Jan. 9, 1934. J. L. SANDS 1,943,190

BATTERY TERMINAL CONNECTION

Filed Sept. 8, 1931

Fig. 1.

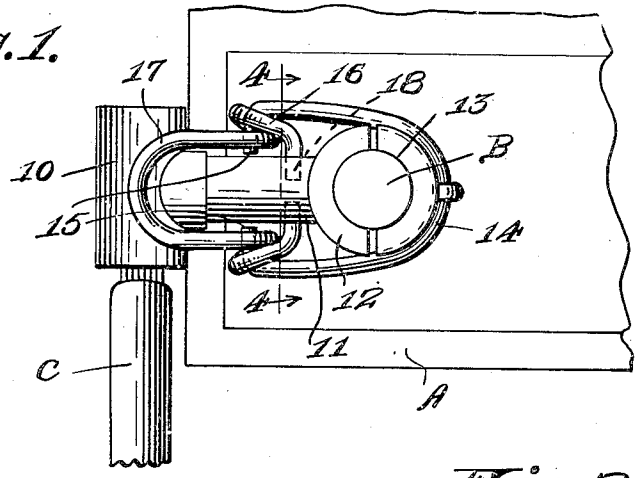


Fig. 2.

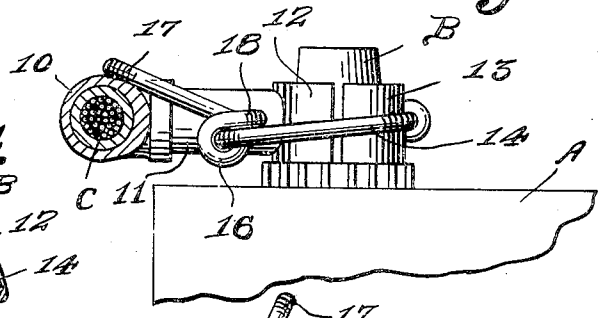
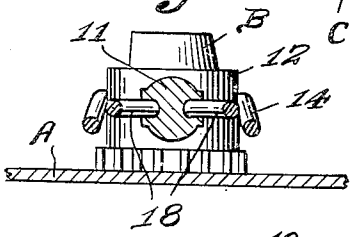


Fig. 4.



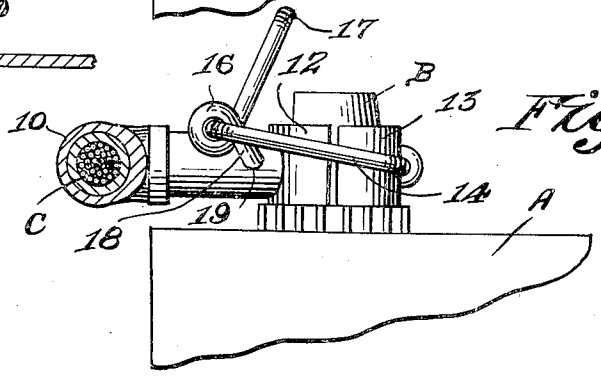


Fig. 3.

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WITNESS:

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BATTERY TERMINAL CONNECTION

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6 Claims. (Cl. 173—259)

The invention relates to means for connecting a conducting cable to the terminal of a storage battery and has for its general object the provision of a novel clamp structure for this purpose which may be moved into and out of operative relation without any necessity for employing any tools, except possibly a screw driver or other lever means, no screws, nuts, bolts or other similar fastenings being required.

It is well known that the ordinary type of terminal connection storage battery corrodes quickly and to such an extent that disconnection of whatever terminal clamp is provided on the conductor becomes a difficult matter. As a matter of fact it frequently happens that the clamp corrodes onto the terminal post so thoroughly that there is to all intents and purposes a union of the parts which defies all ordinary and reasonable effort to effect disconnection, the result being that the clamp frequently has to be chiseled off, this quite naturally resulting in destruction of the clamp itself and mutilation of the post or terminal. Particularly is it true where use is made of bolts and nuts or screw threaded connections for effecting the clamping. It is with these various facts in view that I devised the present invention which has for an important object the provision of a novel storage battery terminal post clamp or connector embodying relatively movable elements one of which is in the nature of a lever and all of which cooperate in a manner very similar to the construction of the clamping means whereby the glass tops of preserving jars are clamped in place, the underlying feature or principle being quite analogous.

