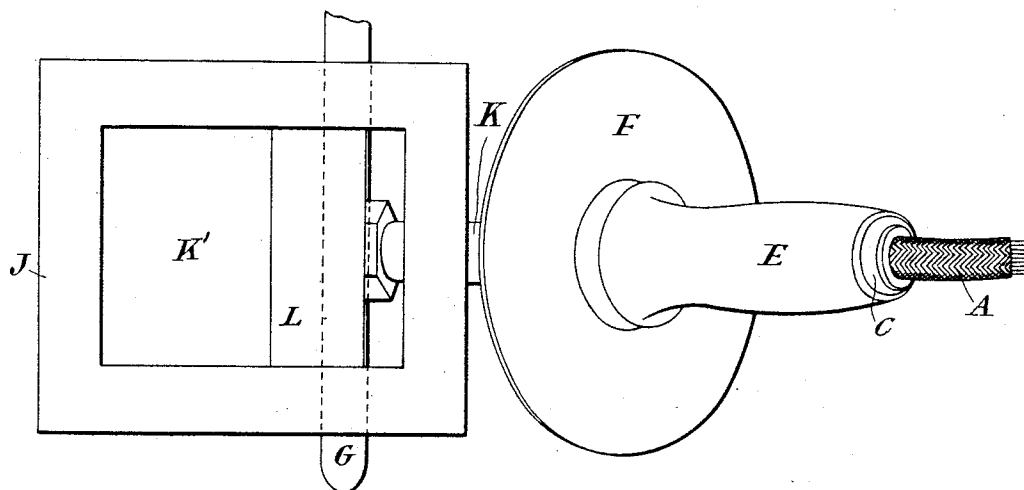
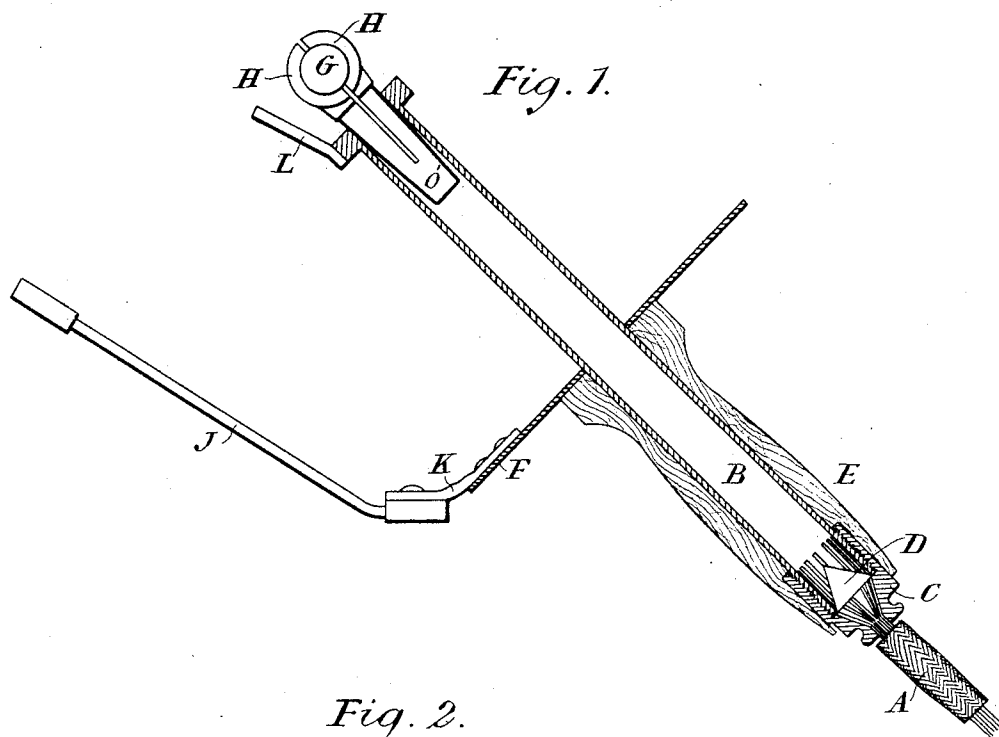


H. HOWARD.
CARBON HOLDER.

No. 472,055.

