Aug. 16, 1927. 1,639,450

C. L. BASTIAN ET AL

TORCH

Filed Nov. 25, 1924

Fig. 1.

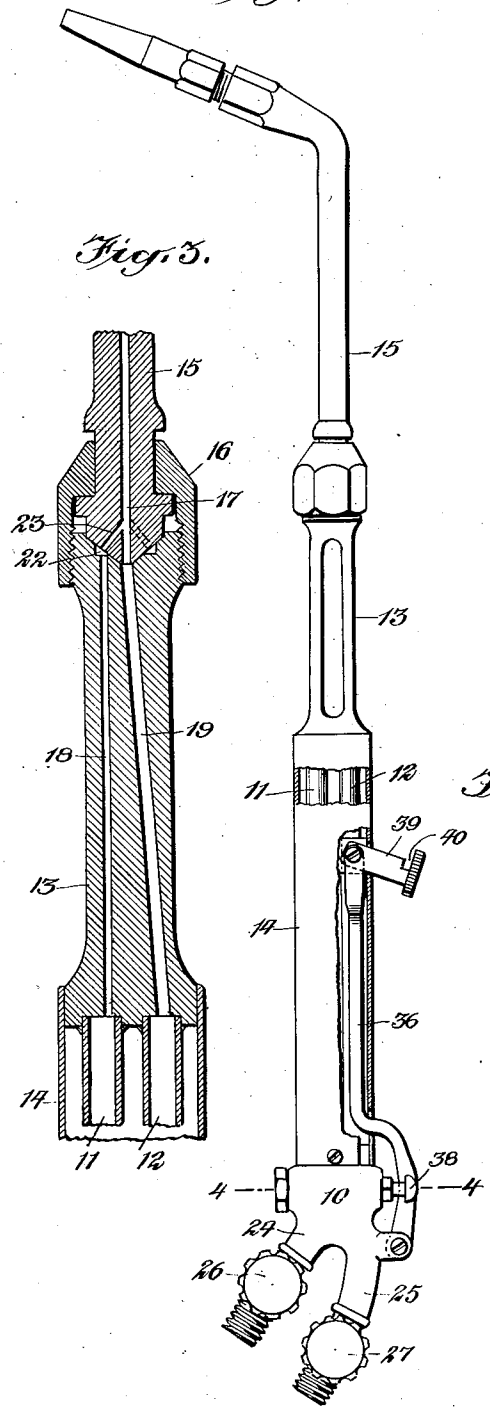


Fig. 4.

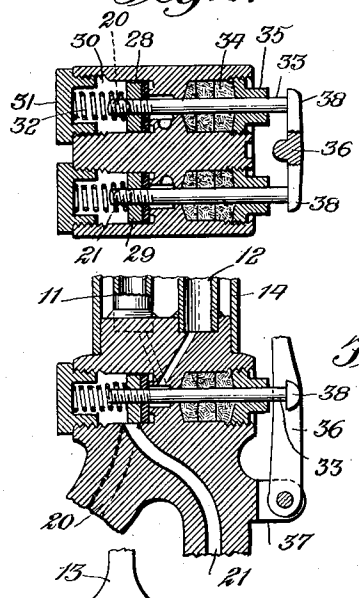


Fig. 5.

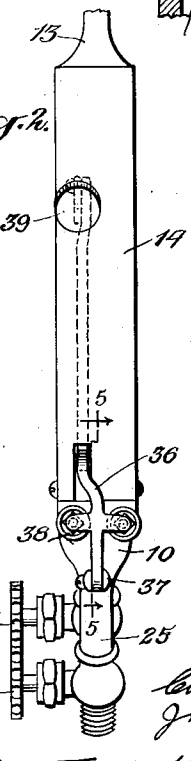


Fig. 6.

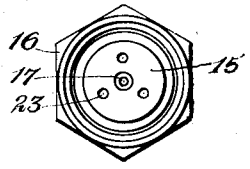
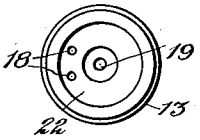


Fig. 7.



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Patented Aug. 16, 1927. 1,639,450

UNITED STATES PATENT OFFICE.

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TORCH.

Application filed November 25, 1924. Serial No. 752,092.

This invention is an improvement in heating or welding torches and relates more particularly to that type in which there are provided independently adjustable valves for controlling the combustible and combustion supporting gases to regulate the size and character of the flame, and separate means for turning on and off both gases without disturbing the adjustment or relative setting of said valves.