Another object of the invention is to provide a terminal clamping device embodying saddle elements embracingly engaging the terminal post of the battery and one of which is equipped with lever operated clamping means for drawing both into close contact with the terminal post to insure a good electrical contact.

An additional object of the invention is to provide a device of this character which will be simple and inexpensive to manufacture, easy to assemble and install, positive in action, efficient and durable in service, and a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and the combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawing, in which

Figure 1 is a plan view showing the invention in applied and clamping position.

Figure 2 is a side elevation thereof with the parts in clamping position.

Figure 3 is a similar view with parts in released position, and

Figure 4 is a section taken on the line 4—4 of Figure 1 and looking in the direction of the arrow.

Referring more particularly to the drawing, the letter A designates a portion of the box or case of a storage battery which is customarily divided into a plurality of cells or compartments within each of which are groups of interleaved positive and negative plates between which are interposed wooden or other separators. Customarily a storage battery has two terminals, only one of which is indicated by the letter B in the present instance. The letter C designates the current take-off cable which in accordance with the present invention is represented as provided at its end with a T-shaped terminal 10 including a shank 11 formed at its end with a semi-cylindrical saddle member 12 shaped to conform substantially to the curvature of the terminal post B.

Cooperating with the saddle member 12 is a substantially semi-cylindrical clamping member 13 which, like the saddle member 12, is preferably formed of some material such as lead which is not so readily corroded by the electrolyte, or the fumes thereof, ordinarily used in storage batteries. In order to effect a positive connection or clamping action between the saddle member 12 and the clamping member 13 in cooperative relation to the post B, I make use of a clamping structure here represented as including a substantially U-shaped member 14 embracingly engaging the semi-cylindrical clamping member 13 and having the ends of its arms directed toward each other to define trunnions 15 engaged within loops 16 formed intermediate the ends of a U-shaped lever 17 which has a bight portion engageable with the T-shaped connection 10 and which has the ends of its arms indicated at 18, pivotally engaged within holes, recesses or sockets 19 in diametrically opposite points in the shank 11.

In the use of the device, it will of course be understood that the released or ineffective or inoperative position is as illustrated in Figure 3. At such a time the U-shaped lever 17 is disposed in a position adjacent the post B, the bight portion of the U-shaped member 14 being spaced away from the clamping member 13 and the clamping relation of the member 13 and saddle

member 12 to the post B being avoided. When it is desired to connect the cable to the post B it is necessary to dispose the curved saddle member 12 against the post, place the clamping member 13 against the opposite side of the post, engage the U-shaped clamping member 14 in embracing relation to the clamping member 13, and then press upon the U-shaped lever 17 so as to move the same away from the post and toward the T-shaped connection 10 as clearly illustrated in Figures 1 and 2. When this is done it is quite clear that owing to the eccentricity of the loops 16 with respect to the trunnions 18 the movement of the lever 17 with respect to the clamping member 14 will cause the latter to engage firmly against the semi-cylindrical clamping member 13 and force it and consequently the saddle member 12 into close engagement with the post B so that there will be a good physical or mechanical as well as an electrical connection therebetween. Release is effected simply by swinging the U-shaped lever 17 away from the connection 10 and toward the battery terminal post into the position shown in Figure 3. Attention is directed to the fact that all of this requires no tools whatsoever though it might as a matter of convenience be easily possible to use a screw driver or the equivalent as a lever for moving the clamping lever 17 toward the post for effecting release. It is not believed that it will be necessary to use anything of the sort for effecting the clamping action as it will be necessary only for the operator to engage say the palm of his hand upon the lever 17 and press it down firmly toward the T-shaped connection 10 to bring about the desired clamping action. It should of course be apparent that even though there should be considerable corrosion tending to cause adhesion of the saddle member 12 and clamping member 13 to the post B the release of the clamping means will enable the operator to effect separation of these parts without any particular degree of difficulty.

