

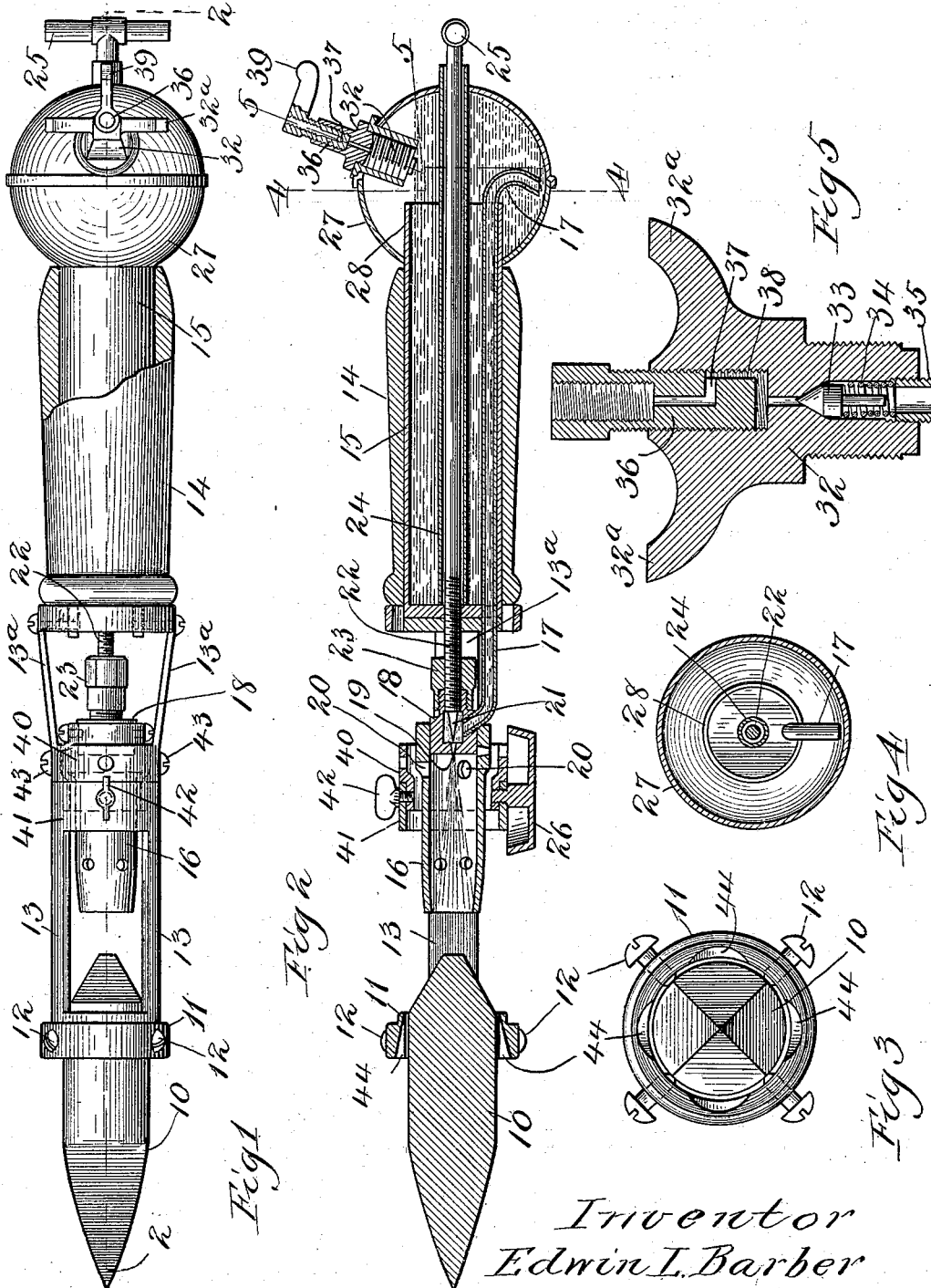
No. 650,163.

Patented May 22, 1900.

E. L. BARBER.
SELF HEATING SOLDERING TOOL.

(Application filed Nov. 1, 1899.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN L. BARBER, OF CHICAGO, ILLINOIS.

SELF-HEATING SOLDERING-TOOL.

SPECIFICATION forming part of Letters Patent No. 650,163, dated May 22, 1900.

