Dec. 15, 1925. 1,565,405

A. R. ALLARD

ELECTRODE HOLDER

Filed Nov. 5, 1920

Fig. 1

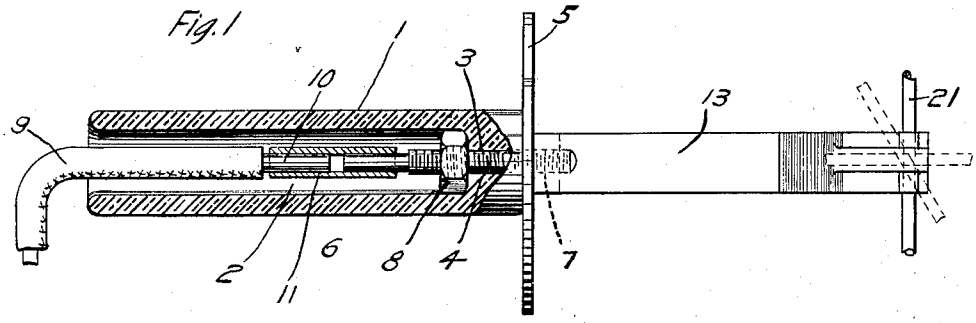


Fig. 2

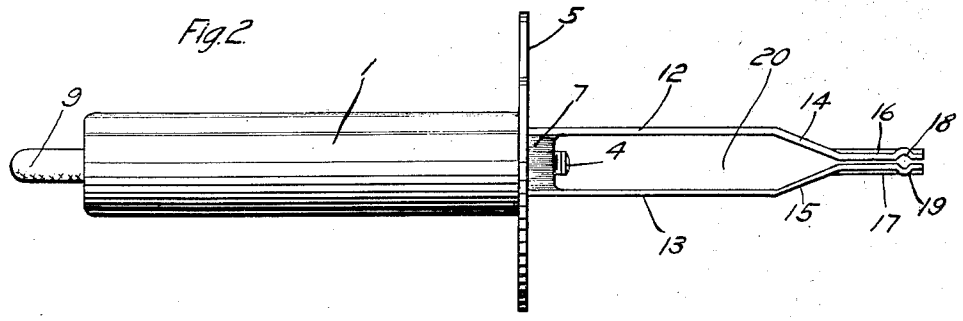
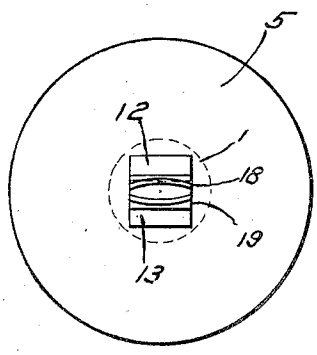


Fig. 3



WITNESSES:

H. E. Blowes.

H. C. Biermann

INVENTOR

Arthur R. Allard

BY

Wesley G. Carr

ATTORNEY

Patented Dec. 15, 1925. 1,565,405

UNITED STATES PATENT OFFICE.

ARTHUR R. ALLARD, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRODE HOLDER.

Application filed November 5, 1920. Serial No. 421,925.

To all whom it may concern:

Be it known that I, ARTHUR R. ALLARD, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electrode Holders, of which the following is a specification.

This invention relates to electrode holders particularly adapted for use in holding metal or other electrodes, such as are used in arc welding.

Various types of electrodes holders for this purpose have been suggested, heretofore, some of which have been used rather extensively. These holders are subject to numerous disadvantages, among which are the large size and relatively great weight of the holder and its operating mechanism. Difficulty has also been experienced in devising an electrode holder of simple construction and adapted for easy manipulation.

The present invention is designed to obviate the defects of prior electrode holders, it being among the objects thereof to provide an electrode holder which shall be simple in construction and easy to manipulate, and the handle of which shall not become unduly heated during use.

In practising my invention, I form a hollow handle of non-conducting material having a guard at the forward end thereof, as usual. The current-conducting member extends through the hollow handle but is spaced from the interior surface thereof, the rear end of the handle being open. Such a construction provides an insulating, dead air space between the current-conducting member and the handle itself, which causes the heat to be radiated through the copper cable and electrode-gripping springs, instead of by way of the grip member.

I further provide a simple and effective device for clamping or holding the welding electrode or pencil. This device generally consists of a plurality of springs welded or otherwise secured to a threaded member or nut which is secured to the projecting end of the current-conducting member. This construction allows a new electrode-clamping member to be substituted for one which has become burnt or otherwise damaged, in a very simple manner. It is merely necessary to remove the nut carrying the spring clamping members and replace the same with a similar device.

Referring to the accompanying drawings forming a part hereof and which illustrate one embodiment of my invention, Fig. 1 is a side elevational view of an electrode holder constructed in accordance with my invention, showing an electrode held thereby, some of the parts being in section;

Fig. 2 is a top plan view of the electrode holder shown in Fig 1, and

Fig. 3 is an end view of the same.

