

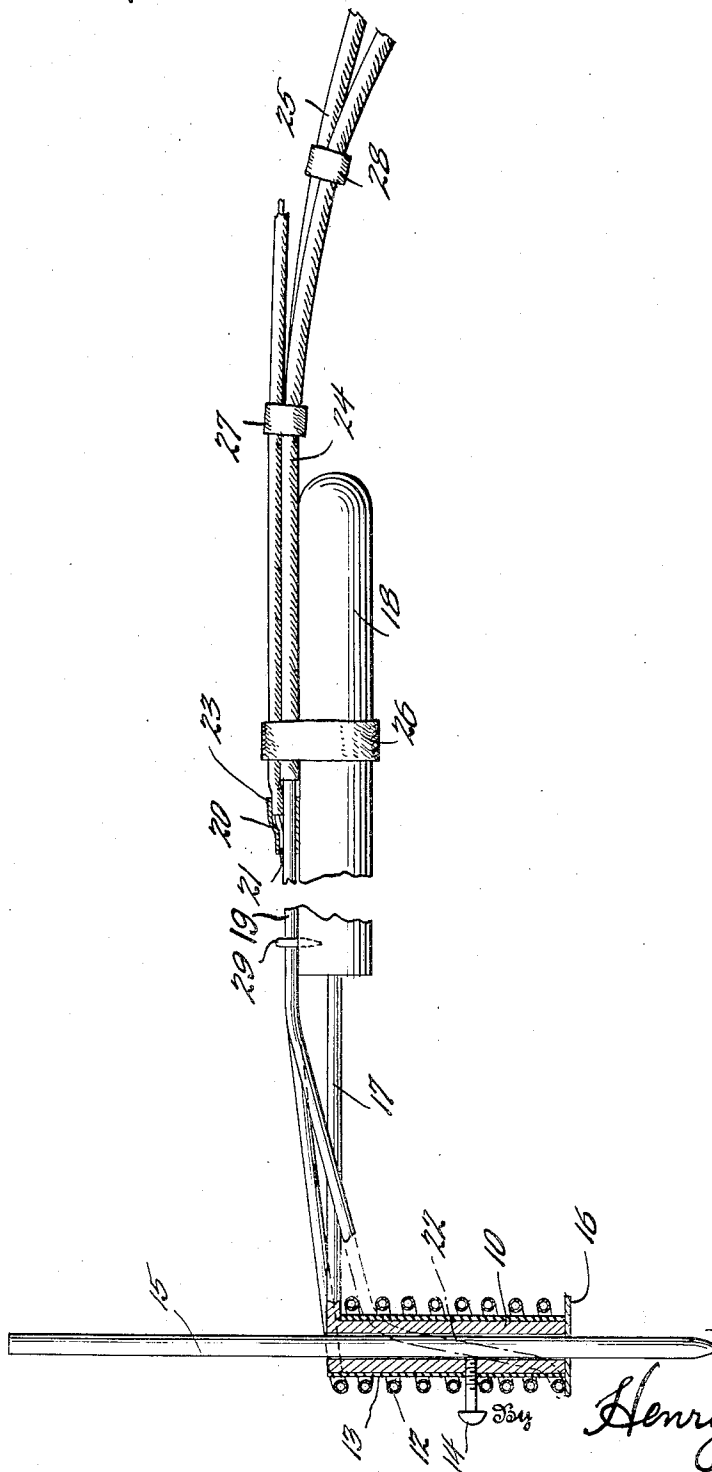
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CARBON HOLDER

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CARBON HOLDER

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This invention relates to carbon holding devices for use in electric welding and has for its principal object the provision of a simple and efficient device of this kind, made extremely light for convenience of the workman and affording a firm grip. A further object of the invention is to lessen or avoid the danger of burning a hole in the cooling coil by accidental contact between the holder and the work. A still further, and important object of the invention is to insure a steady arc by utilizing the copper cooling coil as the conductor of electrical current to the carbon stick via a steel washer at the lower end of the holder.

