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UNITED STATES PATENT OFFICE.

HENRY WELLINGTON, OF BROOKLYN, NEW YORK.

TORCH.

SPECIFICATION forming part of Letters Patent No. 343,682, dated June 15, 1886.

Application filed June 9, 1885. Serial No. 168,113. (Model.)

To all whom it may concern:

Be it known that I, HENRY WELLINGTON, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Torches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My improvements have relation to that class of devices ordinarily known as "torches," and intended to be carried about in the hand, burning light hydrocarbon or other easily-vaporizing material, and employed for purposes of burning paint or varnish, for heating ordinary vapor-burners before lighting, and for other analogous purposes in connection with heating and illuminating.

The object of my invention is to simplify and improve the construction and arrangement of the various parts of the torch, rendering the implement thoroughly effective for the general purpose of burning or heating, easy and cheap to construct and assemble for use, strong, durable, and not liable to get out of order.

To accomplish all of this my invention involves certain novel and useful peculiarities of construction, relative arrangements or combinations of parts, details of manufacture, and principles of operation, all of which will be herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical axial section and partial elevation of a torch constructed and arranged for operation in accordance with my invention, and Fig. 2 is a side elevation of the same. Fig. 3 is a partial section and plan view showing the burner and its perforated jacket, the view being taken upon a plane at right angles to that of Fig. 1.

In all these figures like letters of reference, wherever they occur, indicate corresponding parts.

A is the reservoir or main body of the torch, the same being preferably spun, stamped; or otherwise formed of a single piece of metal, and it is closed at bottom by the bottom pieces, B and B', the former having a narrow groove around its top, into which the lower margin of the reservoir is bent or turned, the joint be-

tween it and the reservoir being soldered or otherwise made oil or liquid tight after the pump is fixed in place. The piece B' is fitted into the piece B, as shown, and soldered in place, thereby affording a double bottom, which is easily made of metal thin enough to be readily stamped or spun, and affording an amply strong bottom well braced against any internal pressure, and not liable to be blown out while the torch is subjected to the severest use.

C is the barrel or cylinder of the pump projecting through one side of the reservoir and having the lower end of the torch-handle secured thereto. The joint between the pump-barrel and reservoir is made liquid-tight by use of solder or otherwise.

D is the pump-piston applied upon the piston-rod E, said rod being made to pass loosely through a removable cap, F, upon the end of the pump-barrel, and being supplied with a pin or stop, as represented at *a*, for the purpose of locking the piston-rod within the barrel when the torch is in use, and preventing said rod from projecting out when not required. The cap F is supplied with a slot, *a'*, to permit the passage of pin *a*. When the rod is turned in the position shown in Fig. 1, it may be drawn out. By pushing the rod in and giving it a slight turn, the pin *a* will bear against the under face of cap F and lock the piston in the barrel, as will be readily understood. The inner end of the pump-barrel within the reservoir is closed, except the perforation therein, which is governed by a valve, *b*, of simple form, and of any suitable material capable of resisting the chemical action of the liquid employed for fuel, said valve being held normally seated by a spring, *d*. This constitutes a simple form of valve, which is not liable to get out of order, and which, when required, after long use or wear, may be easily replaced by a new one by any person. The pump being submerged, it is important to prevent any backflow therein of liquid from the reservoir, and at the same time permit the proper inflow of air to the reservoir under the influence of the pump-piston, and this advantage is perfectly attained by the construction shown.

In my patent of September 4, 1883, (No. 284,346,) the pump-barrel was made to project

through the reservoir at both ends. Not so in the present construction, for reasons which will appear below.

The pump-barrel C is secured to the reservoir at the opening through which it is passed. Opposite this opening is another opening for a metallic shell, G, which is also secured in the reservoir-wall. Another metallic shell, G', enters G, and is so arranged therein as to afford an annular space or channel, c, between the two, through which space the oil from the reservoir is forced to the packing-tube, and thence to the burner. The inner end of shell G' fits loosely upon the end of the barrel, to facilitate coupling therewith. Upon the outer end of shell G is a removable cap, G², and a projection, G³, upon shell G is tapped for the reception of the lower end of the packing-tube H, which conducts liquid to the burner. To prevent air from being forced out through the end of shell G', a washer or packing-disk, f, of suitable elastic material, is employed between G' and G², and to prevent escape of oil, except into tube H, the shells G' and G are united at their outer extremities by solder or otherwise, as indicated at i. The spring d abuts at one end against the washer, and at the other end is supplied with a metallic cup, g, which holds the valve b. At h is a small tube communicating with the annular space c between G and G', and opening at or near the bottom of the reservoir.

Air being forced into the reservoir by the pumps finds its way to the top of the liquid in the reservoir through the tube e, and by its pressure upon the liquid forces the same to ascend to the burner through H, all in a manner which will be readily understood. The tube e extends near to the top of the reservoir, is closed at top, and provided with a small orifice, as at e', in which position and under which construction air can be admitted readily and oil practically excluded from said tube and the interior of shell G' during any ordinary use of the torch.

