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C. CAMILLERI

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ELECTRODE HOLDER

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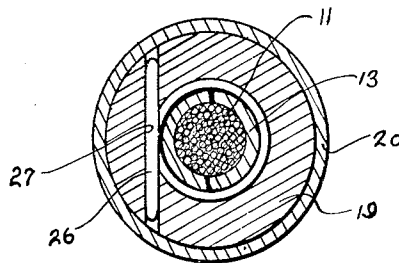
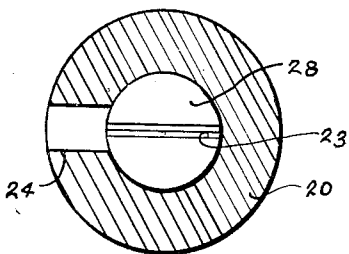
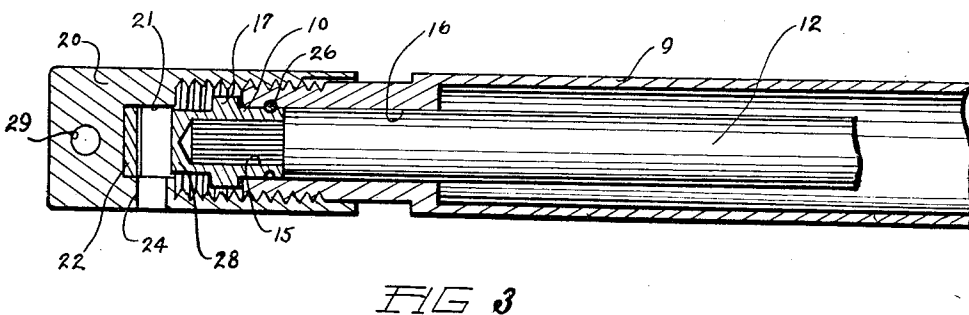
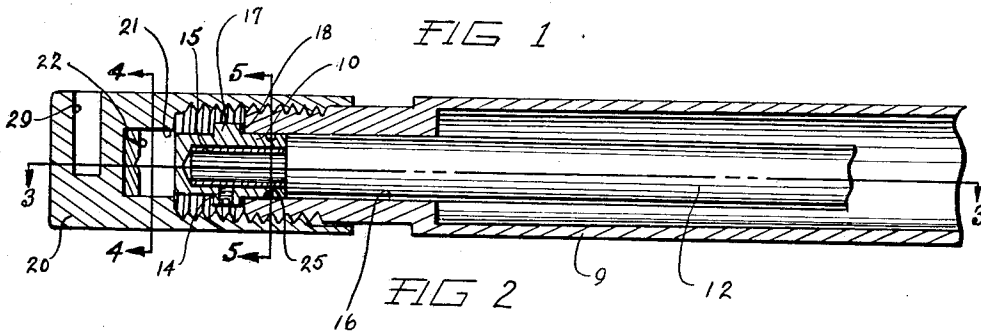
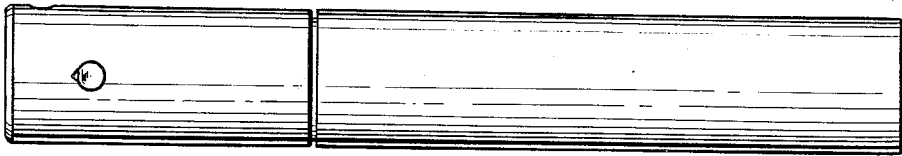


FIG 4

FIG 5

INVENTOR.  
CHARLES CAMILLERI

BY *Thomas J. Donnelly*  
HIS ATTORNEY

# UNITED STATES PATENT OFFICE

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## ELECTRODE HOLDER

Charles Camilleri, Detroit, Mich., assignor to  
Bordon Mfg. Co., Inc., Detroit, Mich., a corpo-  
ration of Michigan

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5 Claims. (Cl. 219—3)

