Nov. 5, 1968 C. B. HAEGERT Re. 26,486

BATTERY CLAMP CONNECTORS

Original Filed Sept. 15, 1960

FIG. 1A

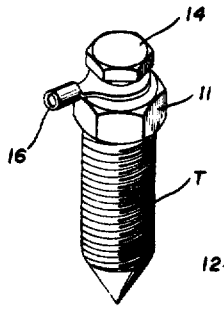


FIG. 1B

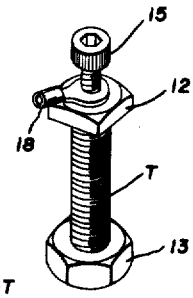
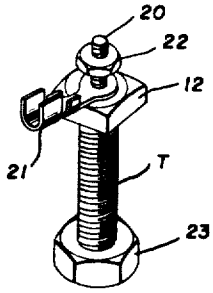


FIG. 1C



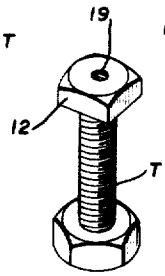


FIG. 1D

FIG. 2

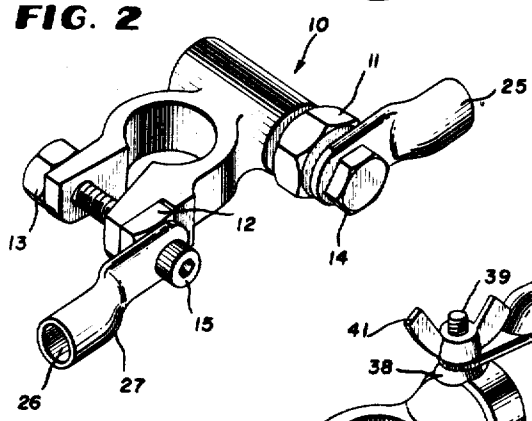
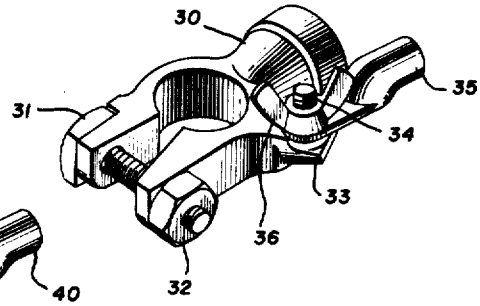


FIG. 3



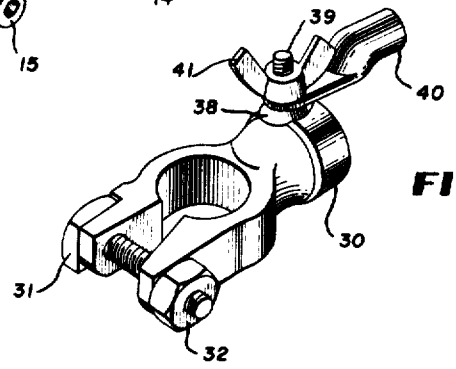
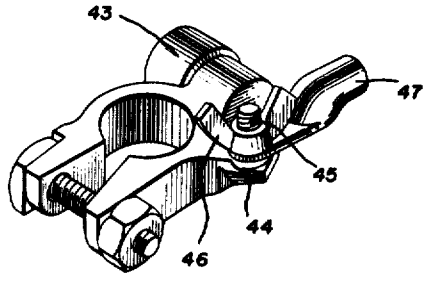


FIG. 4

FIG. 5



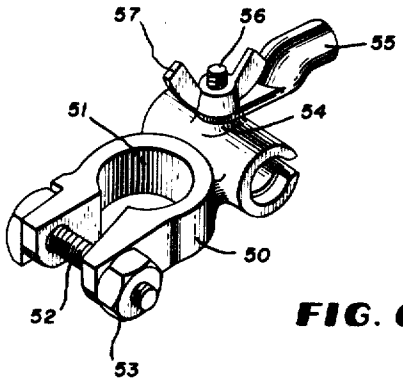


FIG. 6

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BATTERY CLAMP CONNECTORS

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Original No. 3,230,499, dated Jan. 18, 1966, Ser. No. 450,256, Apr. 19, 1965, which is a continuation of Ser. No. 347,332, Feb. 14, 1964, which in turn is a continuation of Ser. No. 56,285, Sept. 15, 1960. Application for reissue May 1, 1967, Ser. No. 646,743
2 Claims. (Cl. 339—230)