Patented Apr. 5, 1892.



Witnesses:

Baltus DeLong
Washington Miller

Inventor,
Henry Howard,
By his atty

Baldwin Davidson & Wright

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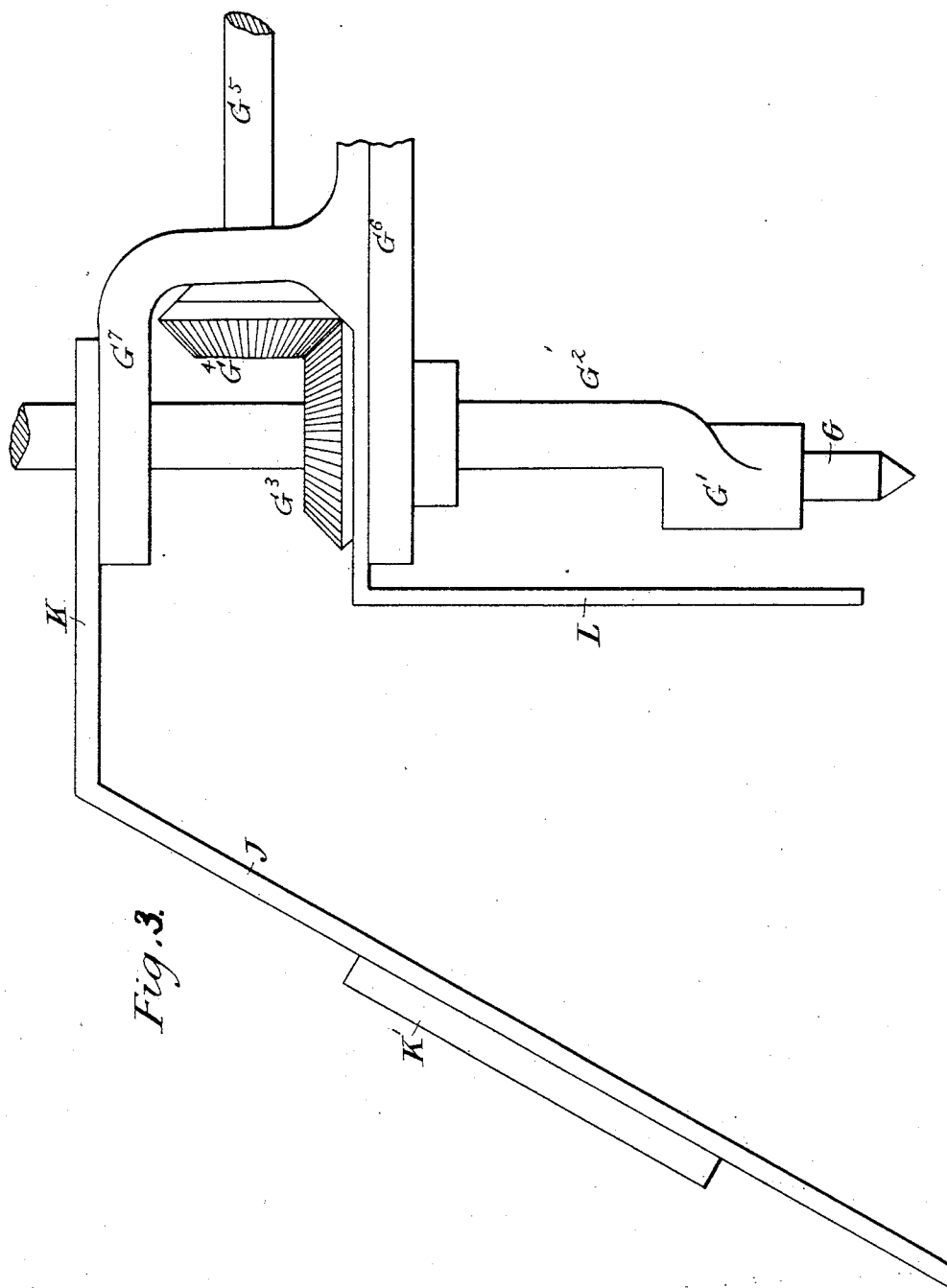


Fig. 3.

