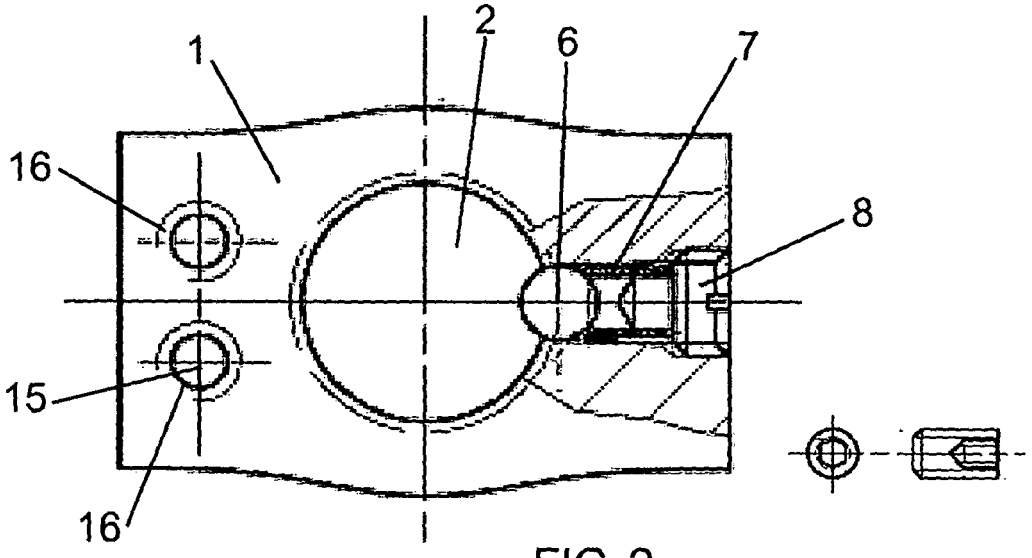

FIG. 2

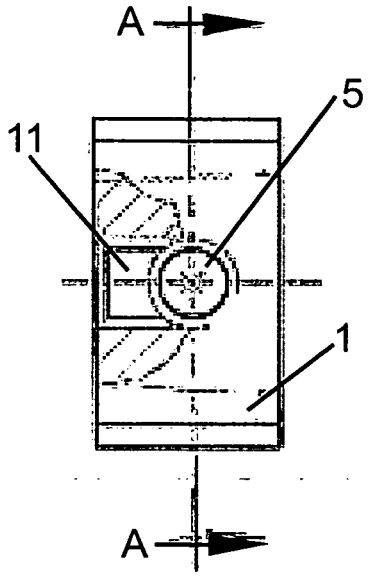

FIG. 3

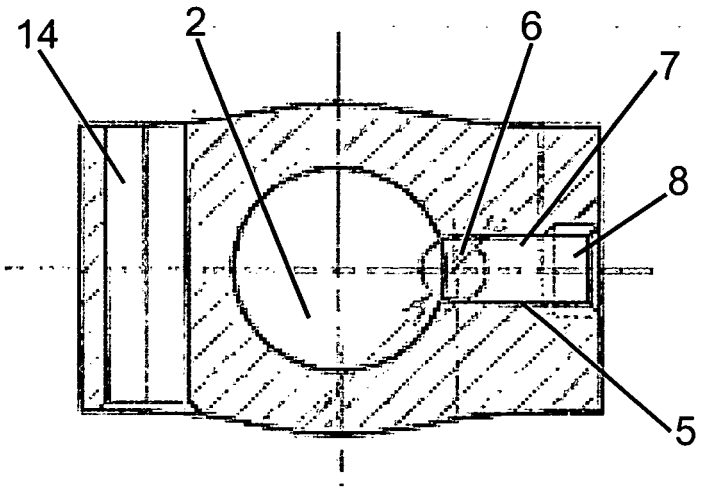

FIG. 4

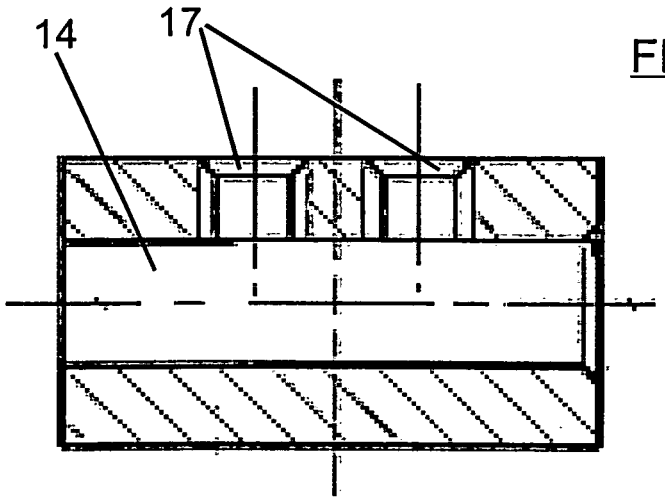

FIG. 5

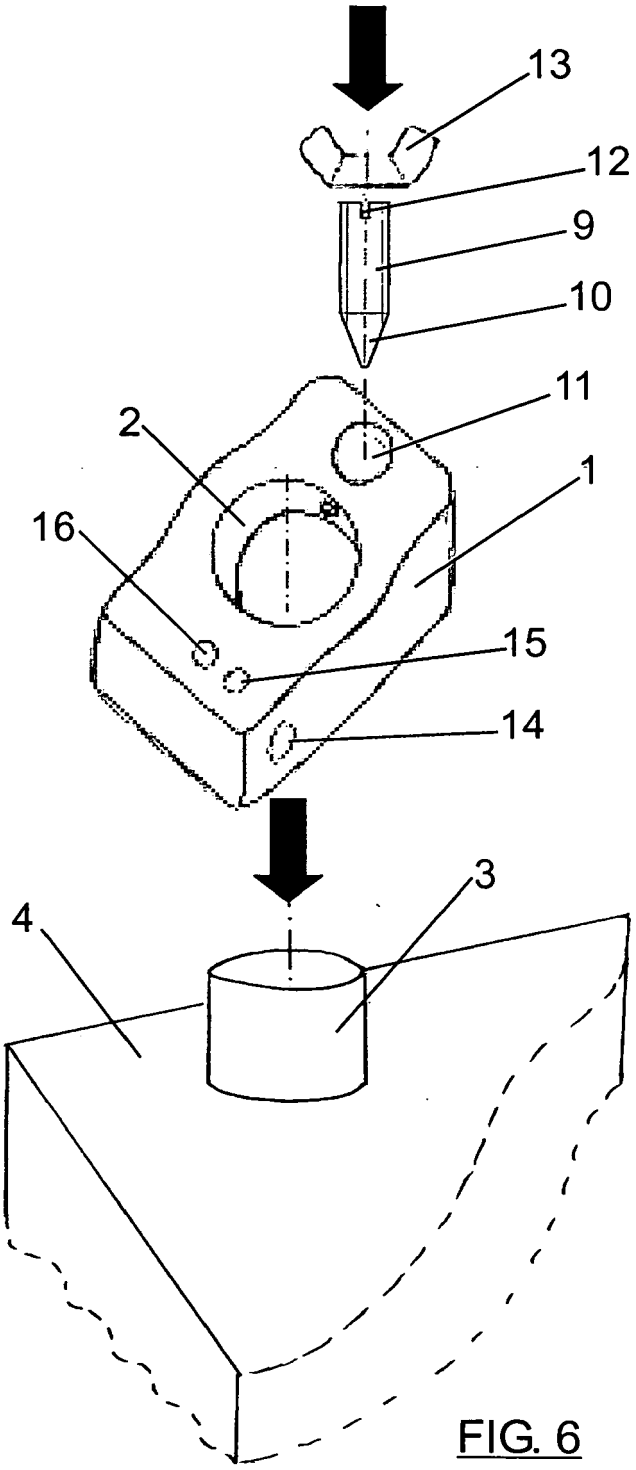

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 07 38 0095

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 44 04 057 A1 (EIFELWERK HEINRICH STEIN GMBH [DE]) 10 August 1995 (1995-08-10) * column 3, line 29 - line 38 * * column 4, line 43 - line 45; figures 1-4 * -----	1,3,4	INV. H01R4/50 H01R4/52 H01R11/28
A	EP 0 381 996 A (BALZERS HOCHVAKUUM [LI]) 16 August 1990 (1990-08-16) * column 2, line 2 - line 26; figures 1,2 * -----	1	
A	GB 231 923 A (RUDOLF WOODS) 14 April 1925 (1925-04-14) * page 3, line 43 - line 79; figures 1-5 * -----	1	
A	US 3 678 450 A (AZAMBER EUGENE C ET AL) 18 July 1972 (1972-07-18) * column 1, line 60 - column 2, line 4; figures 1-4 * -----	4	

TECHNICAL FIELDS SEARCHED (IPC)

H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Berlin	17 January 2008	Stirn, Jean-Pierre

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 38 0095

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