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

ABSTRACT OF THE DISCLOSURE

A conventional battery clamp includes a clamping portion having free spaced ends with aligned holes receiving a threaded bolt for drawing the spaced ends together. This bolt has an enlarged head having a threaded hole for receiving a headed clamping screw for clamping a lug end to the unit, such lug end being connected with an additional electrical conductor.

The present application is a continuation of application Ser. No. 347,332, now abandoned, which in turn is a continuation of application Ser. No. 56,285, filed Sept. 15, 1960, now abandoned.

The present invention relates to battery clamps and more particularly to a new and novel battery clamp for ready attachement thereto of a conductor or conductors.

The battery clamps of the present invention are permanently installed to provide a much desired means for connecting an additional lead or leads to standard battery clamps so as to permit the connection thereto of additional equipment. Such equipment may be an additional radio, for example, an FM radio, a two-way radio for intercommunications, an air-conditioning unit or similar equipment to be used in the automobile and for which there is no ready attachment or individual terminal provided. A further use or requirement for direct attachment of the conductors to a battery is to connect a group of batteries in parallel to power equipment.

There is no known prior device by which such connection may be made immediately at the battery itself rather than at other terminals in the automobile circuits without removing or adjusting in any way the already installed battery clamps.

One purpose of the present invention, therefore, is to provide means on the battery clamp itself to which conductors may be connected readily and involving no interference with or movement of attached clamps. A second purpose is to provide a terminal or terminals in a circuit not controlled by the igintion switch and not involving connection to the automobile circuits to which conductors may be immediately attached.

It is accordingly an object of the present invention to provide a battery clamp to which power units in addition to the standard automobile equipment may be readily connected.

It is another object of the present invention to provide a battery clamp terminal for a wide variety of present battery clamps thereby enabling direct connection to be made to such clamps.

It is a further object of the present invention to provide a battery clamp terminal to which additional conductors may be attached from a plurality of directions.

It is a further object of this invention to provide an additional terminal or terminals which may be attached

at a variety of positions on existing battery clamps or their fittings.

It is a further object of the present invention to provide a battery clamp having means integral therewith for the attachment of conductors which is simple and inexpensive in construction, and yet reliable and sturdy in operation.

Other objects and many of the attendant advantages of the present invention will become apparent when considered in connection with the following specifications and accompanying drawings, wherein:

FIG. 1A illustrates one embodiment of the present invention; FIG. 1B illustrates a second embodiment of the present invention; and FIG. 1C illustrates a third embodiment of the present invention; FIG. 1D illustrates more in detail a feature of the embodiment of FIG. 1B;

FIG. 2 illustrates the embodiments of FIGS. 1A and 1B as attached to a battery clamp;

FIG. 3 illustrates a fourth embodiment of the present invention;

FIG. 4 illustrates an alternate attachment for the embodiment shown in FIG. 3;

FIG. 5 illustrates the embodiment of FIG. 3 attached to a standard elbow battery clamp; and

FIG. 6 shows the embodiment of FIG. 4 attached to a split type battery clamp.

The present invention provides an arrangement whereby quick connection may be made easily and securely to a battery clamp without removing the battery clamp from the battery post. The various attaching means for a variety of battery clamps and battery clamp fittings are shown in the figures, and will now be discussed more in detail.

Referring to FIGS. 1A, 1B and FIG. 2, there is shown the battery terminal clamp **10** of applicant's Patent No. 2,940,060 including cable expansion bolt **11** and bolt **12**, the latter having attached thereto nut **13** for drawing toward one another the jaws of the clamp. The expansion bolt **11** is presented in greater detail in FIG. 1A while the bolt **12** is shown in enlarged view in FIGS. 1B, 1C and 1D.