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My invention relates to a new and useful improvement in an electrode holder adapted for use in arc welding operations. The electrode holder is of the screw operated type in which a pair of parts are adapted for movement relatively to each other axially to effect a clamping of the electrode against a pair of opposed faces. In such type of holders, there is usually employed a handle in which is mounted a metallic part to which the electric cable is connected, this metallic part being usually termed a "cable connector." Associated with this handle is a cap or head which telescopes thereon or therein and which carries an opposed face for engaging the electrode. In a commonly constructed type of screw operated holder, a rod is projected forwardly from the cable connector and serves, upon axial movement of the handle and the head, for effecting a clamping of the electrode between the electrode engaging face of the head or cap and the end of the rod. In this type of construction, therefore, the cable terminates at a distance from the electrode equal to the length of the rod and the thickness of the base of the cable connector, which is formed cup shaped. An object of the present invention is to provide an electrode holder of this class so constructed that the base of the cup-shaped cable connector bears directly against the electrode so that the distance between the end of the cable and the electrode will be the thickness of the base.

Another difficulty encountered in these types of holders is that when the handle and the head are rotated relatively to each other, the cable which is attached to the cable connector also has to be rotated so as to twist the cable and place tension in it. It is an object of the present invention to provide an electrode holder in which the twisting of the cable is avoided when the rod is being clamped in position.

Another object of the invention is the provision of an electrode holder having the cable connector swivelly or rotatably mounted in the handle so that when there is relative rotation between the handle and the head or cap, the cable connector itself will remain stationary. This will prevent any twisting or kinking of the cable and will also prevent undue wear on the end face of the cable connector which would be encountered were the cable connector to be rotated while in engagement with the electrode and moving in clamping relation thereto.

Another object of the invention is the provision of an electrode holder which may be easily and quickly assembled and disassembled so that re-

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moval and replacement of parts may be easily accomplished.

Another object of the invention is the provision in an electrode holder of a handle and an insulating cap telescoping therewith, each of these parts having interengaging threads for axially moving the same relative to each other upon relative rotation.

Another object of the invention is the provision of an electrode holder so constructed and arranged that the cap, axially movable on the handle, will form a guide for the clamping end of the cable connector as the same moves into clamping relation with the electrode.

Another object of the invention is the provision of an electrode holder in which the heating of the handle will be reduced to a minimum.

Other objects will appear hereinafter.

It is recognized that various changes and modifications may be made in the detail of structure illustrated without departing from the invention itself and it is intended that such variations and modifications shall be encompassed within the scope of the claims which form a part hereof.

Forming a part of this specification are drawings in which,

Fig. 1 is a side elevational view of the invention;

Fig. 2 is a longitudinal, vertical, central, sectional view of Fig. 1 with a part broken away;

Fig. 3 is a view taken on line 3—3 of Fig. 2;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2, slightly enlarged;

Fig. 5 is a sectional view taken on line 5—5 of Fig. 2, slightly enlarged.

In the drawings, I have illustrated a tubular handle 9 formed from suitable insulating material such as fiber, a phenolic composition or the like. I provide a metallic cable connector 10 which is formed cup-shaped and in which the bared end 11 of the cable 12 is inserted and held in position by the presser plate 13 against which the set screw 14 is threaded. It is obvious that, if desired, the bared end of the cable may be soldered in the socket 15 of the cable connector and the mechanical connection embodying the presser plate 13 and the screw 14 dispensed with. This cable connector 10 is of a size to fit snugly in the bore 16 of the handle 9 at the forward end thereof. A peripheral flange 17 is formed on the cable connector which is of larger diameter than the bore 16 and which serves to bear against the metallic washer 18 which embraces the cable connector. A portion 19 of the handle is threaded to thread into the open end of the cup-shaped

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cable or head 20. This cup-shaped member is reduced in diameter at its base to provide the bore or recess 21 which is of such an inside diameter as to snugly receive the end of the cable connector 10. Mounted on the base of the bore or recess 21 is a metallic wear plate 22 having the diametrical groove 23 formed therein in alignment with the opening 24 formed in the cap or head 20.

