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Publication number: **0 570 637 A1**

EUROPEAN PATENT APPLICATION

Application number: **92304574.4**

Int. Cl.⁵: **H01R 11/28**

Date of filing: **20.05.92**

Date of publication of application:
24.11.93 Bulletin 93/47

Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IT LI LU MC
NL PT SE**

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Battery clamp and connectors.

A battery clamp (1) for connection of electrical cables to a terminal post of an electric storage battery has a body (2) of electrically conductive material with an aperture formed therethrough to accommodate the terminal post and includes cam operated locking means (6 and 7) for releasably securing the clamp to the post and also means for releasably securing at least one electric cable to the clamp.

Also disclosed is a cam operated electrical cable connector (21) for use with the battery clamp or a suitably adapted cable adaptor (41).

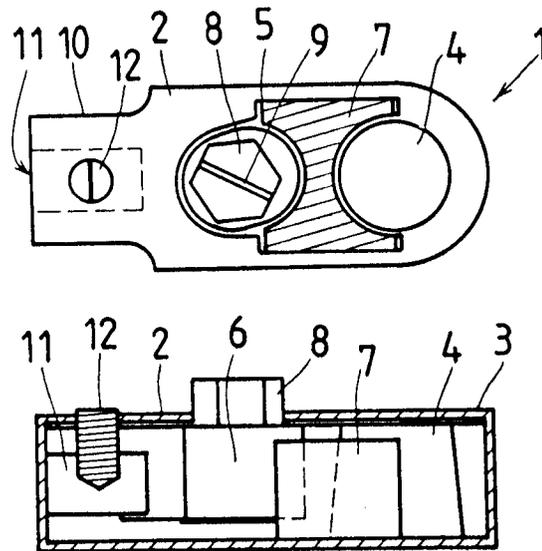


FIG. 1

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FIELD OF THE INVENTION

This invention relates to clamps for electric storage batteries and to cable connectors used in conjunction therewith. An application is described for motor vehicle batteries but the invention is not exclusively confined thereto.

BACKGROUND TO THE INVENTION

Battery clamps for securing electrical leads to the terminal posts of motor vehicle batteries generally have securing means comprising an "U" shaped body having a bolt passing through the legs and secured by a nut on the threaded end of the bolt. This system suffers from the disadvantage of requiring a spanner of the correct size to connect or disconnect the clamp and further, the bolt being of a corrosive material, tends to corrode, resulting in difficulty in removal and possible damage to the clamps or terminal post. Although other types of clamp have been used, eg a spring release clamp, these suffer from one or other of these disadvantages, resulting in delays when connecting or disconnecting batteries in service.

OBJECT OF THE INVENTION

It is an object of this invention to provide a clamp which is of simple construction and allows for quick release and securement of battery cables to a battery and also provides quick release cable connectors.

SUMMARY OF THE INVENTION

A battery clamp for connection of electric cables to a terminal post of an electric storage battery comprising an electrically conductive material body having an aperture formed therethrough to accommodate said terminal post and, included within the body, are cam operated locking means whereby the clamp may be releasably secured to the terminal post and means for releasably securing at least one electric cable to the clamp.

Further features, according to the invention, the electrically conductive material body is preferably a casting of elongate configuration.

Still further features, according to the invention, the cam operated locking means is located in a recess in the body and comprises an offset cam having a follower in the form of a slug adapted to slide in the recess and be locked into electrical contact with the battery terminal post.

Still further, according to the invention, the means for releasably securing an electrical cable to the clamp comprises a socket in the body adapted for the insertion and locking therein of a spigot of

an electrical connector to which the cable is secured, the spigot having a cam formation thereon whereby the connector may be locked into electrical contact with the clamp.

Still further, according to the invention, preferably the body includes an insulating cover surround adapted to provide openings therethrough for a terminal post, electrical connections and an adjusting boss of the cam operated locking means.

