Feb. 16, 1943. P. BOURQUE 2,311,022

ELECTRODE HOLDER

Filed March 3, 1942

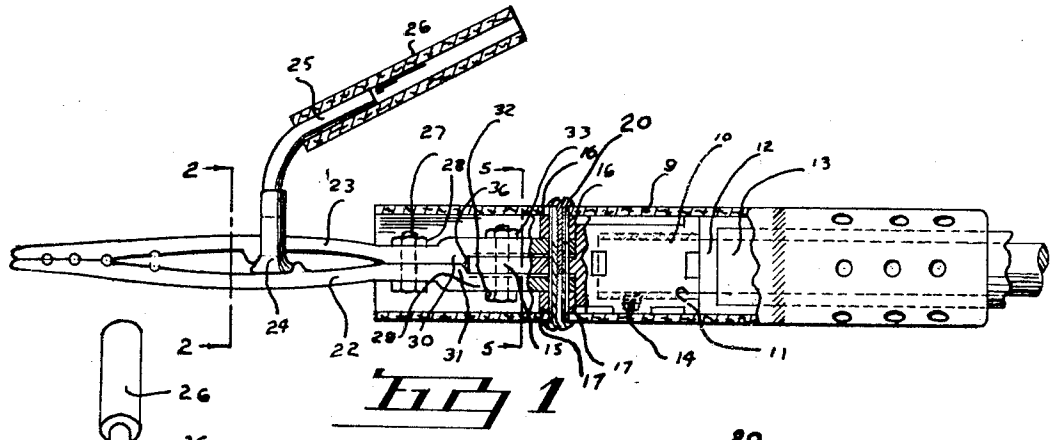


Fig 1

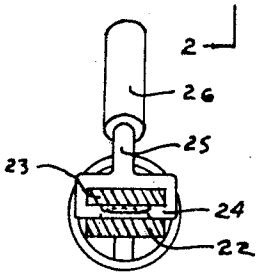


Fig 2

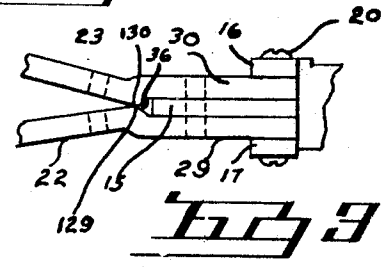


Fig 3

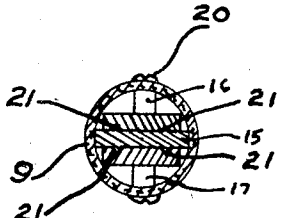


Fig 5

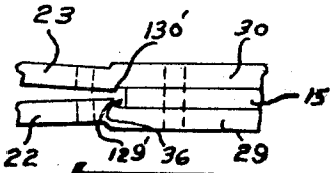


Fig 4

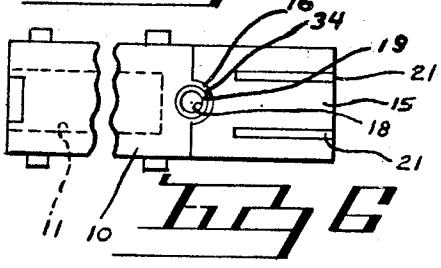


Fig 6

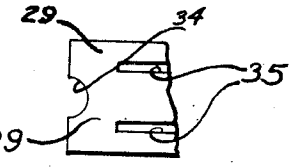


Fig 7

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ELECTRODE HOLDER

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Application March 3, 1942, Serial No. 433,147

10 Claims. (Cl. 219—8)

My invention relates to a new and useful improvement in an electrode holder adapted for use in holding an electrode which may be used in welding operations. The type of electrode holder referred to embodies a pair of clamping jaws mounted on a tongue projecting outwardly from a cable connector and it is an object of this invention to provide, in a holder of this class, clamping jaws which are offset adjacent the end of the tongue and projected forwardly therefrom.

It is another object of the invention to provide an electrode holder having a pair of clamping jaws mounted on a tongue in embracing relation, and inwardly offset toward each other adjacent the end of the tongue.

It is another object of the invention to provide an electrode holder having a supporting tongue for supporting clamping jaws, the tongue and the jaws being so constructed so as to cooperate relatively to each other for preventing undue displacement of the jaws relatively to the tongue.

Another object of the invention is the provision of a jaw supporting tongue projecting outwardly from a connecting portion so arranged and constructed that the lateral movement of the jaws relatively to the tongue may be avoided.

In an electrode holder having resilient jaws arranged in superimposed relation and bowed intermediate their ends, an adjustment means may be resorted to adjacent one end for adjusting the tension of the jaws at the opposite end. When it is desired to mount these jaws on a supporting tongue in embracing relation, at their butt ends, it is important that the adjusting of the tension does not disturb the mounting of the jaws on the tongue so that there will always be a close electrical connection between the tongue and the jaws. It is an object of the present invention to provide a structure whereby the jaws may be mounted on a single tongue in embracing relation thereto and an attachment of the jaws on the tongue substantially undisturbed when the tension of the jaws is varied, or when the jaws are sprung apart at their free ends.