The parts C and G' being adjustable, one with respect to the other, before being finally secured in place, leaves the shell A free to conform easily to the contour of the base, and therefore makes it easy to locate and attach the said base, whereas in the former construction above alluded to the pump-barrel being rigid and affixed to opposite parts of the shell frequently left the latter "out of true," and required that the base-piece or bottom be made to conform to the irregular shape of the shell, which was sometimes difficult and liable to result in the making of a defective joint. The shell G' also operates to sustain the inner end of the pump-barrel.

To make the pump simple and effective, and without employing a valve in the piston, I enlarge the opening in the cap F enough to admit air around the piston-rod. Upon pulling the piston-rod outwardly, the piston being elastic permits the air to pass to the front of the piston, which being forced inwardly drives

the air before it and forces it past the valve b, as will be easily understood.

I is a light tubular handle connected at the bottom with the pump-barrel, preferably by a threaded joint, as shown, (afterward secured by solder,) and at top with a metallic brace, K, which fits over the upper end of the handle, and which is secured to the top of the reservoir. Through this brace is the filling-orifice, closed by a removable plug, as L. The brace is preferably soldered upon the handle, and also upon the reservoir, so as to make the handle perfectly rigid and immovable. The pump-barrel, the reservoir, and handle are thus effectually secured one to the other.

The screw-plug L is made hollow, and contains a packing, I', of rubber or other elastic material, the same being arranged to bear upon an annular seat, L².

The burner is represented at M, the same being of the class ordinarily known as "vapor-burners," which class have the peculiarity of converting the liquid fuel into vapor or gas before burning it. The conversion is accomplished by heat from the burner. The upper part of the tube H is connected with the reservoir by a brace, O, and thus (together with the connections at its lower end) held rigidly in place. The top of the reservoir is creased at o, and the brace O made to conform to the shape of the top.

P is the needle screw or valve by which the flow of vapor is regulated. To prevent too great spreading of the flame, and to insure perfect burning and heat-conducting qualities, so that the burner may be used with equal safety and certainty when employing a large or small flame, I supply the burner M with a projecting piece, M', the same being centrally perforated, and extending near to the outer end of the surrounding perforated casing M². Guides m m may be employed to steady the piece M', which may be detached, if desired. When burning a large flame, a portion of the gas passes out around M' and between it and M², and a portion directly through the central perforation in M', the last-named current being concentrated, operating to draw the other toward it, and thus prevent too great spreading. When burning a small flame, all the gas passes through this central perforation and produces a narrow-pointed flame of intense heating quality. The large flame is employed for burning paint or varnish, &c., and the smaller for soldering and similar uses requiring a pointed flame.

While burning the small flame the heat-conducting powers of the burner are sufficient to insure the proper conversion of the oil into gas and immunity against extinguishment of the flame by gusts of wind or drafts of air. The central jet of gas also operates when the large flame is employed to render the same more steady and less liable to be deflected by currents of air than in ordinary constructions.

The spring d, with the valve b, can be removed and replaced at any time by simply

turning cap G², and this without danger of leakage of oil from the reservoir or in any way interfering with the pump or other parts of the device.

5 When constructed and arranged substantially in accordance with the foregoing explanations, the improvements are found to admirably answer the purpose or object of the invention, as previously stated.

10 Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a torch of the character herein set forth, the combination, with the pump-barrel terminating within the reservoir, of the valve applied upon the extremity of said barrel, the spring located within the supporting-shell, the supporting-shell, and the reservoir, substantially as shown and described.

20 2. In a torch of the character herein set forth, the two shells G and G', having the annular space between them for the passage of oil, the said shell G having an opening, h, within the reservoir and connected with the packing-tube outside of the reservoir, the shell G' connected with the end of the pump and provided with an opening within the reservoir outside of shell G, the parts combined with the reservoir and packing-tube, substantially as described.

30 3. The combination, with the reservoir and pump-barrel, of the shell G', containing the valve and valve-spring, the shell G, and the removable end cap or cover applied upon shell G, substantially as shown and described.

35 4. The combination of the reservoir, the pump, shell G', connected to the inner end of

the pump-barrel, the valve, and the tube leading from the interior of said shell to the top of the reservoir, substantially as shown and described.

5. In combination with the shell G, secured in the wall of the reservoir, the threaded projection for the reception of the lower end of the packing-tube, a burner, the removable cap, the interior shell, the pump-barrel, and the reservoir, substantially as and for the purposes set forth.

6. In combination with the burner and perforated casing, the projecting piece centrally perforated and arranged within the perforated casing, leaving a free space between it and the casing, substantially as shown, and for the purposes set forth.

7. In a torch of the character herein set forth, having the pump-barrel and the supporting-shell secured in the walls of the reservoir, the combination, with the reservoir, of the bottom composed of the two plates B and B', mounted and secured in place, substantially as and for the purposes set forth.

8. In a torch of the character herein set forth, the combination, with the reservoir, pump-barrel, and packing-tube leading to the burner, of the two shells G and G', the washer, and the removable cap, substantially as and for the purposes set forth.

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

HENRY WELLINGTON.

Witnesses:

JOHN BUCKLER,
WORTH OSGOOD.