Application filed November 1, 1899. Serial No. 735,547. (No model.)

To all whom it may concern:

Be it known that I, EDWIN L. BARBER, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Self-Heating Soldering-Tools, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

10 This invention relates to that type of tools in which there is employed a hydrocarbon, such as gasoline, as a fuel, the storage-reservoir being in the handle of the implement, the generator and burner being in its shank, and a soldering-point being secured in such position that the flame from the burner is thrown upon it.

One object of the present invention is to provide means for feeding the gasoline from the cooler part of the reservoir even when the supply is well nigh exhausted and to provide an improved form of soldering point or slug and improved means for detachably securing it to the shank of the handle and directing the flame upon it.

A further object of the invention is to adapt the tool for other uses than the heating of a soldering-point, means being provided for disconnecting the outer end of the shank, so that the burner may be used as a simple torch for heating any object.

These objects are attained in the construction which is fully hereinafter described and which is illustrated in the accompanying drawings, in which—

35 Figure 1 is a side elevation of the tool, a portion being broken away. Fig. 2 is a central longitudinal section. Fig. 3 is a bottom plan. Fig. 4 is a sectional view on the line 4 4 of Fig. 2, and Fig. 5 is a detail section on the line 5 5 of Fig. 2.

45 The drawings represent the preferred proportional parts; but the same scale has not been followed through all of the figures, the details being shown in larger views for the purpose of clearness.

The soldering-point 10 is in the form of a slug pointed at both ends, one end being somewhat flattened to adapt it for doing what is known in the trade as "bottom work." This slug is secured within a collar 11 by means of set-screws 12, so that it may be readily re-

moved, and either end may be inserted within the collar. The lower or outer end of the shank of the implement consists of a pair of arms 13 13, to which the collar 11 is rigidly attached and which are detachably connected with a pair of upper arms 13^a 13^a, which in turn are secured in any suitable manner to the handle. The latter member consists of a tubular handpiece 14, preferably of wood or other material having low conductivity of heat, and a cylindrical reservoir 15 within the member 14.

The burner consists of a Bunsen tube 16, to the upper end of which is fitted a chambered block 18, which constitutes the generator, a supply-tube 17, leading from the reservoir to the chamber of this generator, and a small aperture 19, leading from the chamber of the generator, so as to direct a jet of gas centrally into the burner-tube. This tube is provided with a plurality of air-ports 20, and the discharge-port 19 of the generator is controlled by a needle-valve 21, the stem 22 of which passes upwardly through a longitudinal tube 24, extending entirely through the reservoir, the stem being provided with a handpiece 25 at its upper end. The stem 22 enters the generator through a suitable stuffing-box 23 and is in screw-threaded engagement therewith, so that the valve is seated and unseated by simply rotating the stem.

A pan 26 is secured to the shank of the implement in such position that gasoline may be discharged into it through the port 19 and a suitable aperture in the side wall of the burner-tube 16 for the purpose of starting the generation of the vapor—an expedient common in connection with vapor-burners of all kinds.

The reservoir is enlarged in the present instance by placing a ball 27 at the outer end of the handle, the upper end 28 of the cylindrical portion of the reservoir 15 being continued into the chamber of this ball. The supply-tube 17 extends upward through the tube 15 into the ball 27, and its extreme end is turned laterally and backwardly, so as to dip into the annular cup that is formed within the ball 27 by the prolonged end 28 of the cylindrical portion of the reservoir. By means of this expedient the gasoline, which always occupies the spherical portion of the

reservoir, entering the same whenever the implement is brought to a horizontal position, is held within the annular cup surrounding the portion 28 of the tube 15, and from this cup the supply of fuel is directly drawn.

