No. 774,302. PATENTED NOV. 8, 1904.

F. M. BAKER.

TORCH.

APPLICATION FILED MAY 19, 1904.

NO MODEL.

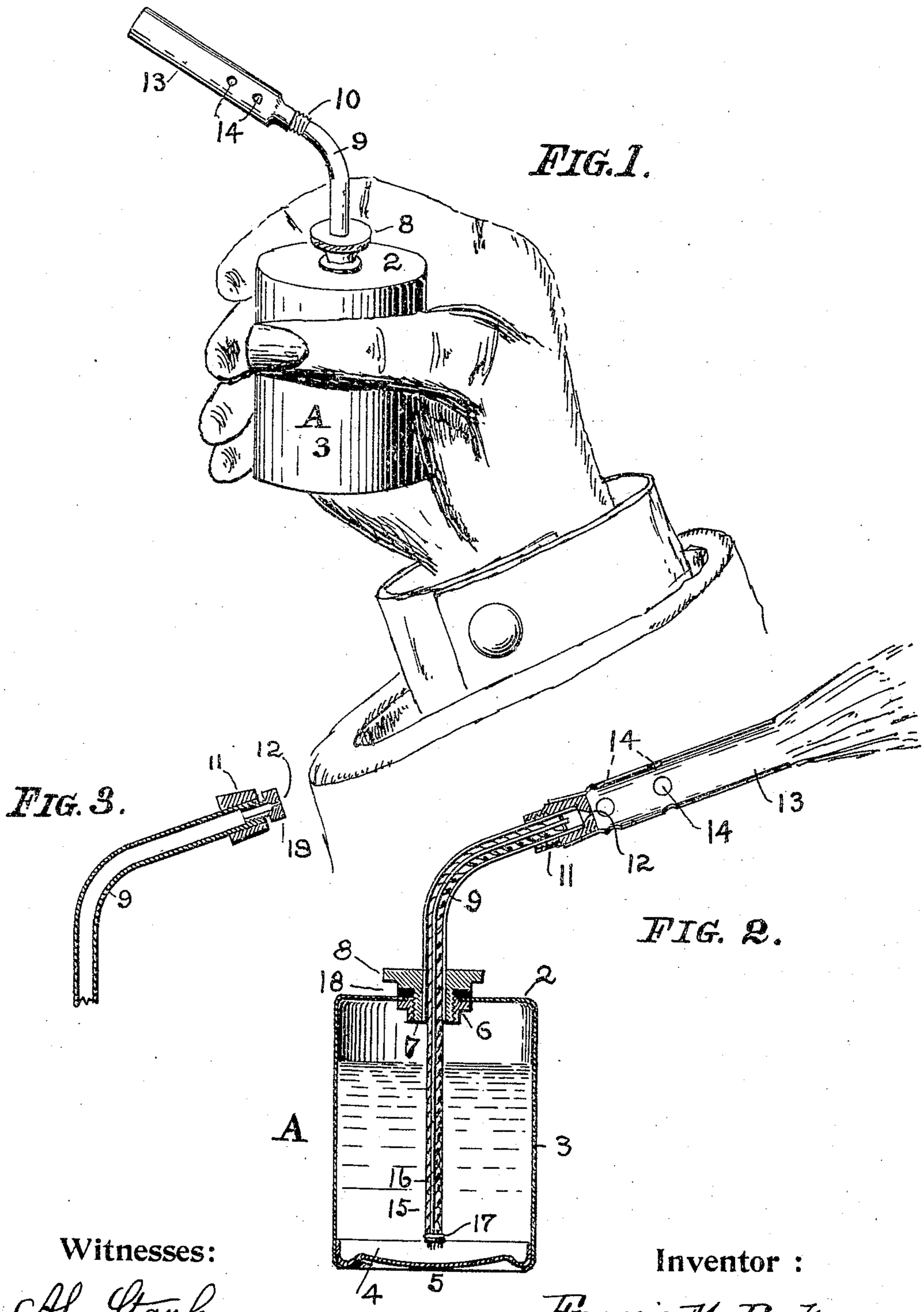

FIG. 1.

FIG. 3.

FIG. 2.

Witnesses:

Al. Stark.

Jas Ryan.

Inventor:

Francis M. Baker,

By Michael J. Stark & Sons,

Attorneys.

No. 774,302. Patented November 8, 1904.

UNITED STATES PATENT OFFICE.

FRANCIS M. BAKER, OF FOND DU LAC, WISCONSIN, ASSIGNOR OF ONE-HALF TO PAUL J. ZEIDLER, OF LOMIRA, AND HARRY J. BAKER, OF FOND DU LAC, WISCONSIN.

TORCH.

SPECIFICATION forming part of Letters Patent No. 774,302, dated November 8, 1904.

Application filed May 19, 1904. Serial No. 208,730. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS M. BAKER, a citizen of the United States, and a resident of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Torches; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in hand-torches; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate this invention more fully and form a part of this specification, Figure 1 is a perspective view of my improved torch as held in a person's hand. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is a similar view of the upper end of the generator slightly modified.

Like parts are designated by corresponding symbols of reference in all the figures.

The object of this invention is the production of a simple, cheap, and efficient torch in which the liquid fuel—such as the hydrocarbons, gasolene, alcohol, and other suitable liquids—is fed to the generator by capillary attraction by means of a suitable wick, which liquids are vaporized in said generator, pressure in the tank being produced by vaporization of the liquid fuel in the generator and which pressure (an accumulation of the gaseous vapors) causes a steady flow of vapor through the orifice in the end of the said generator.

A in the drawings represents the tank. It is preferably of cylindrical form and convenient size and made from sheet metal in the process of drawing or spinning, with its top 2 formed integral with the shell 3.

