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ROTARY EJECTOR ELECTRODE HOLDER

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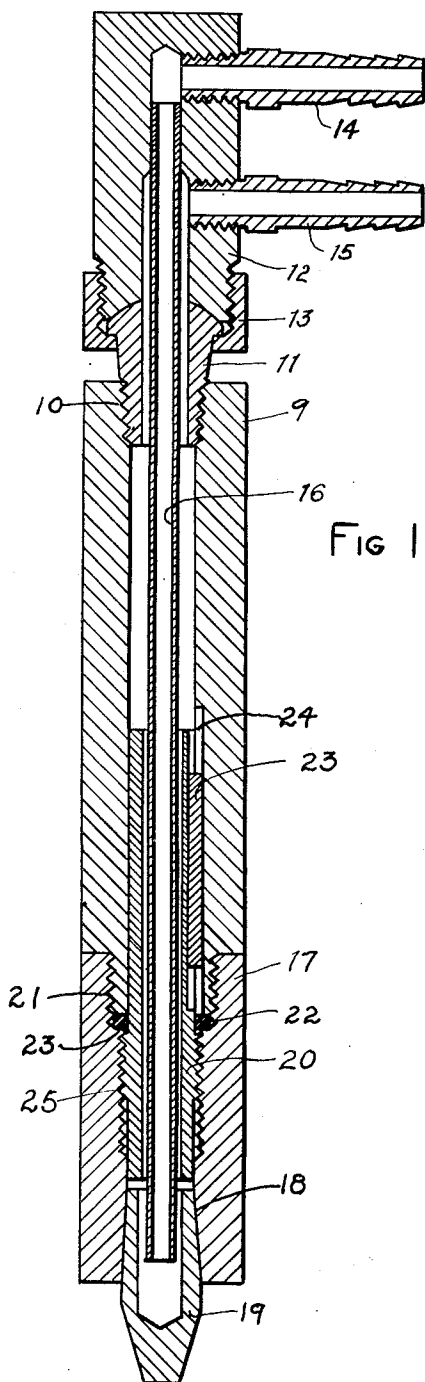
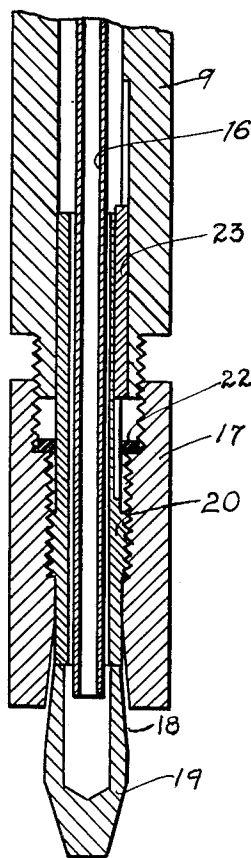


FIG 1

FIG. 2



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ROTARY EJECTOR ELECTRODE HOLDER

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4 Claims. (Cl. 219—4)

This invention relates to electrode holders for spot welding. These electrodes ordinarily comprise a hollow body and a removable tip fitting into the body with a taper fit, the hollow body containing means for feeding a cooling fluid down to the tip. In actual use these tips are subjected to considerable pressure which forces the tip into its socket so hard as to make removal very difficult.

It is an object of this invention to provide an electrode holder of the character described, from which the tip may be readily removed when desired without damage to the tip, by a rotary motion of the lower portion of the holder, and a new tip may be inserted and held after a mere reverse rotary movement.

It is a further object to provide an electrode holder which will eject the tip without injury, but which nevertheless will be proof against leakage when in use.

It is a further object to provide a device of the character described which will be both rugged and durable, and which will render excellent service throughout its entire life.

The invention accordingly comprises an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, in which:

Fig. 1 is a central longitudinal section through the device with the tip in place.

Fig. 2 is a similar section of the lower portion of the device with the tip ejected.

In the drawing the numeral 9 designates the body of a holder embodying this invention, having a screw thread 10 by which it is adapted to be attached to a nipple 11 held into a head 12 by a union 13. This head is provided with inlet 14 and outlet 15 for cooling fluid, the former being connected to an internal tube 16 which extends down to the bottom of the holder and preferably into the tip. At the lower end of the holder 9 and forming a part thereof is a rotary member 17 which is rotatable upon the body. This rotary member 17 has at its lower end a taper socket 18, in which is fitted the tapered end of the welding tip 19.