It is another object of the present invention to provide an inward offset on registering jaws adjacent one of their ends.

Other objects will appear hereinafter.

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

Forming a part of this specification is a drawing in which:

Fig. 1 is a side elevational view of an electrode holder embodying the invention with parts broken away and parts shown in section.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary side elevational view showing the jaws in position for mounting on a supporting tongue.

Fig. 4 is a fragmentary side elevational view similar to Fig. 3 showing a slight modification.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1.

Fig. 6 is a top plan view of the shank and tongue used in the invention.

Fig. 7 is a fragmentary view of the inner face of the butt end of one of the jaws.

In the electrode holder illustrated, I provide a tubular handle 9 formed from suitable heat insulating material such as fibre or the like. This handle 9 embraces a shank-forming portion or jaw retainer 10 formed from suitable metal and having the bore 11 into which the bared end 12 of an electric conductor 13 is inserted. This bared end 12 may be secured in the bore 11 by a set screw 14, or in any other suitable manner, such as soldering.

Projecting outwardly from the forward end of the shank 10 is a tongue 15. Projecting outwardly from the forward wall of the shank 10, at opposite sides of the tongue 15, so as to overlie the same, are bosses 16 and 17 through which is formed a suitable passage 18 lined with a tube 19 of electrical insulating material, such as fibre. A bolt 20 is projected through the tube 19 and through the handle 9 and serves as a means for securing the shank 10 in the handle 9. Longitudinally directed spaced apart ribs 21 extend from the opposite faces of the tongue 15.

The clamping jaws 22 and 23 are preferably both made from resilient metal, although one may be rigid and the other resilient. As shown these jaws are slightly bowed intermediate their ends and a spreading stirrup 24, embracing the jaw 23, lies between the jaw 23 and the jaw 22 so that upon the rocking of the stirrup 24 the jaws 22 and 23 are sprung apart at their forward or free ends. These jaws are normally in engagement adjacent their forward ends so that they may clamp an electrode wire therebetween. A prong 25 extends upwardly from the stirrup and is provided with a tube 26 formed of suitable heat insulating material such as fibre or the like sc as to provide a handle or trigger so that

the spreading mechanism may be reached to spread the jaws apart. Each of these jaws is provided at its butt end with an opening through which a bolt 27 may be projected. A nut 28 is threaded on this bolt and by tightening or loosening the nut 28 the tension of the jaws 22 and 23 at their free ends may be regulated, the bolt 27 projecting through a divergent portion of the jaws. As shown, each of the jaws is offset adjacent its butt end.

The butt ends 29 and 30 may be set to be outwardly offset from the remainder of the jaws, or the jaws may be set to be inwardly offset toward each other adjacent the end of the tongue 15.

In the form shown in Fig. 1 and Fig. 3 the inwardly offset portions 29 and 30 and 129 and 130 normally engage each other even before the adjusting nut 28 is tightened on the bolt 27. This is the preferred form which I desire to use. In Fig. 4 however, I have illustrated these portions 129' and 130' as slightly spaced apart prior to the tightening of the adjusting nut. As shown in Fig. 7 the inner faces of the butt end portions 29 of the jaws are provided with spaced apart grooves 35. These grooves 35 are of such size, shape and spacing so as to receive the ribs 21 when the butt end portions 29 are mounted on the tongue 15. A bolt 32 provided with a nut 33 is projected through the tongue 15 and the butt end portions 29 for securing these parts in tightly clamped relation. The ends of the butt portions 29 are provided with a recess 34 in which engage the bosses 16 or 17. The engagement of the ribs 21 in the grooves 35 will prevent lateral movement of the butt ends 29 on the bolt 32 as a pivot. The shoulder 36 will also serve to resist this lateral movement, but in actual practice it is sometimes difficult to manufacture the article so that the shoulder 26 will engage with the end face of the tongue 15. It has also been experienced that the ribs 21 engaging the grooves 35 assist in providing a good electrical connection between the tongue 15 and the parts 29. It is preferred that the engagement of the bosses 16 and 17 in the recess 34 shall be a snug engagement so that the bosses 16 and 17 will thus also function in preventing a pivoting of the jaws on the bolt 32.

The member 10 may be termed a shank-forming portion, a shank or a jaw retainer as it does serve as a means of retaining the jaws. It is believed obvious that instead of the elongated ribs or grooves, small bosses or tits could be provided for engaging in recesses so that this structure may be referred to as an engaging means on the opposed faces of the butt ends of the jaws and the tongue, or supporting member which will resist lateral swinging of the jaws relatively to the tongue or supporting member.

What I claim as new is:

1. In an electrode holder of the class described, a shank-forming member adapted for electrical connection to an electric conductor; a supporting member on the forward end of said shank-forming portion; a pair of gripping members arranged in superimposed relation and embracing, at their butt ends, said supporting member and proceeding outwardly beyond the end of said supporting member and thence inwardly offset toward each other, forwardly of the forward end of said supporting member and normally divergent of each other forwardly of said offset.