4 is the bottom of the tank A. It is preferably stamped or spun from suitable resistant metal with a curvature 5, the convexity being outwardly placed, whereby this bottom becomes resilient or "springy," the object of which will hereinafter appear.

6 is a ring securely fastened into an opening in the top 2 of the tank A, and it is internally screw-threaded to receive a correspondingly-screw-threaded portion or shank 7 of the collar 8, into which is secured one end of the generator or gooseneck 9, consisting of a metallic tube of proper diameter and thickness, which tube may be straight or curved to any desired radius to conform in convenience to its various uses. The upper end of this generator or gooseneck 9 is externally screw-threaded at 10 to receive an internally-screw-threaded cap 11, which has in its head a very minute orifice 12, serving as an opening for the escape of the gases or vapor from the generator or gooseneck 9. The exterior of this cap is tapered, and upon this tapering portion is placed a tube 13, having a series of perforations or holes 14 for the admission of air, thereby converting this tube into a mixing-chamber and burner, wherein the gas or vapor is mixed with the proper amount of oxygen from the air to produce perfect combustion of the carbon and the desired blue flame.

Within the generator or gooseneck there is placed a wick 15 of proper density, said wick being tied at both of its extremities to a metallic strip 16 by ties 17, said strip being adapted to facilitate the insertion of the wick into the generator or gooseneck and its withdrawal therefrom when desired or necessary and to form a space or passage in the generator or gooseneck for the escape of the vapor that may accumulate in the tank A.

The collar of the generator or gooseneck is of rather large diameter to enable it being readily screwed into the collar or ring 6 in the top of the tank, to facilitate which it may be externally knurled to afford a firm grip for the fingers or it may be polygonal in shape to accommodate a wrench. It also serves as a

radiator to prevent an excess of heat being conducted downwardly and communicated to the liquid in the tank.

A washer 18 may be placed between the ring 6 and the collar 8, if desired, to make a tight joint.

The operation of this torch is substantially as follows: The tank is filled nearly full of the hydrocarbon liquid of suitable density through the ring 6, the generator or gooseneck 9 and its appurtenants being removed. Then the latter being replaced and the wick being saturated with the liquid fuel, the flame from a lighted match may be applied to the generator or gooseneck to primarily start the generation or gas, or some of the liquid fuel may be ejected from the tank by holding it with the hand in an inclined position and by pressing the bottom 4 with the thumb, this escaping liquid being lighted to heat the generator or gooseneck 9 and the tube 13, which will cause the liquid fuel in the upper part of the wick 15 to be vaporized and the vapor to escape through the orifice 12 in the cap 11, thereby causing a very strong blue flame to issue from the free end of the tube 13, which will burn perfectly steady.

This torch is especially adapted for use by electricians for soldering the joints of electric conductors, &c., and by dentists, jewelers, and others in their various mechanical operations where a hot flame is a desideratum. It is also admirably adapted for use in heating the generators of hydrocarbon-lamps, torches, &c., since the heat of a single match is sufficient to start the generation of vapor.

It will now be readily observed that this torch requires no pump to create pressure in the gasolene-tank and also that its extreme portability and cheapness renders its general adoption and use entirely practical, efficient, serviceable, and safe, because an excess of pressure and overheating of the tank are impossible.

In constructing this torch I have discovered that the diameter and thickness of the parts above the tank are factors of the greatest importance and must be in perfect proportion and that these dimensions allow of but very slight variations to produce perfect results and a steady and continuous flame in the torches of different sizes. Thus in torches of the size shown in the accompanying drawings the generator or gooseneck is best made of one-fourth inch No. 24 brass tubing and the burner-tube 13 of seven-sixteenths inch No. 26 brass tubing, the orifice in the jet being but eight one-thousandths of an inch in diameter, and the entire length of the gooseneck is two and one-half inches. These dimensions I have found after many experiments to be the most satisfactory for a torch of the size shown in the drawings and, as above stated, allow of but slight deviations in the proportions.

In some instances it is desirable to render the cap 11 easily removable for the purpose of cleaning the minute orifice 12 or to renew the cap after this orifice has become too large, (since it will increase in diameter through continuous use and the application of a cleaning-needle used in connection with this torch.) To provide for this contingency, I may construct the upper end of the generator or gooseneck as shown in Fig. 3, where the tube 9 is provided with an external tapering sleeve permanently affixed to said tube and where it is internally screw-threaded to receive a correspondingly-screw-threaded tip 19, having the minute orifice 12 heretofore mentioned. This tip is made square or polygonal at its end to facilitate its insertion into and removal from the gooseneck 9. This construction is a mechanical equivalent of the removable cap shown in Fig. 2, and therefore within the scope of this present invention.

Having thus fully described this invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. As an improved article of manufacture, a hand-torch consisting, essentially, of a tank; a spring-bottom in said tank; an internally-screw-threaded ring in the top of said tank; a curved tube provided with a collar having an externally-threaded shank to engage the threaded ring; wicking in said tube, said wicking comprising strands supported by a metallic strip to which said strands are secured at both ends; a vapor jet-tip secured to the end of said tube, and a tube serving as a mixing-tube and provided with air-inlet openings secured over said tube.

2. In a hand-torch, a generator and radiator combined, in combination with a tank; said generator consisting of a tube having on one end a comparatively large collar located above the said tank and provided with means for engagement with the tank and on its other end an internally-screw-threaded cone; a jet-tip engaging said cone and having a minute orifice, and a wick within said tube and attached to a metallic strip, as stated.

In testimony that I claim the foregoing as my invention I have hereunto set my hand in the presence of two subscribing witnesses.

FRANCIS M. BAKER.

Attest:
R. H. ZEIDLER,
LEONA EGELHOFF.