In accordance with this invention there is provided a member within the body of the holder

which, when the rotary member 17 is turned on the body member, will engage the upper end of the tip 19 and eject the latter. Any member within the body which accomplishes this purpose comes within the broad purview of this invention. For example, when the rotatable member 17 is screw-threaded to the body member 9, the endwise motion of the rotatable member toward the body of the holder can be made to cause the end of the tip to strike against the end of the cooling fluid tube 16. Such construction would mean that the tip would be ejected by screwing the rotatable member onto the body. This, however, would make it difficult to provide a water-tight joint between the body 9 and the rotatable member 17 to contain the cooling fluid while in use.

In the preferred construction, therefore, a separate sliding member is provided; thus within the body portion, and movable endwise therein relative to the member 17, is a sleeve 20 which is forced endwise by rotation of the member 17. To accomplish this result, the sleeve 20 is screw-threaded into one of the members 9 or 17, and is articulated to the other in a manner to cause it to move out of the rotary member when those members are relatively turned.

The upper end of the tip 19 is in position to be contacted by the sleeve 20 at the lower end of the travel of the latter. The effect of this construction is that as the member 17 is rotated, the sleeve 20 is forced down against the upper end of the tip 19, and the latter is forced out of its taper so that it can be easily removed without the need of injuring its surface with a wrench or pliers to dislodge it.

In the practical form of the invention herein disclosed, the rotatable member 17 is screw-threaded to the body 9, as shown at 21. This simplifies access to the interior parts if this should be required, and at the same time it facilitates packing the connection between the members 9 and 17 against the leakage of the cooling fluid. This packing can be accomplished, if desired, merely by providing a gasket material 22 between the end of the body 9 and a shoulder 23 on the interior of the member 17, so that when the member 17 is screwed up to its uppermost position, the joint will be made fluid-tight by the gasket.

The screw thread that moves the sleeve will then be such that as the member 17 is screwed off of the body 9, the same rotary movement will move the sleeve 20 to dislodge the tip 19. This is accomplished in the manner shown by keying

the sleeve 20 to the body 9 by means of a sliding key 23 on the sleeve fitting into a keyway 24 in the body, and by providing a left-hand thread 25 between the sleeve and the member 17. Thus, as the member 17 is screwed off of the body 9, the sleeve 17 will be forced against the tip to eject the latter.

When the rotary member is screw-threaded onto the body, I prefer the construction shown rather than to connect the sleeve with the body by a screw thread and connect it to the rotatable member by the key, since in the latter case it would be necessary to make the pitch of the thread between the sleeve and the body much steeper than the thread between the rotatable member and the body, so that the sleeve will move endwise faster than the rotatable member. Such a steep pitch of screw is inherently less efficient.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A welding electrode including a hollow body, a member rotatable upon said body having a tapered socket to receive a tip, a stem carried by the body portion and movable against the tip to

eject the same, and connections between said stem and said rotatable member including a screw thread constructed and arranged to move said stem to eject a tip on rotation of the rotatable member.

2. A welding electrode holder comprising a hollow body member, a member rotatable thereon having a tapered socket adapted to receive a tip, a sleeve movable endwise within said body to eject said tip, connections between said sleeve and said body member, and between said sleeve and said rotatable member, at least one of said connections including a screw thread, said connections being constructed and arranged to cause said sleeve to move to eject the tip when said rotatable member is rotated.

3. A welding electrode holder comprising a hollow body member, a member rotatable thereon having a tapered socket adapted to receive a tip, a sleeve movable endwise within said body to eject said tip, a screw connection between said sleeve and said rotatable member, and a keyway between said sleeve and said body whereby a rotation of said rotatable member on said body will screw said sleeve in said thread and move the same relative to the rotatable member.

4. A welding electrode holder comprising a hollow body member, a rotatable member threaded thereon having a tapered socket adapted to receive a tip, a sleeve movable endwise within said body to eject said tip, a screw connection between said rotatable member and said sleeve of opposite pitch to the thread between the rotatable member and the body, and a key connection between the said sleeve and said body member, whereby unscrewing said rotatable member from said body will eject the tip from the socket.

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