Aug. 1, 1939. C. C. TOIBERG ET AL 2,168,250

NONCORROSIVE ELECTRICAL CONNECTOR

Filed May 4, 1938

Fig. 1.

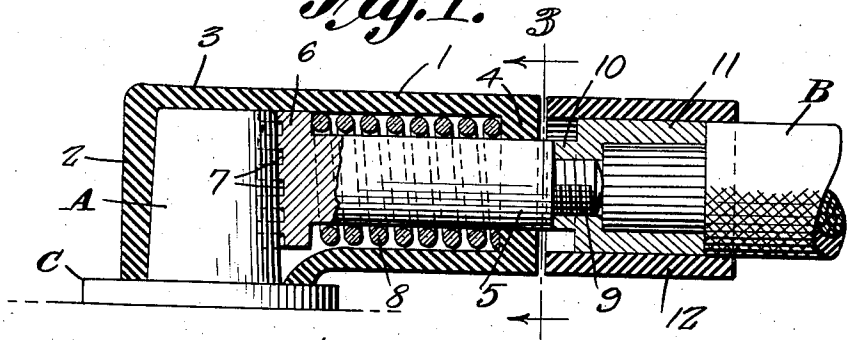


Fig. 2.

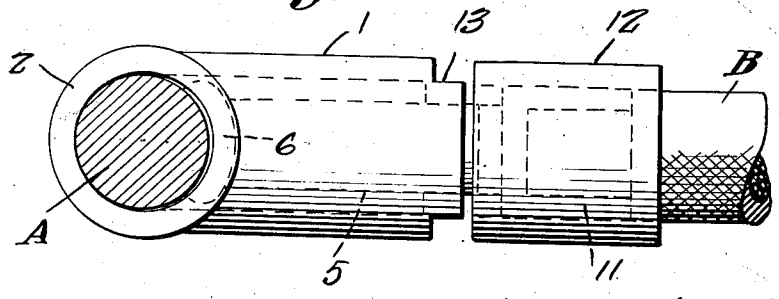
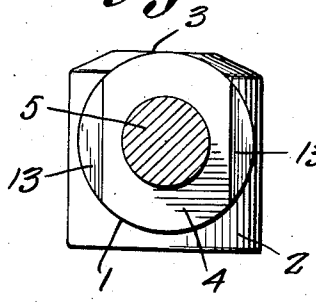


Fig. 3.



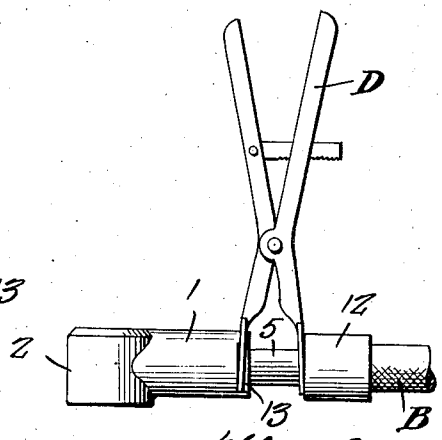


Fig. 4.

Carl C. Toiberg,
Benjamin A. Koerner,
INVENTORS

BY Victor J. Evans & Co.
ATTORNEYS

WITNESS

Patented Aug. 1, 1939 2,168,250

UNITED STATES PATENT OFFICE

2,168,250

NONCORROSIVE ELECTRICAL CONNECTOR

Carl C. Toiberg and Benjamin A. Koerner, Glendale, Calif., assignors of one-fifth to Rose A. Toiberg, one-fifth to Loraine I. Koerner, and one-fifth to Jerrell Babb

Application May 4, 1938, Serial No. 206,045

2 Claims. (Cl. 173—259)

This invention relates to electrical connectors, and its general object is to provide a connector for any electrical purpose, but is primarily designed for storage battery cable terminals, in that it prevents corrosion and can be easily and expeditiously applied and removed with respect to the battery post, yet casual removal or displacement is practically impossible.

An important object is to provide an electrical connector in the form of a spring clamp that sets up a gripping association with the post and includes means made from insulating or non-conducting material, for housing the post and metallic parts of the connector to protect the same from dirt and other foreign matter, as well as to exclude moisture and especially air therefrom, so as to eliminate the formation of deposits and corrosion of the parts, with the result the post and metallic parts are retained in a clean condition at all times to not only assure proper operation of the parts, and a free flow of current therethrough, but also prevents deterioration thereof.

A further object is to provide an electrical connector or terminal clamp that is simple in construction, inexpensive to manufacture and extremely efficient in operation, use and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a sectional view taken through the connector with parts in elevation and illustrates the same applied to a post of a battery.

Figure 2 is a bottom plan view of the connector with the post in section.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a view illustrating the manner by which the connector can be applied and removed with respect to the post, by the use of a tool, which is shown as being a valve lifting tool.