Expansion bolt **11** and bolt **12**, as shown in FIGS. 1A and 1B, have set screws **14** and **15**, respectively, inserted in one end thereof in holes tapped therein such as **19** in bolt **12** which is shown in FIG. 1D. The diameters of the tapped holes are substantially less than the diameters of the threaded portions T to retain adequate strength in the shaft of the bolts. Bolts **11** and **12** are tapped at the head thereof to accommodate set screws **14** and **15**, respectively. The set screws serve as receiving means to receive and hold conductors which are to be attached to the battery clamp.

Lugs **16** and **17** are positioned over set screws **14** and **15**, respectively, and may have conductors, not shown, attached either before the set screws are tightened in their respective bolts or after such tightening. In this regard, it is noted that the clamp of FIG. 2, for example, shows an embodiment of the present invention as it may appear when secured about the battery post and before additional conductors are attached.

The clamp of FIG. 2 illustrates one embodiment of the device of the present invention in the form in which it is marketed. Lugs **25** and **27** are included with the clamp, and attaching set screws **14** and **15** also are provided. It will be appreciated that the lugs may be removed from the assembly before or after the clamp is secured about the battery post, and that conductors may be attached to the lugs while removed leaving simply the insertion and tightening of set screws **14** and **15** to effect firm connection of the lugs to the clamp.

In FIG. 1C, the bolt is shown with a threaded extension **20** on the head end of the bolt to receive lug **21**

and nut **22**. Extension **20** may have any of a variety of diameters and may extend instead from the nut end in which case, however, its diameter would necessarily be less than the diameter of the threaded section T of bolt **18** such that a holding means such as nut **23** may be positioned over the threaded extension.

Referring again to FIG. 2 bolt **11** is shown with set screw **14** inserted in tightened position holding lug **25** in tight connection to battery clamp **10**, and lug **27** is shown tightened against the head of bolt **12**. Lug **27** is hollow, as indicated at **26**, to receive the end of a conductor such that the lug may be crimped in the usual manner after the conductor has been bared and inserted in the opening thereof. A comparable opening exists in lug **25** though it is not shown. Lug **25**, before tightened against bolt **11**, may be directed in any direction about the periphery of the bolt, thereby providing a wide choice of attaching azimuth or direction to the conductor.

Lug **27** is attached to bolt **12** of the battery clamp and is of the variety shown in FIG. 1B wherein set screw **15** is inserted in a tapped hole, shown in FIG. 1D in bolt **12**. It will be appreciated that both lugs **25** and **27** may be tightened in position without affecting the tightness of bolts **11** or **12** or clamp **10** after the clamp has been secured about the battery part. That is, the attachment of lugs **25** and **27** is entirely independent of the fitting and tightness of the battery clamp and the battery cable leading from the clamp.

In FIG. 3, there is shown a conventional battery clamp **30**, having bolt **31** and nut **32** attached thereto and to which a terminal branch **33** has been added integral with the clamp **30**. Attached integrally to the terminal branch is threaded extension **34** which is adapted to receive over it lug **35** and holding means such as wing nut **36**. The branch **33** may, as in previous embodiments, be tapped in lieu of having threaded extension **34** attached thereto, and may accommodate a set screw such as **15** in FIG. 2 therewithin to hold in position lug **35**. It will be appreciated that in this embodiment substantially 360-degree freedom is obtained in the direction to which lug **35** may extend, the angular portion of a complete circle in which the connector is restricted being somewhat less than 90° of rotation about extension **34**.

In FIG. 4, there is shown a conventional clamp **30** and bolt **31** tightened by nut **32** with, however, terminal branch **38** included on the periphery **39** of the battery clamp. The branch **38** may be welded or soldered or in other ways made integral with clamp **30**. In the embodiment illustrated, branch **38** has extending from it threaded extension **39** which is adapted to receive lug **40** and holding means such as wing nut **41**. In the embodiment of FIG. 4, the conductor to which lug **40** is attached may extend in any direction about extension **39**.