From the foregoing description and a study of the drawing it is believed that the construction, operation and advantages should be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that I reserve the right to make all such changes in the details of construction as well as in the arrangement and combination of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

Having thus described the invention, I claim.

1. Means for clamping a conductor to the terminal post of a storage battery, comprising a connector mounted upon the end of the conductor and terminating in a curved saddle member disposable against one side of the battery terminal post, a complementary clamping member disposed against the opposite side of the post, a lever pivoted upon said connector, and a yoke embracing and permanently pivotally connected with said complementary clamping member and pivotally engaged with said lever intermediate the ends thereof, said lever having a portion engageable with the connector for maintaining a non-alined relation between the pivots.

2. Means for connecting a current take-off cable to the terminal post of a storage battery, comprising a connector mounted upon the end of the take-off cable, said connector including a shank terminating in a saddle member substantially conformingly engageable against one side of the terminal post, a complementary clamping member disposable against the other side of the post, a U-shaped member having its bight portion engageable with said clamping member and having its arms terminating in projections extending toward each other, a clamping lever of U-form having its ends directed toward each other and formed as trunnions pivotally connected with the shank of said connector and having the intermediate portions of its arms coiled to define loops pivotally engaged with the projections on the first named U-shaped member.

3. Means for connecting a current take-off cable to the terminal post of a storage battery, comprising a connector mounted upon the end of the take-off cable, said connector including a shank terminating in a saddle member substantially conformingly engageable against one side of the terminal post, a complementary clamping member disposable against the other side of the post, a U-shaped member having its bight portion engageable with said clamping member and having its arms terminating in projections extending toward each other, a clamping lever of U-form having its ends directed toward each other and formed as trunnions pivotally connected with the shank of said connector and having the intermediate portions of its arms coiled to define loops pivotally engaged with the projections on the first named U-shaped member, the pivotal connections of the clamping lever with the U-shaped member going past center when said clamping lever is moved away from the post and toward the connector.

4. Means for connecting a current take-off cable to the terminal post of a storage battery, comprising a connection mounted upon the end of the cable and including a shank terminating in a saddle portion engageable against one side of the battery terminal post, a coacting substantially complementary clamping member disposed against the post, and eccentrically pivotally connected U-shaped yoke and lever members, the yoke being permanently pivotally connected with the clamping member and the lever being pivoted upon the shank, the lever and yoke being movable relatively to effect clamping action of the saddle and the clamping member with respect to the terminal post, the bight portion of the lever engaging the connector as a stop for maintaining the pivotal connection between the yoke and lever past center with respect to the pivotal connection of the lever with the shank and the point of engagement of the yoke with the complementary clamping member.

5. Means for connecting a current take-off cable to the terminal post of a storage battery, comprising a connector mounted upon the end of the take-off cable, said connector including a shank terminating in a saddle member engageable against one side of the terminal post, a clamping member disposable against the other side of the post, a U-shaped lever pivotally mounted upon said shank in straddling relation thereto and having the intermediate portions of its arms coiled, and a yoke connected with said clamping member and having the ends of its arms formed with inwardly directed trunnions engaged within said coils, the pivotal connection of the yoke with the lever being off-center with respect to the pivotal mounting of the latter when the lever is in position for maintaining the clamping member in clamping relation to the post.

6. Means for connecting a current take-off cable to the terminal post of a storage battery, comprising a connector mounted upon the end of the take-off cable, said connector including a shank terminating in a saddle member engageable against one side of the terminal post, a clamping member disposable against the other side of the post, a U-shaped member having its bight portion engageable with said clamping member, a clamping lever of U-form having the ends of its arms formed with inwardly directed trunnions pivotally engaged within recesses in the opposite sides of the shank of said connector, said U-shaped member having the free ends of its arms pivotally connected with the arms of said U-shaped lever.

JESSE L. SANDS.