While we have illustrated our connector for use with cable terminals for storage batteries, we want it understood that it can be used for any suitable electrical purpose, and referring to the drawing in detail, the letter A indicates a battery post and B a cable of the usual construction.

The connector or cable terminal clamp which forms the subject matter of the present invention includes a hollow elongated body 1 preferably made from insulating material and provides a housing having an enlarged portion 2 in the form of a cap or hood shaped to snugly fit the major portion of the post A and to completely enclose the same, in that the cap portion is rounded and slightly tapered toward the flat closed top 3 and has an opening in the bottom to receive the post therein, as clearly shown in Figure 1.

The remaining portion of the body is of cylindrical formation and extends horizontally from the cap portion, with the lower portion thereof elevated above the lower end of the cap portion, so as to provide ample space between the cylindrical portion and the battery, as shown in Figure 1. The outer end of the cylindrical portion is open, but is restricted by an annular flange 4 providing an interior shoulder.

Mounted in the cylindrical portion for slidable movement through the flange 4 is the shank 5 of a plunger clamp that includes a head 6, formed on the shank to provide a shoulder at the juncture of the head therewith, as best shown in Figure 1. The head is shown as being of arcuate formation but in any event has an arcuate outer face curved to follow the curvature of the post A, and the face is preferably grooved as at 7, so as to not only set up a binding engagement with the post, but also a gripping association therewith.

Surrounding the shank and having its end convolutions engaging the shoulders provided by the head 6 and the flange 4, is a coil spring 8, for urging the head in binding and gripping association with the post, as best shown in Figure 1. While we have illustrated a coil spring for that purpose, it will be obvious that other resilient or spring means may be employed.

The extending end of the shank 5 is reduced and threaded to provide a stud 9 which has threaded thereon the nipple 10 of a coupling collar 11 of the cable B which is soldered or otherwise secured in the collar, as best shown in Figure 1.

Surrounding the coupling collar is a sleeve 12 that is likewise formed from insulating material, for cooperation with the housing for enclosing and protecting the metallic parts of our connector, and the post A, from foreign matter, and particularly to exclude moisture and air there-

from, to prevent corrosion thereof, brought about by oxidation or other causes. The exclusion of air is especially true with respect to the post A, in that the lower end of the cap portion snugly fits the post support and reinforcing member C thereof, as shown in Figure 1.

The outer end of the cylindrical portion is laterally recessed as at 13 upon opposite sides, to provide shoulders, to facilitate the application of a tool D to the connector, for moving the plunger clamp against the action of the spring 8 in applying and removing the connector with respect to the post. The tool as shown in Figure 4 is a valve lifting tool of the usual construction, and includes bifurcated jaws for disposal between the housing in the coupling collar for the purpose set forth and clearly shown in Figure 4. However, the plunger clamp can be moved to its inoperative position without the use of a tool, but it will be obvious that the tool materially facilitates that operation, in that the spring exerts sufficient pressure against the head, to prevent any possibility of casual removal or displacement of the connector with respect to the post.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What we claim is:

1. A non-corrosive electrical connector for a storage battery cable, comprising a one piece housing of insulating material including a closure cap portion having an open lower end, a cylindrical portion formed on the cap portion for disposal laterally thereof and having an open outer end, said cap portion shaped for loosely fittingly receiving a post of a battery therein and being of a length for the lower end thereof to engage the top of the battery for the housing to completely enclose the post to exclude foreign matter therefrom, a flange restricting the open outer end of the cylindrical portion and providing a shoulder, a plunger clamp in the housing and including a shank mounted for slidable movement in the cylindrical portion and through the open end thereof, a head formed on the shank and having a grooved arcuate outer face for cooperation with the cap portion to set up a clamping engagement with the post, said head providing a shoulder at its juncture with the shank, a coil spring surrounding the shank and engaged with the flange and shoulder for urging the head against the post, a cable coupling member detachably secured to the shank, and insulating means surrounding and enclosing the extending end of the shank and the coupling member.

2. An electrical connector for a battery cable, comprising a housing of insulating material and including a tapered closure cap portion for loosely fittingly receiving and completely enclosing a battery post, a cylindrical portion formed on and laterally extending from the cap portion and having an open outer end, spring pressed clamping means slidably mounted in the housing and including a shank extending through the open end, a head on the shank and having an arcuate outer face curved to fit the post for cooperation with the cap portion to set up a clamping engagement therewith, cable connecting means including a collar for securely receiving a cable therein, a nipple formed on said collar and threaded to the shank, a sleeve of insulating material surrounding the extending end of the shank and the cable connecting means for enclosing the same, and said cylindrical portion having its outer end recessed upon diametrically opposite sides to facilitate the application of a tool between the cylindrical portion and the cable connecting means for releasing the clamping means from the post.

CARL C. TOIBERG.
BENJAMIN A. KOERNER.