Sept. 7, 1948. A. W. McCLARY 2,448,994

WELDING ROD HOLDER

Filed June 28, 1946

Fig. 1.

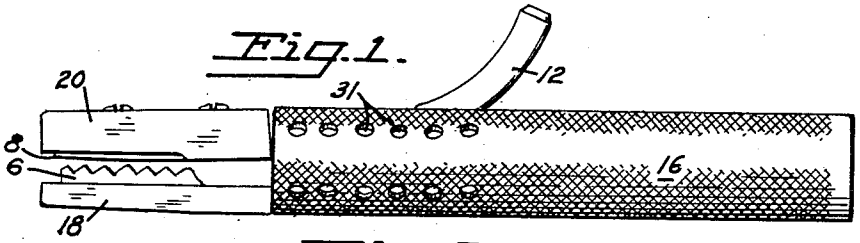


Fig. 2.

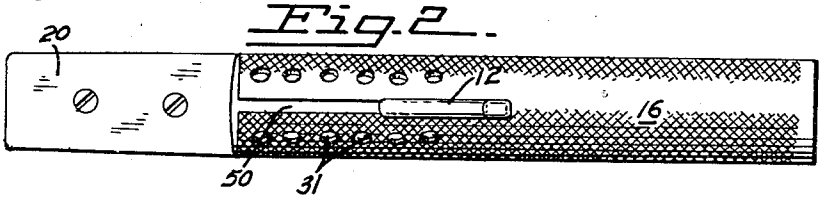


Fig. 3.

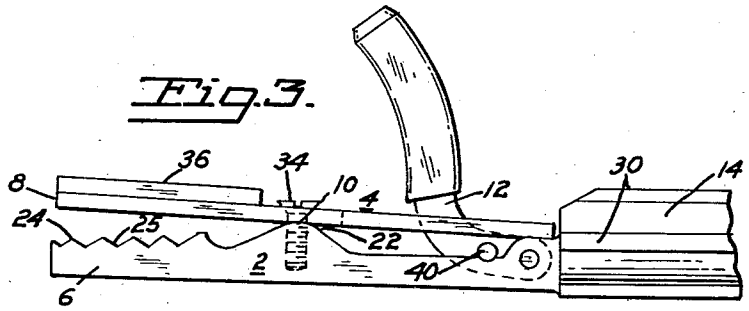


Fig. 4.

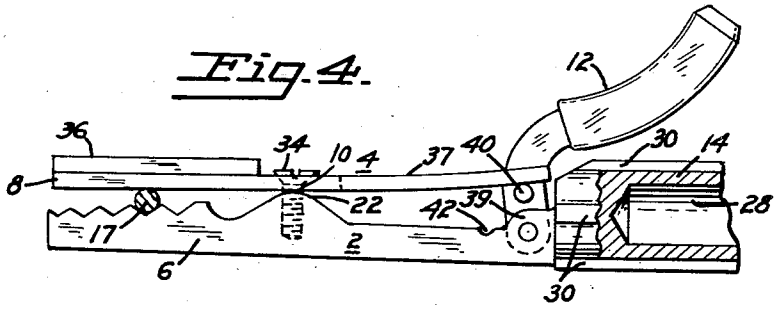
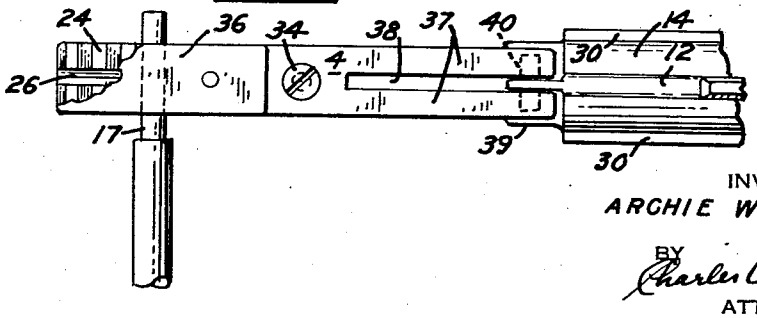


Fig. 5.



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WELDING ROD HOLDER

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5 Claims. (Cl. 219—8)

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My invention relates to a welding electrode holder and more particularly to those of the type employing pivoted arms.