The handle 1 of the electrode holder of non-conducting material, such as wood or fibrous material compacted and held together by a hardened binder, is made hollow to provide a relatively large cylindrical chamber 2 the outer end of which is open. The inner end of the handle is provided with a hole 3 to receive a screw threaded rod 4 of conducting material, preferably copper, the rear end 6 of which extends into the chamber 2. A shield or guard 5 of suitable non-conducting material is secured to, or formed integrally with, handle 1.

Nuts 7 and 8 are respectively screwed upon the outer and inner ends of the rod 4, thus securely fixing the same in relation to the handle.

A cable 9 extends into the chamber 3 through its open rear end, the inner end 10 thereof being in proximity to the end 6 of member 4. A sleeve 11 encloses the ends 6 and 10 and may be clamped, soldered or welded thereto.

Flat springs 12 and 13 are secured to opposite sides of nut 7, generally by welding or riveting. The forward portions 14 and 15, respectively, of springs 12 and 13 converge so that the extreme outer arcuate ends 16 and 17 thereof lie close to each other in parallel relation. Lateral grooves 18 and 19 are formed in said ends.

In order to assemble an electrode holder of this type, it is merely necessary to form the various elements thereof, secure the conducting member 4 and the cable 9 together by any suitable means, and then insert conducting member 4 into the hole 3, the nut 8 being already in place. Nut 7, to which springs 12 and 13 are secured, is then screwed upon the outer end of conducting member 4 and the electrode holder is ready for use.

To clamp an electrode 21 in this device, it

is inserted into opening 20 between springs 12 and 13 and pulled forward past converging portions 14 and 15 and into grooves 18 and 19, where it is held.

When an electrode has become almost entirely consumed, it is not necessary to first remove the same before inserting a second electrode, but the insertion of a new electrode into space 20 and moving the same forward will cause a separation of ends 16 and 17 of the springs to allow the burnt-out electrode to drop. The new electrode may then be slipped in its place.

This structure has many advantages over prior electrode holders, it being light in weight, well balanced, easy to repair, has a small number of parts, has no moving parts, and none of the elements thereof are complicated.

The spring construction of my electrode holder offers an added advantage in that the electrode may be easily inserted from between the springs, and also in that the stub or end of the electrode previously used is released from the holder as the new electrode is inserted. This spring structure offers a further advantage in that the large surface area thereof and the considerable space separating the members assist in the dissipation of heat radiated from the electrode or produced by the resistance of the spring material to the current flowing through it.

The springs, being welded to a nut which is removable from the main portion of the electrode, provide a cheap and substantial structure. The contour of the springs, being arcuate, aids in firmly gripping the electrode, since the springs touch the electrode only at a few points along the upper and lower edges of the springs.

The hollow handle affords a means for keeping the temperature of the portion which is held in the hand, below the point where it may cause discomfort. This is due, probably, to the air space which acts as insulation against the radiation of heat from the conducting member to the handle, the heat being dissipated in other ways, as by being conducted through the copper conducting member, the cable, and the springs, instead of through the handle itself.

Although I have shown and described a specific embodiment of my invention, it is obvious that details of construction may be varied within the scope of my invention. For instance, the conducting member, instead of being held in the handle by nuts, may be secured therein by any other suitable means, as by screwing into a threaded opening in said handle. The cable may be secured to the conducting member by any suitable means other than a sleeve 11.

Although grooves 18 and 19 are so constructed as to allow an electrode to be held in a direction perpendicular to the axis of the electrode holder, it is apparent that, as shown in Fig. 1, grooves may be formed at other angles to allow working with my electrode in various positions. These and other changes in construction will be obvious to those skilled in the art from the principles laid down in this specification.

I claim as my invention:

1. An electrode-holder comprising a tubular insulating handle closed at one end, said closed end being provided with a hole smaller in diameter than the internal diameter of said tubular portion, whereby an abutment is provided surrounding said hole, an electric cable, a threaded conducting member having one end secured to the end of said cable and having its other end projecting through said hole, a shoulder being provided intermediate the ends of said threaded member for abutment against the closed end of said tubular member, a nut on the projecting end of said threaded member, and an electrode-holding attachment carried by said nut.

2. An electrode-holder comprising a tubular insulating handle closed at one end, said closed end being provided with a hole smaller in diameter than the internal diameter of said tubular portion, whereby an abutment is provided surrounding said hole, an electric cable, a threaded conducting member having one end secured to the end of said cable and having its other end projecting through said hole, a shoulder being provided intermediate the ends of said threaded member for abutment against the closed end of said tubular member, a nut on the projecting end of said threaded member, and an electrode-holding attachment carried by said nut, said attachment comprising a pair of springs relatively widely separated at their rear ends and converging toward closely disposed front portions having transversely extending electrode-retaining grooves near the front ends of the closely disposed portions, whereby the act of inserting a new electrode by pressing the same forwardly against the converging portions releases the old electrode and permits it to drop out.

In testimony whereof, I have hereunto subscribed my name this 28th day of October 1920.

ARTHUR R. ALLARD.