The implement is usually employed in an inclined position, so that it is not necessary to carry the branches of the feed-tube to the bottom of the cup. The plug 32 for closing the filling-aperture of the reservoir is provided with a central duct which is counter-bored at each end, the counterbore at the inner end accommodating and providing a seat for a check-valve 33, which is seated by means of a spring 34 reacting against an apertured plug or nipple 35, screwed into the counter-bore of the plug 32. The counterbore at the outer end of the plug 32 is screw-threaded to receive a member 36, which serves the double purpose of a nipple for the attachment of an air-pump nipple and a valve for closing the reduced portion of the duct of the plug 32, so as to reinforce the check-valve 35. The member 36 has a duct leading from its outer end almost to its inner end and then opening laterally through its side wall, as shown at 37, a channel 38 being cut from the inner end of the passage 37 to the inner end of the member 36, so that when the latter member is turned back to unseat it as a valve communication is opened through its passage to the duct of the plug 32. The outer end of the passage 37 is counterbored and screw-threaded for the attachment of an air-pump nipple. (Not shown.) The plug 32 is provided with thumb-pieces 32^a, by which it may be conveniently turned, and the member 36 is provided with a thumb-piece 39 for the same purpose.

To the lower ends of the arms 13^a there is attached a band 40, and to the upper ends of the arms 13 there is attached a band 41. The bands 40 and 41 are adapted to engage each other telescopically, their joint being of the rabbit form, so as to bring their outer surfaces flush. Thumb-screws 42 are employed for securing the two bands 40 and 41 together, so that they may be readily disconnected to remove the soldering-point when it is desired to use the implement as a torch. The generator and burner are secured to the band 40 by means of screws 43.

The collar 11 is sufficiently large to conveniently receive the slug 10, and intermediate of the screws 12 its inner wall is recessed, as shown at 44, to provide ample passages for the flame, which, being directed upon the upper point of the slug 10, is deflected outwardly by the tapering form at this point into the passages 44 and envelops the entire body portion of the slug 10 well down to its outer point, so that the heat is applied in such manner that it is not necessary to depend simply upon the conductivity of the metal to carry it to the outer point, which it is the purpose to heat.

While I have shown the implement with-

out a sleeve or hood for inclosing the burner other than the arms 13, it is obvious that such a device may be applied to the implement, if desired.

In practice the reservoir is filled nearly full of gasoline, and then by the application of an air-pump the fluid is placed under compression. Upon opening the needle-valve the fluid will be discharged into the burner-tube 16, and the implement being held in proper position will find its way into the pan 26. Being ignited in this pan, the generator quickly becomes heated and the discharge from the port 19 is in the form of a vapor, which, igniting from the flame of the pan, quickly heats the soldering-point. Before the pressure developed within the reservoir by means of the air-pump has been dissipated the handle has become heated sufficiently so that the highly-volatile gasoline will maintain a pressure sufficient to expel the vapor at a suitable velocity. The presence of hydrocarbon vapor in the reservoir renders it immaterial also whether a constant supply of fluid is provided within the tube 17, so that the implement may be freely handled in use without danger of cutting off the flame, even though the reservoir may have become nearly emptied of its contents.

In ordinary practice such an implement is never long in one position, and without any precaution upon the part of the user it will in the ordinary course of his work be brought to a horizontal position with sufficient frequency to keep the cup surrounding the end 28 of the tubular portion of the reservoir constantly supplied with liquid fuel. It is found in practice that it is advisable to direct the supply of fuel from the outer end of the reservoir in a tool of this kind, for the reason that the tool is frequently used with its point elevated, and all of the advantages gained by such means are present in the implement herein shown and described, there being the added advantage of the retention of a constant supply of liquid fuel within the cup in the spherical portion of the reservoir well removed from the flame. The implement when in use is changed in its position so rapidly that there is always a sufficient quantity of the liquid gasoline delivered to the tube 17 and at sufficiently-frequent intervals so that the flame is maintained without interruption or material variation.

I claim as my invention—

1. In a vapor-burning torch, in combination, a burner, a reservoir forming the handle of the torch, a cup within the reservoir and being located adjacent to one end thereof and having its mouth directed to such end so that as such end of the reservoir is raised the cup will be filled with the liquid fuel, and a tube leading from such cup to the burner.

2. In a vapor-burning torch, in combination, a burner, a reservoir attached thereto and having a cylindrical portion forming a handle for the torch and being enlarged at

one end, the cylindrical portion being prolonged into the enlarged portion to form an annular cup, and a tube leading from such cup to the burner, substantially as described.

5 3. In a vapor-burning torch, in combination, a burner, a reservoir attached thereto and having a cylindrical portion forming a handle for the torch and being enlarged at

its outer end, the cylindrical portion being prolonged into the enlarged portion to form an annular cup, and a tube leading from such cup to the burner, substantially as described. 10

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