With a torch of this type the operator may readily shut off both gases and conserve the supply thereof whenever there is a brief interval between successive heating or welding operations, and he may readily turn on both gases for use and obtain the previously determined size and character of flame without requiring time or effort to readjust. For this purpose there is provided a second pair of valves of a type which may be quickly opened or closed and provided with means for operating them simultaneously or in succession.

Among the important objects of our invention are the following:

To position all of the valves outside of the handle, whereby we avoid all danger of leakage of gas past the packings to the interior of the handle and the danger of explosion therein; to position all of the valves of the torch as far as conveniently possible from the heat of the flame; to so mount all the valves that they are conveniently accessible for cleaning, repairing or replacement, or for adjustment of the packings thereof; to so design the actuating mechanism for the auxiliary or shut-off valves that it may be conveniently operated by the thumb of the hand holding the torch, may be mechanically retained in open position, and does not interfere with the proper handling or firm grasping of the torch or rendering the latter unsightly.

As one important feature the auxiliary valves are mounted in a valve block at the rear end of the torch between the needle valves and the handle, and are actuated by a lever which extends lengthwise of the handle and inside of the latter to the front end of the gripping portion where a small part is exposed for actuation. Thus the proper and firm grasping or holding of the torch is not interfered with by the valve actuating mechanism, and the gripping of the handle does not operate to open the valves.

Other objects and important features will be pointed out hereinafter, or will be apparent from a consideration of the preferred form illustrated in the accompanying drawings.

In these drawings:

Fig. 1 is a side elevation of a torch embodying our invention.

Fig. 2 is a top plan view of the rear or handle portion.

Fig. 3 is a central longitudinal section through the shank portion.

Fig. 4 is a transverse section on the line 4—4 of Fig. 1.

Fig. 5 is a longitudinal section on the line 5—5 of Fig. 2, and

Figs. 6 and 7 are end views looking in opposite directions, at the goose-neck tip and shank at their abutting ends.

In the construction illustrated in the accompanying drawings there is a main valve block 10 and a pair of tubes 11 and 12 extending therefrom to a shank 13. A tubular handle 14 is connected to the forward end of the block 10 and the rear end of the shank 13 so as to provide a grip portion, and to conceal the two tubes 11 and 12. A goose-neck tip 15 is detachably secured to the end of the shank by a union 16 and the base of the tip is provided with a mixing chamber 17 in which the gases are brought together after delivery through the two tubes 11 and 12 and the two corresponding passages 18 and 19 in the shank.

The valve block 10 has two passages 20 and 21 therethrough, the passage 20 being for the acetylene or other combustible gas, and the passage 21 being for the oxygen or other combustion-supporting gas. The passage 20 leads to the lower tube 11 and the latter leads to the passage 18 which terminates in an annular groove 22 in the end of the shank and opposite to the head end of the tip. The oxygen passage 21 leads to the upper tube 12 and the passage 19. The latter is inclined so as to register with the central passage and mixing chamber of the tip. The head of the tip has passages 23 leading from the groove 22 to the mixing chamber.

In our improved construction the valve

block carries four valves, two for each passage. One valve for each passage serves for the adjustment or regulation of the flame and is preferably of the needle valve type, while the other valve for each passage is preferably of the spring pressed poppet type. The valve block 10 has a pair of branches 24 and 25 to which hose from the two sources of gas may be connected, and in which are the passages 20 and 21. In these branches are mounted the two needle valves 26 and 27, and by means of which the size and character of the flame may be regulated or the gas completely shut off when the torch is laid aside for other than a brief interval. As a convenience in manufacture, the valves 26 and 27 are preferably in short nipples which are separately formed and thereafter brazed or otherwise permanently secured to the body of the valve block.

The body of the valve block has therein a pair of poppet valves 28 and 29 for controlling the gas flow through the two passages 20 and 21. These are movable in a direction at right angles to the general length of the torch and in a vertical direction when the torch is held in the usual approximately horizontal welding position. The valve seat for each valve is formed in the valve block, while the valve itself is mounted in a chamber 30 at the lower side of the valve block. The chamber is closed at its lower end by a cap 31 and within the chamber is a spring 32 for holding the valve to its seat. Each valve has a valve stem 33 projecting through the upper side of the valve block and through a packing 34 in a chamber formed in the block. This packing may be adjusted by a gland nut 35 threaded into the valve block, and serving as a guide for the valve stem. The two passages 20 and 21 lead to the two chambers 30 below the valves, and lead from above the valve seats to the two tubes in the handle. It will be noted that by removing the caps 31 the valves may be dropped out for replacement or repair, and that the packing may be tightened or replaced by removing the gland nuts 35 without removing the caps 31 or the valves.