The cable connector is provided with a peripheral groove 25 in which engages a pin 26 inserted in the passage 27 formed in the threaded end 19 of the handle. This pin 26 serves to secure the cable connector in the position shown in Figs. 2 and 3, and at the same time permits this cable connector to rotate relatively to the handle 9. Consequently, as the handle 9 is rotated relatively to the cap or head 20, the cable 12 is permitted to remain stationary so that a twisting or kinking of the cable is avoided, with a consequent elimination of a back lash which would result from such kinking or twisting.

The head 20 is made from suitable insulating material, such as asbestos composition or the like, capable of insulating both as to heat and electricity. In use, an electrode would be inserted in the opening 24 so as to lie in engagement with the face of the wear plate 22, this face being tangent to the interior of the opening 24. Upon a relative rotation of the parts 9 and 20 in one direction, these parts would telescope and the cable connector would move at its base end into the reduced bore 21 which would serve as a guide for the cable connector. As this movement continues a sufficient amount, the end face of the cable connector, which would be the outer face of the base, would engage the electrode. As the movement continues, this electrode would be clamped between the wear plate 22 and the base of the cable connector, the cable connector remaining stationary after engagement with the electrode, while the relative rotation of the parts 9 and 20 continues to effect the necessary clamping action. By having the cable connector remain stationary, the face of the same is not subjected to the wear which it would be were it to rotate into clamping engagement with the electrode. The presence of the metal washer 13 would prevent a binding of the cable connector against the end of the threaded portion 19 of the handle. It will be noted that when the parts have been moved into relative position for clamping an electrode in position for use, the cable may terminate a distance from the electrode equal to the thickness of the base 28 of the cable connector. By bringing the cable as close as possible to the electrode, a heating of the electrode holder by electrical resistance is considerably reduced and in some cases entirely avoided. It is preferred that the cable connector be made of metal of high conductivity, such as copper or a copper alloy of high copper content in order to provide a material of high conductivity. In view of the fact that the end face of the cable connector is not subjected to excessive wear because of the rotatable or swivel mounting of this cable connector in the handle, it becomes practicable to form the cable connector out of soft material such as pure copper. It is preferred, however, to form this cable connector out of a copper alloy in order that a higher degree of hardness may be obtained.

The wear plate 22 may be secured in the bottom of the bore 21 in any desired manner, such as by screws or other fastening means, or it may

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be secured merely by forming it of such size that it can be secured in the bore 21 as a press fit.

Formed in the head 20 is an auxiliary opening 29. When the operator has used an electrode and desires to change electrodes, he may, by inserting the end of the new electrode in the passage 29 and gripping the handle 9 in one hand, effect a relative rotation of the cap or head 20 and the handle 9 to release the used electrode from clamped position. The operator may then, by inserting the butt end of the new electrode in the opening or passage 24, effect a relative rotation of the cap or head 20 and the handle 9 to bring about the desired clamping action.

It is believed obvious that the electrode holder constructed in this manner is possessed of a minimum number of metal parts and that these parts have been reduced to a minimum size so that an electrode holder of considerable lightness is provided. In view of the fact that all metal parts in which the heat of electrical resistance may reside are positioned well forwardly of the portion of the handle which may ordinarily be gripped by the operator, the portion of the handle gripped by the operator will remain comfortably cool so that the objectionable feature of the hot handle is thus eliminated.

It is believed obvious that in assembling or disassembling the holder, a simple operation is required. The cap 29 may be removed from the threaded end 19 of the handle. To remove the cable connector from the handle, it would be but necessary to remove the pin 26 and this may be easily accomplished when the cap or head 20 is removed.

In this manner, I have provided a cable connector possessing many desirable features which will appear obvious to those skilled in the art and some of which have been referred to herein, while, at the same time, an electrode holder of lightness and coolness is provided and also one which may be economically manufactured.