Among the objects of my invention are:

1. To provide a novel and improved electrode holder of simple construction and low manufacturing costs;

2. To provide a novel and improved electrode holder having an adjustable grip so as to permit positive gripping of welding rods or electrodes of different diameters and to compensate for wear of the rod holding jaws;

3. To provide a novel and improved electrode holder utilizing a compound lever system for achieving a positive gripping action under the control of a small force;

4. To provide a novel and improved electrode holder which is well insulated electrically;

5. To provide a novel and improved electrode holder which is provided with a high degree of heat insulation and which is well ventilated;

6. To provide a novel and improved electrode holder which is compact and has a minimum number of projecting parts; and

7. To provide a novel and improved electrode holder which is safe and easy to handle.

Additional objects of my invention will be brought out in the following description of the preferred embodiment of the same, taken in conjunction with the accompanied drawing wherein:

Figure 1 is a longitudinal view in elevation of a preferred embodiment of my improved electrode holder with insulation covering installed thereon;

Fig. 2 is a plan view of the covered electrode holder illustrated in Fig. 1;

Fig. 3 is a somewhat enlarged longitudinal view in elevation of the electrode end of the holder of Fig. 1, shown with the insulation removed and with the jaws thereof in open position;

Fig. 4 is a view corresponding to that of Fig. 3, showing the jaws gripping an electrode; and

Fig. 5 is a plan view of the device illustrated in Fig. 4.

Referring to the drawing, there is illustrated an electrode holder embodying the features of the present invention and comprising two mutually pivoted working arms 2 and 4 having jaws 6 and 8 on one side of the pivot 10 and a suitably insulated control arm 12 cooperating therewith and an electrical connector 14 at the other side of the pivot point 10. The electrical connector 14 and the portion of the working arm

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12 on the side of the pivot point adjacent to the electrode connector 14 are enclosed by a tubular handle 16 composed of insulating material. The portions of the working arms 2 and 4 adjacent to and exterior to the jaws 6 and 8 are enclosed by shields 18 and 20 composed of electrical insulating and high heat-resistant material.

The entire electrode holder construction possesses a simple cylindrical appearance having only a single projecting part, namely, the control arm 12 which is used for manipulating the working arm 4 with respect to working arm 2. In order to simplify the description, the electrode holder will be described in more detail hereinbelow as if the length thereof were horizontally disposed and the two working arms were disposed one above the other.

The lower working arm 2 is of generally flat, rigid construction having a pivot crown 22 intermediate the ends thereof. On one side of the crown 22 there is the lower jaw 6, which is provided with two rows of teeth 24 defined by a plurality of transverse notches 25 and separated by a longitudinal channel 26 to facilitate the positioning and gripping of an electrode between the jaws.

On the opposite side of the pivot crown 22, the lower working arm terminates in the electrical connector 14 which is provided with an end bore 28 for the reception of a cable (not shown) which will preferably be soldered or, otherwise affixed therein.

A plurality of longitudinal ribs 30 peripherally distributed about the connector, provide supports for the handle 16 and cooperate therewith to define ventilating passages permitting circulation of air through the handle. Perforations 31 in the handle at this point aid such ventilation.

The upper working arm 4 is loosely supported on the pivot crown 10 by means of an adjusting screw 34 extending through an oversize hole therethrough and threadedly engaging the pivot crown of the lower working arm 2. Said upper arm is in the form of a relatively stiff leaf spring of steel or other suitable metal. The portion opposing the jaw 6 of the lower working arm 2 defines the second jaw 8 which cooperates therewith to grip a welding electrode 17. This upper jaw is preferably reinforced by means of a flat strip 36 of metal welded thereon throughout its length to impart additional stiffness thereto while the remaining portion of the upper working arm remains relatively less stiff by comparison. Such

remaining portion is slit to form a fork having two tynes 37, spaced by a slot 38.

The control arm 12 is pivotally supported between a pair of bosses 39 on the lower working arm 2 adjacent the connector for movement between the tynes 37, and carries a transverse pin 40 adapted to bear against the under surface of such tynes during upward movement of the control arm, from a lower position in which the pin rests in a transverse groove 42 in the lower working arm out of contact with the tynes. Thus in the lower position of the control arm 12, the upper working arm is in a relaxed condition and free to admit of the positioning of an electrode between the holder jaws. In its upward movement, the upper jaw will be resiliently pressed in clamping engagement against the electrode, and by swinging the control arm beyond dead center, a toggle action is effected whereby to lock the control arm in its clamping position.

A slot 50 in the end of the handle 16 adjacent the control arm offers complete freedom for such functional movements of the control arm, at the same time permitting such control arm to come to rest in its locking position within thumb actuating distance of the operator's hand which grips the holder, whereby finger tip control in the release of the control arm may be realized.

Because of the fact that the control arm 12 operates on the working arms 2 and 4 at a point remote from the pivot 10, and the transverse pin 40 is only slightly spaced from the fulcrum point of the control arm itself a high mechanical advantage is achieved which greatly minimizes the effort necessary to adjust the control arm to its locking position or to flip the same from such locking position to release an electrode. By reason of the same mechanical advantage such slight effort will cause the jaws to exert a vise like grip upon an electrode disposed between such jaws. The degree of pressure exerted upon an electrode may be varied somewhat, if desired, by adjustment of the screw 34 though such adjustment is preferably relied on in adapting the holder to electrodes of different sizes and to compensate for wear on the jaws.

