Sept. 1, 1925. 1,551,729

E. P. BURNS

ELECTRODE HOLDER

Filed Feb. 5, 1924

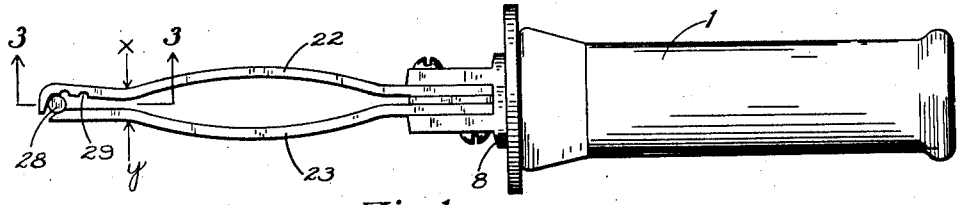


Fig. 1.

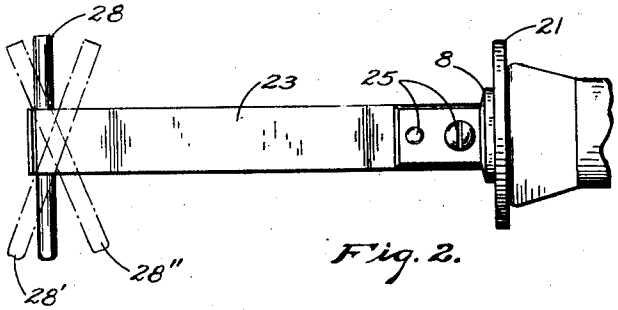


Fig. 2.

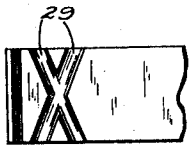


Fig. 3.

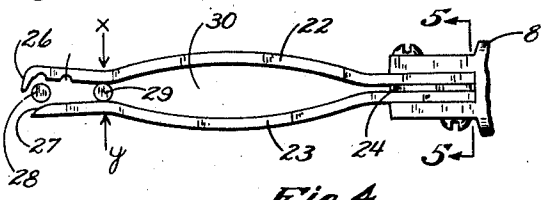


Fig. 4.

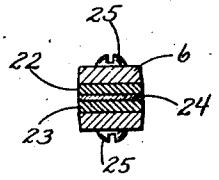


Fig. 5.

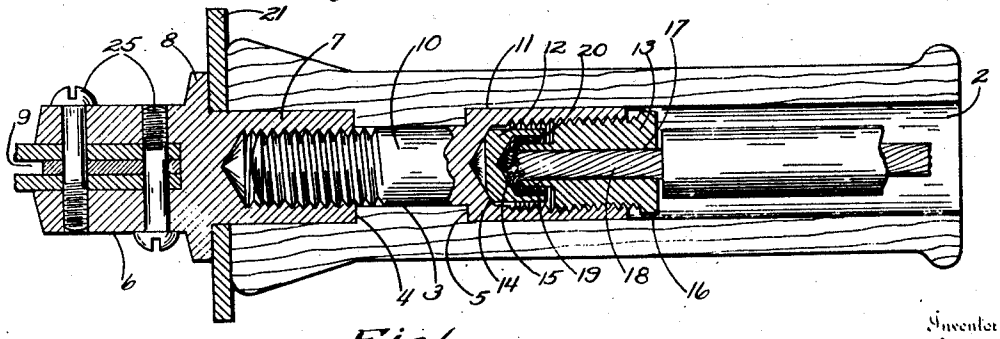


Fig. 6.

Inventor

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Patented Sept. 1, 1925.

1,551,729

UNITED STATES PATENT OFFICE.

EUGENE P. BURNS, OF HUNTINGTON, WEST VIRGINIA, ASSIGNOR TO THE OHIO BRASS COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF NEW JERSEY.

ELECTRODE HOLDER.

Application filed February 5, 1924. Serial No. 690,802.

To all whom it may concern:

Be it known that I, EUGENE P. BURNS, a citizen of the United States of America, residing at Huntington, in the county of Cabell and State of West Virginia, have invented certain new and useful Improvements in an Electrode Holder, of which the following is a specification.