The invention extends to cam connectors for connecting cables to a battery clamp as hereinbefore described or further, for use in a cable extension adaptor having socket outlets suitably adapted for their insertion and locking therein.

BRIEF DESCRIPTION OF THE DRAWINGS

Three embodiments of the invention are described below by way of example only and with reference to the accompanying drawings in which :

Figure 1 shows a battery clamp according to the invention in plan and cross section;

Figure 2 shows an elevation and plan of a cam connector according to the invention;

Figure 3 shows a battery clamp according to the invention incorporating two removable cam connectors of the type illustrated in Figure 2; and

Figure 4 shows use of removable cam connectors of the type illustrated in Figure 2 in an extension cable adaptor.

DETAILED DESCRIPTION OF THREE PREFERRED EMBODIMENTS OF THE INVENTION WITH REFERENCE TO THE DRAWINGS

As illustrated in Figure 1, there is provided a battery clamp (1) for use in connecting a high tension cable to one of the battery posts of a motor car battery which comprises a cast metal body (2) of oblong shape, enclosed in a plastic cover (3), and having an aperture (4) therethrough shaped to cooperate with the terminal post over which it is located in use.

Formed in the body (2) is a shaped recess (5) in which is located an offset cam (6) adjacent to and spaced from a cam slug (7) which is cast from an electrically conductive material and, more particularly an aluminium alloy, and shaped to be locked by the cam in use against the terminal post and integral with the cam (6) is a boss (8) which projects through the top of the plastic cover (3). In the face of the boss (8) is a slot (9) into which a screw driver may be inserted for adjustment of the cam. In the end (10) of the body remote from the aperture (4) is a short bore (11) for insertion of a high tension cable.

In use the clamp (1), with a cable inserted in the bore (11) and secured to the body (2) by

means of a grub screw (12) passing through a tapped bore therein, is placed with aperture (4) located over a terminal post of a battery. The cam (6) is turned by a screwdriver or like instrument inserted in the slot (9) of the boss (8) to force the slug (7) into locking engagement with the terminal post.

Figure 2 illustrates a cam connector (21) which comprises an aluminium casting part (22) which is of hexagonal shape with a short bore (23) open at one end into which a cable may be inserted and secured in the connector by a grub screw (24) and a spigot end (25) on which is carried an offset cam (26).

Now referring to Figure 3, a second embodiment of the invention is illustrated which incorporates cam connectors of the type shown in Figure 2.

In this embodiment, a battery clamp (31) similar to that of the first embodiment is provided, having two cam connectors (21) secured in locked position within two sockets (33) formed in the body (34) of the clamp, the sockets being formed to cooperate with the cams of the connectors. Like items of clamp (31) with that of the first embodiment are referenced as in Figure 1. In this embodiment it will be seen that two cables may be connected to a clamp on one terminal post.

Referring to Figure 4, a third embodiment of the invention illustrates the use of cam connectors in an extension adaptor. In this embodiment an extension adaptor (41) is provided and comprises a plastic open ended box (42) having a partition (43) therein for insulating two aluminium castings (44) held therewithin, each formed having socket outlets on either side of the type to accept cam connectors (21) as hereinbefore described.

In use, the extension adaptor has negative connections (21a) on one side and positive connections (21b) on the other side. Connections (21a) are connected to a clamp on the negative terminal of a battery and connections (21b) to a corresponding clamp on the positive terminal of the battery.

It will be seen that the invention provides ease of connection and disconnection for battery clamps when maintenance is carried out and that other embodiments of the invention are envisaged for the connection of cables when, for example, a battery charger is to be used.

Claims

1. A battery clamp (1) for connection of electrical cables to a terminal post of an electric storage battery comprising an electrically conductive material body (2) including an aperture (4) therethrough to accommodate said terminal post, and means (12) for securing at least one

electric cable to the clamp (1) is characterised by cam operated locking means (6 and 7) whereby the clamp may be releasably secured to the terminal post.