From the above description of my invention, it will become apparent that it fulfills all the objects previously recited, and while I have disclosed such invention in considerable detail, the same is subject to alteration and modification, without departing from the principles involved and I accordingly do not desire to be limited in my protection to the specific details of my disclosure, except as may be necessitated by the appended claims.

I claim:

1. An electrode holder comprising a working arm terminating at one end in an electrode-engageable jaw, a flexible resilient working arm disposed with one end thereof facing said electrode-engageable jaw and constituting an opposing jaw for said holder, means for fulcruming said flexible resilient working arm at an intermediate point thereof to said first working arm to permit rocking of said flexible resilient working arm thereon, and means for flexing said flexible resilient working arm against an electrode disposed between said jaws, said flexing means including a lever pivoted at a point spaced from said flexible resilient working arm and extending toward and beyond the same, and means on said lever intermediate its pivot axis and said flexible resilient working arm adapted to engage said flexible resilient working arm in the course of movement of said lever about its pivot axis, said flexible resilient arm being sufficiently flexible to permit movement of said engaging means to a position beyond dead center.

2. An electrode holder comprising a working arm terminating at one end in an electrode-engageable jaw, a flexible resilient working arm disposed with one end thereof facing said electrode-engageable jaw and constituting an opposing jaw for said holder, means for fulcruming said flexible resilient working arm at an intermediate point thereof to said first working arm to permit rocking of said flexible resilient working arm thereon, and means for flexing said flexible resilient working arm against an electrode disposed between said jaws, said flexing means including a lever pivoted at a point spaced from said flexible resilient working arm and extending toward and beyond the same, and means on said lever intermediate its pivot axis and said flexible resilient working arm adapted to engage said flexible resilient working arm in the course of movement of said lever about its pivot axis, said flexible resilient arm being sufficiently flexible to permit movement of said engaging means to a position beyond dead center, and means blocking further movement of said lever in the same direction about its pivot axis when said engaging means reaches said position.

3. An electrode holder comprising a substantially inflexible working arm terminating at one end in an electrode-engageable jaw, a flexible resilient working arm disposed with one end thereof facing said electrode-engageable jaw and constituting an opposing jaw for said holder, means for fulcruming said flexible resilient working arm at an intermediate point thereof to said inflexible working arm to permit rocking of said flexible resilient working arm thereon, and means for flexing said flexible resilient working arm against an electrode disposed between said jaws, said flexing means including a lever pivoted at one point to said inflexible working arm and extending toward and beyond said flexible resilient working arm, and means on said lever intermediate its pivot axis and said flexible resilient working arm adapted to engage said flexible resilient working arm in the course of movement of said lever about its pivot axis, said flexible resilient arm being sufficiently flexible to permit movement of said engaging means to a position beyond dead center, and means blocking further movement of said lever in the same direction about its pivot axis when said engaging means reaches said position.

4. An electrode holder comprising a substantially inflexible working arm terminating at one end in an electrode-engageable jaw, a flexible resilient working arm disposed with one end thereof facing said electrode-engageable jaw and constituting an opposing jaw for said holder, means for fulcruming said flexible resilient working arm at an intermediate point thereof to said inflexible working arm, said fulcruming means including a crown on said inflexible resilient working arm upon which said flexible resilient working arm may rock, and a screw passing through said flexible resilient working arm and threadedly engaging said crown to permit adjustment of the permissible spread of said jaws for the reception therebetween of electrodes of different thicknesses, and means for flexing said flexible resilient working arm against an electrode disposed between said jaws.

5. An electrode holder comprising a substantially inflexible working arm terminating at one end in an electrode-engageable jaw, a flexible resilient working arm disposed with one end thereof facing said electrode-engageable jaw and constituting an opposing jaw for said holder, means for fulcruming said flexible resilient working arm at an intermediate point thereof to said inflexible working arm, said fulcruming means including a crown on said inflexible working arm upon which said flexible resilient working arm may rock, and a screw passing through said flexible resilient working arm and threadedly engaging said crown to permit adjustment of the permissible spread of said jaws for the reception therebetween of electrodes of different thicknesses, and means for flexing said flexible resilient working arm against an electrode disposed between said jaws, said flexing means including a lever pivoted at one point to said inflexible working arm and extending toward and beyond said flexible resilient working arm, and means on said lever intermediate its pivot axis and said flexible resilient working arm adapted to engage said flexible resilient working arm in the course of movement of said lever about its pivot axis, said

flexible resilient arm being sufficiently flexible to permit movement of said engaging means to a position beyond dead center, and means blocking further movement of said lever in the same direction about its pivot axis when said engaging means reaches said position.

ARCHIE W. McCLARY.

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