My invention relates to electrode holders used in the electric arc weld process.

My invention has for its object a simple, light inexpensive device by means of which the electrode may be held and easily and quickly renewed and to which a cable for conducting electric current thereto can be easily and quickly secured and easily renewed.

My invention resides in the new and novel construction, combination and relation of the various parts hereinafter fully described and disclosed in the accompanying drawings.

In the drawings accompanying this specification:

Fig. 1 is a top plan view of my invention.

Fig. 2 is a side plan view of the electrode-holding-half of my invention.

Fig. 3 is an inside view of one of the spring parts.

Fig. 4 is a view showing the relation of the parts at the moment of renewing the electrode.

Fig. 5 is a sectional view on the line 5—5 of Fig. 4.

Fig. 6 is a sectional view of the handle portion of my invention showing the construction of the parts by means of which the conductor cable is secured to the holder.

In the preferred form of my invention I employ a handle member 1 which may be of wood, fiber, rubber or other suitable insulating material. The handle is provided with a longitudinal recess 2 therethrough and having a reduced diameter at 3 thereby forming the shoulders 4 and 5. Projecting from the end adjacent the shoulder 4 is a holding member 6 provided with a projecting stem 7, a flange 8 and a slot 9. The stem 7 is internally threaded to receive the stud 10 which is provided with an enlarged portion 11 to bear against the shoulder 5. The stud 10 is threaded to fit within the threaded portion of the stem 7. The enlarged portion 11 is internally threaded to receive the coupling members 12 and 13. The member 12 is of a cup shaped formation having its corner at one end beveled to engage the beveled surface 14 within the enlarged portion 11. The bottom surface of the member 12 is also beveled as indicated by the numeral 15. The member 12 is slidably fitted within the enlarged member 11. The member 12 is externally threaded to engage the internal threading on the enlarged member 11. It is also provided with a flange 16 which may be polygonally sided to receive a wrench. The member 13 is provided with a recess 17 therethrough to receive the conducting portion 18 of an electric cable. The inner end of the member 13 has a reduced portion 19 which fits within the recess in the member 12 and forms a space 20 therebetween. The cable is secured to the member 10 by removing the member 10 from the handle portion 1 then inserting the exposed end 18 of the cable within the recess 17 while the member 13 is either removed from the stud 20 or has been nearly removed. The extreme end of the conductor 18 is allowed to project beyond the extreme inner end of the member 13 so that when the member 13 is screwed into the stud 10 the projecting end of the conductor 18 which is usually composed of very small individual wires, will be forced outwardly and downwardly into the space 20 as indicated. At the same time the member 12 will be forced into engagement with the beveled wall 14 within the recess in the enlarged portion 11. This makes a very simple and effective arrangement whereby the connection of the cable can be quickly and efficiently made with the stud 10. After the cable has been secured to the stud the stud is then inserted within the channel 2 until it butts against the shoulder 5 and then the holding member 6 is inserted within the opposite end of the channel 2 and rotated relative to the stud 10 thereby drawing the parts into position. Between the flange 8 and the handle member 1 I prefer to position an enlarged washer 21 as this will be a protection to the hand of the operator against its coming in contact with the holding member 6 which will be electrically connected to the cable 18.

Positioned within the slot 9 in the holding member 6 are two resilient spring members 22 and 23 with a spacer 24 therebetween. The spring members and the spacer are held in position with respect to the holding

member 6 by means of the fastening screws 25. I prefer to use two of these so as to hold the parts more firmly and securely in fixed relation to each other. The spring members 22 and 23 are preferably made of spring steel, possibly 1/8" thick, but they may also be made of a better conducting material, such as phosphor bronze, spring brass, etc. or other suitable material which will meet the requirements. The outer end of the member 22 is provided with a lip 26 turned in the direction of the member 23. The outer end of the member 23 is slightly beveled or rounded, as indicated by the numeral 27. The angle formed by the lip 26 with its adjacent portion of the member 22 and the end of the member 23 forms a retaining means at right angles to the longitudinal axis of the device for holding an electrode 28 at right angles to the said longitudinal axis. The member 22 is furnished with partial grooves 29 which may also be duplicated and oppositely disposed upon the member 23 whereby the electrode 28 may be held at an inclination to the longitudinal axis, if so desired, as shown in Fig. 2 by the electrodes 28' and 28''. It will be noted in Fig. 2 that at the points X and Y on the members 22 and 23, respectively, that the inner faces of the members 22 and 23 are closer together than the diameter of the electrode 28, but that such inner surfaces are not in engagement. This construction is the means whereby I am able to quickly renew an electrode which has become too short for further use.