Witnesses:
Washington Miller
Baltus De Long

Inventor:
Henry Howard,
By his Attys.
Baldern Davidson & Wright

UNITED STATES PATENT OFFICE.

HENRY HOWARD, OF HALESOWEN, NEAR BIRMINGHAM, ENGLAND.

CARBON-HOLDER.

SPECIFICATION forming part of Letters Patent No. 472,055, dated April 5, 1892.

Application filed October 21, 1891. Serial No. 409,432. (No model.)

To all whom it may concern:

Be it known that I, HENRY HOWARD, manufacturer, a subject of the Queen of Great Britain, residing at Coombs Wood-Tube Works, Halesowen, near Birmingham, England, have invented certain new and useful Carbon-Holders, of which the following is a specification.

This invention relates to carbon-holders especially suitable for electric welding by means of the arc and are applicable both when the carbon is manipulated by hand and when it is moved mechanically.

The carbon is held between two metallic jaws fixed to a split stem which is forced into the end of a metal tube, thereby causing the jaws to approach each other and hold the carbon firmly, and at the same time make a good electrical connection with the tube. The wires leading the current to the carbon are connected to the other end of the tube in the following manner: The tube is provided with a perforated cap, which screws onto it and having inside a cone whose point enters the tube. The conductor passes through the hole in the top of the cap and the wires are spread around the base of the cone, their ends being inserted into the tube, so that when the cap is screwed up the cone forces the wires into close contact with the inside edge of the tube.

When the holder is to be manipulated by hand, part of the tube is surrounded by a handle of wood or other insulating material.

I fix a screen to the carbon-holder, providing a small window or windows of colored glass in the screen, so that the workman can see the work without being unduly exposed to the light and heat of the arc. The side of the screen next to the arc should be covered with some unflammable material which is a bad conductor of heat. Preferably I employ asbestos card. The other face of the screen may be of metal to support and give stiffness to the card; but in this case it should be insulated from the carbon-holder. Otherwise if the screen accidentally touches any conductor an electric arc is set up. In order to afford additional protection to the eyes of

the workman, I interpose between the colored-glass screen and the arc a small bar of opaque material placed at a short distance from the carbon and moving with it. The work heated is therefore constantly within view of the eye of the workman, while the arc is concealed by the bar.

Figure 1 is a plan, partly in section, and Fig. 2 is a front elevation, of the hand apparatus. Fig. 3 is a front elevation of the apparatus adapted to a mechanically-operated carbon.

In all the figures, A is the conductor leading to the pencil-holder, which consists of a tube B, with the perforated cap C screwing onto it, and the cone D, whose point enters the tube, forcing the wires of the conductor into contact with it.

E, Figs. 1 and 2, is a wooden handle surrounding the tube, and F is a metal guard to protect the workman's hand.

G is the carbon pencil held in the metal jaws H, fixed on the split stem O', which is forced into the end of the tube.

J is a screen carried by the bracket K. It consists of a frame having at the center a window K' of colored glass. Between this glass and the pencil is a bar L, hiding the arc from the workman, but allowing him to see through the colored glass the heated work on each side of it.

In Fig. 3 I have shown apparatus in which the carbon-holder is operated mechanically. The carbon G is mounted in an eccentric holder G' on the end of a shaft G², which carries a gear G³, meshing with a gear G⁴ on a shaft G⁵, which may be driven in any suitable way. The screen J is carried by a bracket K and has a window K' of colored glass. The bracket K is mounted on another bracket G⁷, secured to a part of the frame G⁶. Between the window K' and the pencil is a bar L, hiding the arc from the workman, but allowing him to see through the colored glass. The bar L may be secured to the frame G⁶.

What I claim is—

1. In a carbon-holder, the combination of a support for the carbon, a screen of colored

glass carried by the support, and an opaque bar interposed between the carbon and the screen.

2. In a carbon-holder, the combination of a
5 tube, a cap screwing onto one end of the tube,
a split clip embracing the carbon and forced
into the other end of the tube, and a cone
within the cap and adapted when the cap is

screwed on to force the wires of the conductor into close contact with the tube.

HENRY HOWARD.

Witnesses:

WALTER J. SKERTEN,

T. J. OSMAN,

Both of 17 Gracechurch St., London, E. C.