2. In an electrode holder of the class described, a shank-forming member adapted for electrical connection to an electric conductor; a supporting member on the forward end of said shank-forming portion; a pair of electrode holding jaws arranged in superimposed registering relation and embracing at their butt ends said supporting member and inwardly offset toward each other forwardly of the forward end of said supporting member, and normally divergent forwardly of said offset; and means projected through said supporting member and said butt ends for securing the butt ends in clamping relation thereto.

3. In an electrode holder of the class described, a shank-forming portion adapted for attachment to an electric conductor; a supporting member projecting forwardly of said shank-forming portion; a pair of electrode gripping jaws arranged in superimposed registering relation and embracing at their butt ends said supporting member and inwardly offset toward each other forwardly of said supporting member, and rearwardly of their forward ends; a securing member projected through said butt ends and said supporting member for securing the same together; and a tongue and groove construction on said butt ends and said supporting member for preventing a pivotal movement of said butt ends on said securing member.

4. In an electrode holder of the class described, a shank-forming portion adapted for attachment to an electric conductor; a supporting member projecting forwardly of said shank-forming portion; a pair of electrode clamping jaws arranged in superimposed registering relation and embracing at their butt ends said supporting member and bowed outwardly from each other intermediate their ends and engaging each other at their forward ends and inwardly offset toward each other, forwardly of said supporting member, into engagement with each other rearwardly of their forward ends; and means for securing said butt ends on the supporting member in clamping relation thereto.

5. In an electrode holder of the class described, a shank-forming portion adapted for electrical connection to an electric conductor; a supporting member on the forward end of said shank-forming portion and extending forwardly thereof; a pair of gripping members arranged in superimposed relation and embracing at their butt ends said supporting member and projecting forwardly therefrom and inwardly offset toward each other forwardly of the end of said supporting member and rearwardly of their forward ends, and thence bowed outwardly from each other intermediate their ends and normally engaging each other at their free ends.

6. In an electrode holder of the class described, a shank-forming portion adapted for attachment to an electric conductor; a supporting member projecting forwardly of said shank-forming portion; a pair of electrode clamping jaws arranged in superimposed registering relation and embracing at their butt ends said supporting member and inwardly offset toward each other forwardly of said supporting member and rearwardly of their forward ends; and an engaging means on the opposed faces of said butt ends and said supporting member for resisting swinging movement of said butt ends laterally of said supporting member.

7. In an electrode holder of the class described, a shank-forming member adapted for electrical connection to an electric conductor; a supporting member on the forward end of said shank-forming portion; a pair of gripping mem-

bers arranged in superimposed relation and embracing, at their butt ends, said supporting member and inwardly offset toward each other, forwardly of the forward end of said supporting member and normally divergent of each other forwardly of said offset; and threaded means projected through said jaws at their divergent portion forwardly of said supporting member for adjusting the divergence of said jaws.

8. In an electrode holder of the class described, a shank-forming portion adapted for electrical connection to an electric conductor; a supporting member on the forward end of said shank-forming portion and extending forwardly thereof; a pair of electrode gripping members arranged in superimposed registering relation and embracing at their butt ends said supporting member and projecting forwardly therefrom and inwardly offset toward each other forwardly of the end of said supporting member and rearwardly of their forward ends and thence bowed outwardly from each other intermediate their ends and normally engaging each other at their free ends, said members being springable apart at their free ends for reception of an electrode to be gripped therebetween; and securing means for engaging said jaws forwardly of said offset and at the rear of said bowed portion for limiting the spreading apart of said jaws at said securing means.

9. In an electrode holder of the class described, a shank-forming portion adapted for attachment to an electric conductor; a supporting member projecting forwardly of said shank-forming portion; a pair of electrode clamping jaws adapted for clamping an electrode therebetween and arranged in superimposed registering relation and embracing at their butt ends said supporting member and bowed outwardly from each other intermediate their ends and normally engaging each other at their forward ends and inwardly offset toward each other, forwardly of said supporting member and rearwardly of the bowed portion, into engagement with each other and springable apart at their forward ends for reception of an electrode therebetween; means for securing said butt ends on said supporting member in clamping relation thereto; and means for engaging said jaws rearwardly of the bowed portion and forwardly of the offset for resisting the spreading apart of said jaws at the point of engagement of said securing means therewith.

10. In an electrode holder of the class described, a shank-forming portion adapted for attachment to an electric conductor; a supporting member projecting forwardly of said shank-forming portion; a pair of electrode clamping jaws adapted for clamping an electrode therebetween and arranged in superimposed registering relation and embracing at their butt ends said supporting member and bowed outwardly from each other intermediate their ends and normally engaging each other at their forward ends and inwardly offset toward each other, forwardly of said supporting member and rearwardly of the bowed portion, said bows being spaced from each other at said offset and springable apart at their forward ends for reception of an electrode therebetween; means for securing said butt ends on said supporting member in clamping relation thereto; and a means for engaging said jaws rearwardly of the bowed portion and forwardly of the offset for resisting the spreading apart of said jaws at the point of engagement of said securing means.

PHILIP BOURQUE.