Referring to Fig. 4, I show an electrode 29 inserted between the spring members 22 and 23 at the points X and Y. It will be noted now that the extreme ends of the spring members 22 and 23 are spread further apart than the diameter of the electrode 28, and that there is no engagement between the spring members 22 and 23 and the electrode 28, and that the inner surfaces of the spring members 22 and 23 at the points X and Y are spread apart a distance equal to the diameter of the electrode 29 which normally would be of the same diameter as the electrode 28. Therefore, to renew an electrode 28 which has become too short I insert the end of the new electrode 29 within the space 30 between the spring members 22 and 23 and then while holding the electrode holder with one hand and the electrode 29 with the other, I move the electrode 29 forward until it engages the springs 22 and 23, and further forward movement will cause the springs to spread apart, as shown in Fig. 4, and the electrode 28 will be released and automatically drop out and further forward movement of the electrode 29 will bring it into position formerly occupied by the electrode 28. The time required to change electrodes is not more than a second if the new electrode is handy to the operator. With the present devices, there is generally required the rotation of one or more parts in order to permit the old electrode to be removed and the further rotation of the parts in order to clamp the new electrode in place, and the necessity of the operator grasping parts which have become heated or the use of tools.

When a new electrode is placed in position as described, it snaps into position and coincidentally the old electrode is automatically released and drops from between the members 22 and 23 and the lip 26 stops the forward movement of the new electrode relative to the holder.

It is believed that the simplicity of my invention will be readily comprehended by those skilled in the art from the description which I have herein given.

Having disclosed my invention, I claim:

1. A holding device comprising a handle, electric conducting means projecting from the handle and provided with means to secure a conductor cable thereto, a pair of resilient members secured to the conducting means and having adjacent ends unattached, means at the extreme end of one resilient member to overlap the extreme end of the other resilient member to engage and grip an electrode and means to release the grip on said electrode when said means is engaged by a second electrode to replace the first electrode.

2. A holding device comprising a handle, electric conducting means projecting from the handle and provided with means to secure a conductor cable thereto, a pair of resilient members secured to the conducting means and having adjacent ends unattached, the end portion of the resilient members for a short distance being angularly disposed to each other forming a space therebetween and adapted to engage and hold an electrode therebetween at the wide portion of said space.

3. A holding device comprising a handle, electric conducting means associated therewith, means to supply current thereto, a pair of resilient members associated with the conducting means to engage and hold an electrode, the end of one member bent into overlapping relation to the end of the other member, the bight and said end forming a resilient grip for an electrode.

4. A holding device comprising a handle, electric conducting means associated therewith, means to supply current thereto, a pair of resilient members associated with the conducting means to engage and hold an electrode, the end of one member bent into overlapping relation to the end of the other member, the bight and said end forming a resilient grip for an electrode and means when engaged by a second electrode to cause the release of said first electrode.

5. A holding device comprising a handle means projecting from said handle to which is secured a pair of resilient members to receive and hold an electrode, means to release the hold of the resilient members upon the electrode when said means is engaged by a second electrode to replace the first electrode and means to secure a cable to the projecting means comprising a conducting member secured to the projecting means and having a threaded recess, a plug member to engage the threaded recess and move longitudinally thereof when rotated and having a passage therethrough to receive the cable, a cup shaped member within the recess to receve the extreme end of the cable in overlapping relation to the end of the plug member, all parts to be brought into close fixed relation when the plug and conducting members are moved relative and towards each other.

In testimony whereof I affix my signature.

EUGENE P. BURNS.