What I claim as new is:

1. A device of the class described comprising: a tubular handle of insulating material; a metallic cable connector projected at one end into one end of said handle and extending outwardly at its opposite end from said handle; an electric cable secured at one end to said cable connector and terminating at its end adjacent the end of said cable connector; means for rotatably mounting said cable connector on said handle in fixed axial relation thereto; and a head threaded onto said end of said handle and movable axially thereof upon relative rotation thereto, said head having a bore for reception of the outer end of said cable connector and provided with a lateral opening extending into said bore for insertion of an electrode thereinto across the face of the outer end of said cable connector, a relative rotation of said head and said handle effecting a clamping of said electrode against the end face of said cable connector, said connector being freely rotatable relatively to said head.

2. An electrode holder of the class described comprising: a tubular handle of insulating material; a metallic cup-shaped cable connector; a peripheral projection on said cable connector, one end of said cable connector being inserted into one of said handle, said projection providing an abutment for limiting the amount of insertion of said cable connector into said handle; means for swivelly mounting said cable connector inserted at one end into said handle; a wear plate be-

tween the end face of said handle and said peripheral projection, a portion of said end of said handle being peripherally threaded; and a cup-shaped head threadable onto the threaded portion of said handle and provided adjacent its base with a lateral opening for reception of the butt end of an electrode, the relative rotation of said head and said handle in one direction a predetermined degree effecting a clamping of the outer end of said cable connector against said electrode for securing the same in fixed relation to said head.

3. An electrode holder of the class described comprising: a tubular handle of insulating material having a portion of one end peripherally threaded; a cup-shaped metallic cable connector adapted for the reception of one end of an electric conductor; a peripheral projection on said cable connector, said cable connector being insertable at its open end into the threaded end of said handle, said peripheral projection limiting the distance of insertion of said cable connector into said handle; a loose wear plate surrounding said cable connector and engaging between the end face of said handle and the face of said peripheral projection; means for securing said end of said cable connector inserted into said handle and rotatably relative thereto; a cup-shaped head having a portion of its periphery internally threaded and threaded upon the threaded end of said handle and provided with a lateral opening, opening into the interior thereof for insertion of the butt of an electrode therein, said opening being adjacent the base of said cup-shaped head; a wear plate mounted in said cup-shaped head, with one face substantially tangent to said opening, a relative rotation of said head and said handle in one direction a predetermined degree effecting a clamping of said electrode between the end face of said cable connector and the opposed face of said wear plate.

4. An electrode holder of the class described, comprising: a tubular handle of insulating material; a metallic cable connector adapted for attachment to an electric cable; an outward projection on said cable connector, one end of said cable connector being inserted into one end of

said handle, said projection providing an abutment for limiting the amount of insertion of said cable connector into said handle; means for swivelly mounting said cable connector inserted at one end into said handle a portion of said handle being threaded; and a cup shaped head threadable onto the threaded portion of said handle and provided adjacent its base with a lateral opening for reception of the butt end of an electrode, the relative rotation of said head and said handle in one direction a predetermined degree effecting a clamping of the outer end of said cable connector against said electrode for securing the same in fixed relation to said head.

5. An electrode holder of the class described, comprising: a tubular handle of insulating material; a metallic cup shaped cable connector; a peripheral projection on said cable connector, one end of said cable connector being inserted into one end of said handle, said projection providing an abutment for limiting the amount of insertion of said cable connector into said handle; means for rotatably mounting said cable connector inserted at one end into said handle, a portion of said end of said handle being threaded; and a cup shaped head threadable onto the threaded portion of said handle and provided, adjacent its face, with a lateral opening for reception of the butt end of an electrode, the relative rotation of said head and said handle, in one direction, a predetermined degree, effecting a clamping of the outer end of said cable connector against said electrode for securing the same in fixed relation to said head.

CHARLES CAMILLERI.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

| Number    | Name               | Date          |
|-----------|--------------------|---------------|
| 294,851   | Childs et al. .... | Mar. 11, 1884 |
| 2,118,274 | Sweda .....        | May 24, 1938  |
| 2,176,137 | Jurkat .....       | Oct. 17, 1939 |
| 2,233,618 | Leach .....        | Mar. 4, 1941  |
| 2,330,931 | Stafford .....     | Oct. 5, 1943  |
| 2,351,789 | Thompson .....     | June 20, 1944 |