For operating the two poppet valves 28, 29 simultaneously there is provided a lever 36 pivoted to a lug 37 on the valve block. The lever has laterally projecting lugs 38 engaging with the outer ends of the two valve stems 33, and beyond these stems the lever extends downwardly and forwardly through an aperture in the handle 14. The front end of the lever 36 is adjacent to the front end of the tubular handle 14, and is there provided with an actuating member in the form of a push button 39. This is pivoted to the lever and extends upwardly through an aperture in the handle so that the upper end may be easily forced inwardly by pressure of the thumb of the hand gripping the handle 14. The member 39 is preferably provided with a notch 40 which may receive a portion of the wall of the tubular handle at the front edge of the aperture through which the member 39 extends. Thus by pressing the member 39 inwardly, the lever 36 will act on the two valves 28 and 29 to open them, and by then swinging the member 39 forwardly to a slight extent the wall of the handle will enter the notch 40, and the member will be locked in its inner position and against the action of the valve springs 32.

In using the torch the operator first opens the two poppet or shut-off valves by pressure on the actuating member 39, and locks the valves in open position. The valves 26 and 27 are then opened to the proper extent to give the desired shape and character of flame. If the operator desires to lay the torch aside for a brief interval he may push back slightly on the member 39 so as to release the latter, and the valves 28 and 29 will instantly close to shut off both gases. When he desires to again use the torch he may simultaneously open both valves by pressure on the actuating member 39, and upon lighting the issuing gases the flame will be of the previously determined character and size, inasmuch as the carefully adjusted positioning of the valves 26 and 27 has not been disturbed.

In our improved construction it will be noted that all four of the valves are grouped together, that they are at the maximum convenient distance from the heat of the flame, and that all of them are outside of the tubular handle, whereby any leakage past the packing or from the valve chambers, will be directly to the atmosphere rather than to the interior of the handle where it is liable to explode and injure the operator. The actuating lever 36 extends from the gear of the hand-gripping portion of the handle to the front thereof, whereby the valves positioned at the rear of the handle may be conveniently operated by the thumb of the hand holding the torch. The main portion of the lever, being inside of the handle, is free from liability of accidental operation when the torch is grasped in the hand.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. A torch having a tubular handle, a valve block at the rear end thereof and provided with a pair of separate passages therethrough, a pair of needle valves in said valve block, one for each passage, a pair of shut-off valves in said valve block, one for each passage, and positioned between said needle valves and said handle but outside of the latter, and an operating member for said shut-off valves pivoted to said valve block outside of said handle and between

said needle valves and said shut-off valves extending lengthwise of and within said handle, and having an actuating part outside of the handle adjacent to the front end of the latter.

2. A torch having a tubular handle, a valve block at the rear end thereof, having two separate passages therethrough, separate shut-off valves in said valve block outside of said handle for controlling said passages, a pair of tubes secured to said valve block and extending lengthwise through said handle, a shank secured to the front end of said tubes and supporting the front end of said handle, and having a pair of passages therethrough, and an operating member for said valves, extending lengthwise of and within said handle, and having an actuating part at the front end of said handle, said part being pivotally supported and provided with a notch for locking engagement with the wall of the handle.

3. A torch having a valve block, a pair of valves therein, a pair of tubes extending from said valve block, a shank having a pair of passages and secured to the front ends of said tubes, a tubular handle supported by said valve block and said shank and encircling said tubes, and an operating member for said valves pivoted to said valve block, outside of said handle, extending lengthwise of and within said handle, and having an actuating part pivoted to said member and projecting radially through said handle at the front end of the latter, said part being provided with a notch for locking engagement with the wall of the handle.

4. A torch having a tubular handle, a valve block at the rear end thereof, having two separate passages therethrough, separate shut-off valves in said valve block outside of said handle for controlling said passages, a pair of tubes secured to said valve block and extending lengthwise through said handle and an operating member for said valves, said member being pivoted to said valve block outside of said handle, and extending lengthwise of and within said handle, and having an actuating part at the front end of said handle, said part being pivotally supported and provided with a notch for locking engagement with the wall of the handle.

Signed at Chicago, in the county of Cook and State of Illinois, this 22nd day of November, A. D. 1924.

CHARLES L. BASTIAN.
JULIUS APSIT.