2. A battery clamp as claimed in claim 1 wherein the electrically conductive material body (2) is preferably a casting of elongate configuration.

3. A battery clamp as claimed in either of claims 1 or 2 wherein the cam operated locking means is located in a recess (5) in the body.

4. A battery clamp as claimed in claim 3 wherein the cam operated locking means comprises an offset cam (6) having a follower (7) in the form of a slug adapted to slide in the recess (15) and be locked into electrical contact with the battery terminal post.

5. A battery clamp as claimed in claim 4 wherein the means for releasably securing an electrical cable to the clamp comprises a socket in the body adapted for the insertion and locking therein of a spigot of an electrical connector to which the cable is secured.

6. A battery clamp as claimed in claim 5 wherein the spigot includes a cam formation (21) thereon whereby the connector may be locked into electrical contact with the clamp.

7. A battery clamp as claimed in any one of the preceding claims wherein the body includes an insulating cover surround (3) adapted to provide openings therethrough for a terminal post, electrical connections and an adjusting boss (8) of the cam operated locking means (6 and 7).

8. A cam connector (21) including a spigot as claimed in claim 6 whereby an electric cable may be connected to a battery clamp as claimed in any one of the preceding claims.

9. A cable extension adaptor (41) including socket outlets each of which is adapted for the insertion and locking therein of a cam connector (21) including a spigot as claimed in claim 6.