In devices with which I am familiar the holder has either been exceptionally heavy and usually somewhat complicated or, in the holders that are more convenient to use, it has been extremely difficult and at times impossible to provide an even arc which is essential to good work of this type. In the present device the stick of carbon is held adjustably in a sleeve and the sleeve in turn is water cooled by a copper tube coiled about the sleeve and may be held in position on the sleeve by means of the screw that binds the carbon stick to the holder. The two tubes leading to the coil are secured to the elongated wooden handle which also receives the shaft of the sleeve and the current-carrying wire, which conveniently may be taped to the flexible water hoses.

In the drawing the figure shows my device partly in side elevation and partly in section.

The sleeve 10 preferably has a smooth cylindrical surface both inside and outside. The coil 12 of copper tubing fits fairly snugly a wrapping of mica 13 applied to the outside of the sleeve to insulate the major portion of the sleeve 10 from the current carrying cooling coil 12 which, for best results, is wound counterclockwise on the sleeve when looking down upon it.

The coil 12 may be held in proper position by the set screw 14, which holds the carbon stick 15 in place, the latter extending as far below the steel washer 16 at the lower end of the sleeve as the operator finds most convenient. This washer 16 is secured to the sleeve 10 in any desired manner and its internal diameter is very slightly less than the internal diameter of the sleeve so that the most firm frictional contact with the carbon stick 15 is had at the bottom.

The shaft 17 may be integral with the sleeve 10 or it may be of a different metal which would permit its being made appreciably smaller and yet give the required strength. The shaft 17 may frictionally engage a bore in the elongated han-

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dle 18, which is preferably of wood, as this material is light, sturdy, and will not conduct either electricity or heat in any appreciable form or amount. The electric conductor 20 is soldered to the tube 19 as at 21 and protected by the tape 23. The copper tubing which forms the coil 12 is extended upward as at 22, and I find it simplest to staple the two pieces of tubing 19 and 22 to the handle 18 as shown at 29. Toward the rear of the handle these tubes are inserted in flexible hoses 24 and 25, and these two hoses and the wire 20 are taped to the handle 18 as at 26. An easy way of fastening the hoses and wire together is by the tape 27 and similar material as at 28 may be used to join the flexible hose elements together.

The operation of the device should be apparent from the description just given and it will be noted that with its use it is easily possible to maintain an even arc as the device is exceptionally light, and yet well sufficiently sturdy to perform any task that should be imposed upon it.

What I claim is:

1. In a light weight carbon stick holder for manual use, an elongated wooden handle, a sleeve spaced from and supported by the handle, a metal coil helically wound about the sleeve and having its two ends secured to the wooden handle, means for conveying a cooling fluid thru said coil, a carbon stick extending thru the sleeve, a washer at the lower end of the sleeve of greater diameter than the sleeve, and a wire electrically connecting the coil with the stick thru said washer.

2. The device of claim 1 in which the coil is of copper exposed on the outside of the sleeve and the sleeve is electrically insulated from the coil.

3. In a light weight, manually held carbon stick holder for welding, a sleeve receiving relatively loosely therein a carbon stick extending above and below the sleeve, an electrically conducting washer at the bottom of the sleeve of greater outside diameter than the sleeve firmly engaging the carbon stick, an electrically conducting tubing coiled about the sleeve and engaging the washer to carry current to the carbon stick through the washer, flexible means for conveying a cooling fluid to the holder and the tubing, and electrically insulating means between the tubing and the sleeve whereby when the tubing is coiled loosely with the coils or turns out of contact with each other the current will pass helically around the sleeve and thereby produce a magnetic field which serves to maintain an even arc.

4. The device of claim 3 in which the sleeve has an elongated electrically insulating handle, the two ends of the metal tubing parallel the handle, and are carried thereby in spaced apart relationship, a flexible current carrying wire is electrically connected to one of the two ends of the tubing, and the other end of the tubing is spaced from the coil so that current from the wire shall pass through the entire coil and thence to the carbon stick thru the retaining washer at the lower end of the sleeve.

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