It is again emphasized that the lug connections in FIGS. 2, 3 and 4 are entirely separate and distinct from the procedure of attaching battery clamps to the battery post. There is absolutely no requirement that the battery post be moved or loosened or affected in any other way by attachment of the different conductors such as will be inserted in lugs **25**, **27**, **35** and **40**. It will also be appreciated that the hollow lug illustrated in FIGS. 2, 3 and 4 may be replaced by lugs such as **16**, **17** and **21** in FIGS. 1A, 1B and 1C within the concept of this invention, or by other similar connectors.

Referring now to FIG. 5, an elbow type battery terminal **43** is shown to which terminal branch **44** has been attached or made integral. Threaded extension **45** corresponds to similar extensions **34** in FIG. 3 and **39** in FIG. 4 and wing nut **46** is similarly tightened over threaded extension **45** to hold lug **47** firmly in place. The branch **44** is positioned opposite to the side of the battery clamp into which the battery cable is led, thereby providing greater freedom in the area where the terminal branch is located.

Referring to FIG. 6, the split-type terminal **50** is shown having its opening **51** for positioning over the battery post and bolt **52** with nut **53** for tightening to the post. Terminal branch **54** is positioned at the periphery at the split terminal above the level of the battery post thereby permitting greater freedom of movement for the lug **55** about extension **56**. Wing nut **57**, as its counterparts in FIGS. 3, 4 and 5 have been described, is readily accessible to the person attaching lug **55** to the branch and is easily tightened without interference whatsoever with the battery clamp on the battery post or the cable connection to the battery clamp. It is again noted that lug **55** may be replaced by lugs such as **17** in FIG. 1B and **21** in FIG. 1C or other such connectors, without the concepts of the present invention.

It is apparent therefore that the connection of a conductor or conductors to either the attaching bolt of the battery clamp or to the clamp itself may be effected in an extremely simple manner and without in any way disturbing or changing the positioning of the battery clamp about the battery post. It should also be noted that although various types of lugs for insertion over the threaded extensions have been shown, the invention is not limited to such lugs, but is extended to all similar means by which a conductor may be adapted for firm connection to a terminal.

It is apparent from the foregoing that there is provided a new and novel battery clamp terminal wherein a conductor may readily be attached and quickly removed thereby preventing or avoiding any need to either remove the existing battery clamp and add fixtures to which conductors may be attached or to attach the conductors at other points in the electrical circuit of the automobile. The device is quite simple and inexpensive in construction, and yet is readily accessible for attachment of conductors thereto.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive and since the scope of the invention is defined by the appended [claim] *claims*, all changes that fall within the metes and bounds of the [claim] *claims* or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by [that claim] *the claims*.

I claim:

1. A battery terminal clamp unit comprising a body means including a resilient clamping portion defining an opening adapted to receive a battery terminal, said clamping portion lying in a plane and having free spaced ends carrying aligned openings at one side of said first named opening, said body at the other side of said opening having walls defining a substantially cylindrical opening lying in said plane, said aligned openings and said cylindrical opening respectively receiving threaded bolts, the threaded bolt in said aligned openings operating to draw said free spaced ends together to clamp said unit to said battery terminal and means cooperating with the threads on said bolt in said cylindrical portion to secure the last named bolt to the unit and further to clamp a battery cable to said unit, each of said bolts having an integral head at one end, each of said bolts having a threaded opening extending axially inwardly from the headed end thereof, and headed clamping screws threaded in each of said last named threaded openings and the head on the bolt and the corresponding head on the screw cooperating to clamp lug ends to said unit.

2. Apparatus as defined in claim 1, wherein the threaded opening in the head of each bolt and the clamping screw received therein are of substantially less diameter than the diameter of the respective bolt whereby the threaded opening may extend completely through the head without weakening the strength in the shaft of the bolt.

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The following references, cited by the Examiner, are of record in the patented file of this patent or the original patent.

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