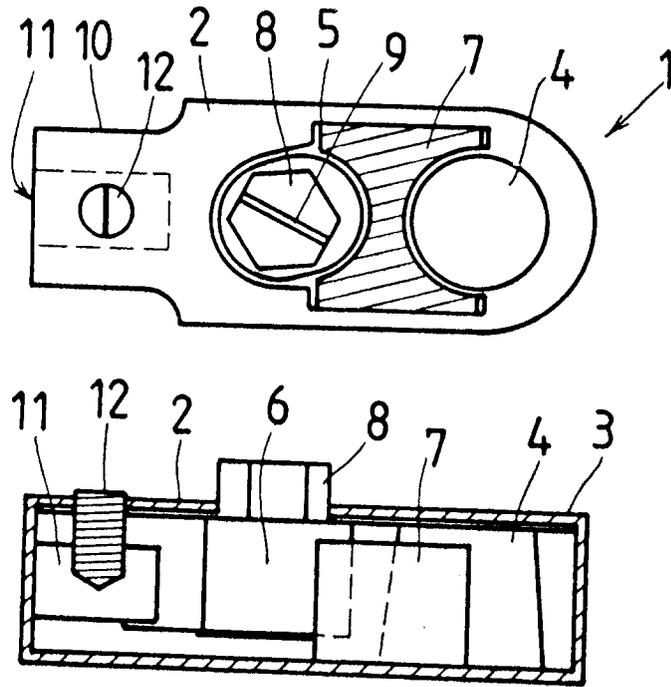


FIG. 1

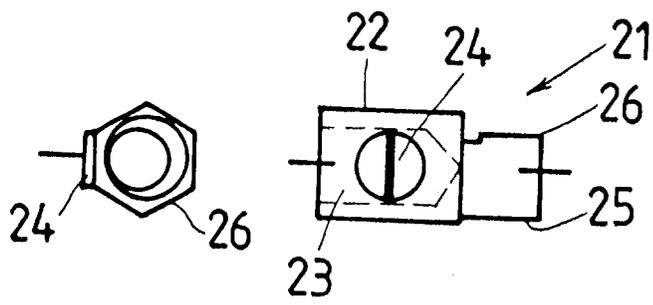


FIG. 2

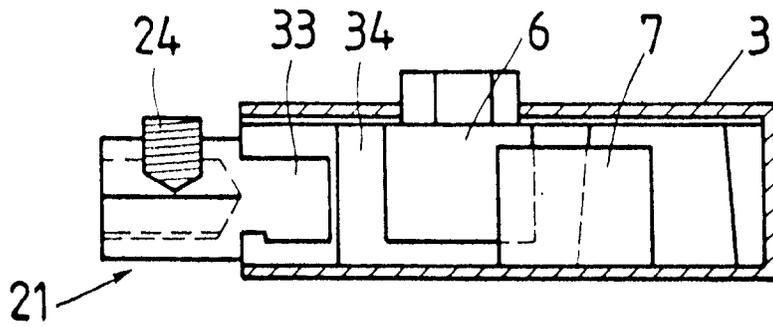
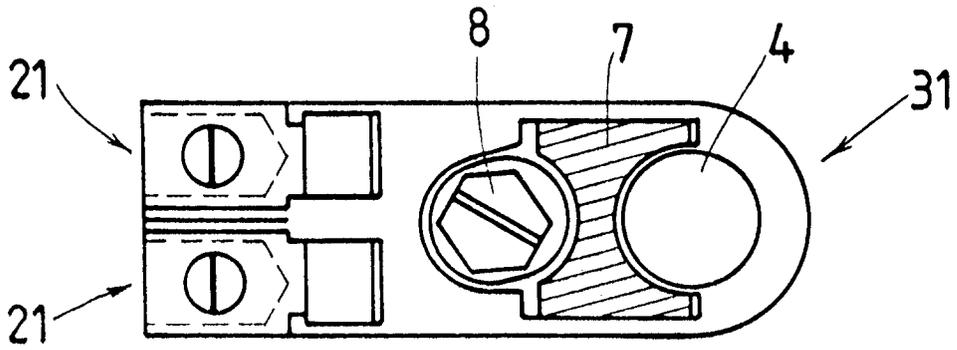


FIG. 3

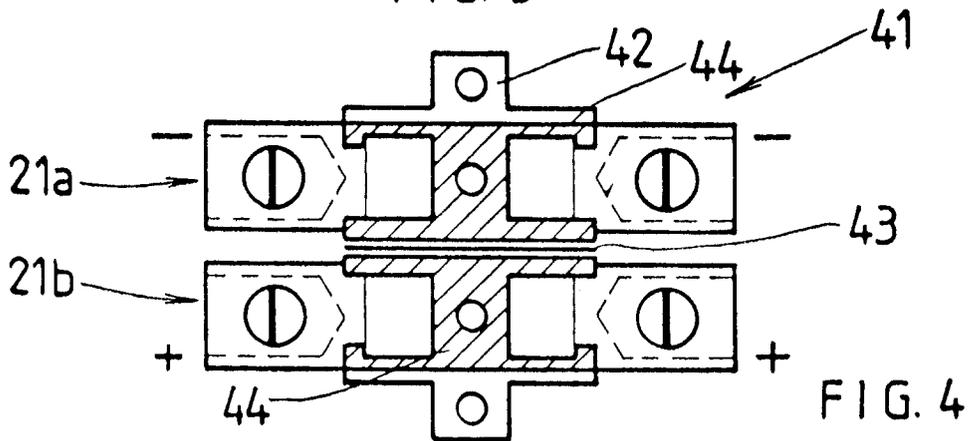


FIG. 4



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 92 30 4574

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	US-A-4 810 204 (WILSON) * column 4, line 35 - line 49 * ---	1,3-4
A	DE-A-2 548 429 (WENING) * figure 2 * ---	1,4,7
A	EP-A-0 164 462 (SYLVIA ARTHUR M.) * figures 5-6 * ---	1,4
A	FR-A-2 601 515 (PRONER SA) * page 2, line 27 - line 31 * -----	1
The present search report has been drawn up for all claims		
		<p>TECHNICAL FIELDS SEARCHED (Int. Cl.5)</p> <p>H01R</p>
Place of search	Date of completion of the search	Examiner
THE HAGUE	14 JANUARY 1993	S. Sibilla
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>		

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