

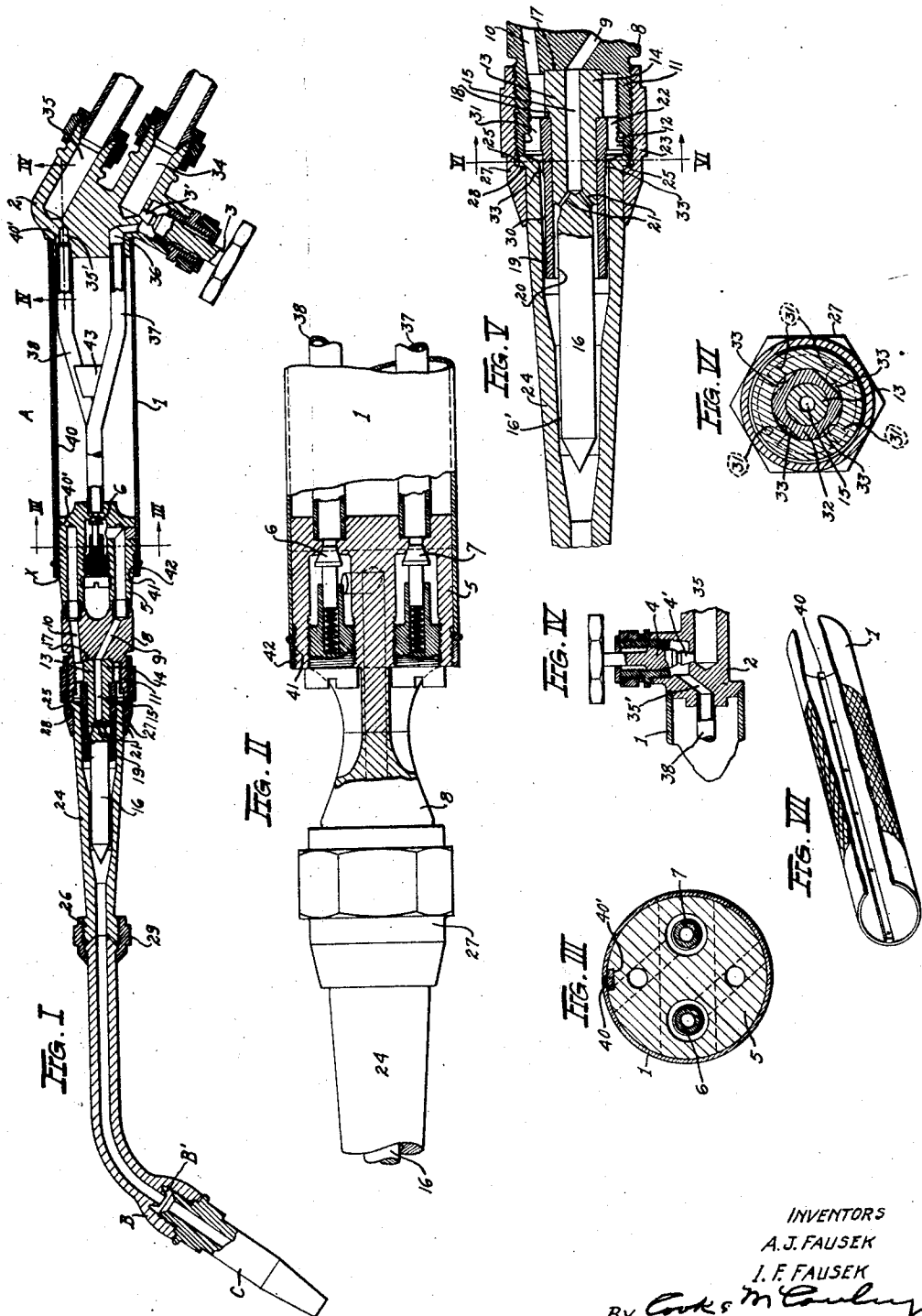
July 20, 1926.

1,592,973

A. J. FAUSEK ET AL

TORCH

Filed Nov. 1, 1924



INVENTORS
A. J. FAUSEK
I. F. FAUSEK
BY *Cook & McLaughlin*
ATTORNEYS

UNITED STATES PATENT OFFICE.

ARTHUR J. FAUSEK AND IRWING F. FAUSEK, OF ST. LOUIS, MISSOURI.

TORCH.

Application filed November 1, 1924. Serial No. 747,185.

Our invention relates to a torch, or blow-pipe, intended for use in welding or cutting metals through the medium of an oxyacetylene flame, the present invention having for one of its objects the provision of simple means for retaining in its proper position the tube which constitutes the handle of the torch.

Another object of our invention is to produce a torch which is so constructed that certain check valves which form parts of the torch may be readily introduced into or withdrawn from the comparatively small handle of said torch within which said check valves are contained.

Still another object of the invention is to provide a torch of the type described with inlet valves having large clearance spaces above the valve seats.

With the foregoing and other objects in view, the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention. However, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Fig. I is a longitudinal section of a torch, or blowpipe, embodying the features of our invention, a portion of the tip of said torch, or blowpipe, being shown in elevation.

Fig. II is an enlarged fragmentary view, partly in elevation and partly in longitudinal section, showing the check valves of our improved torch, or blowpipe.

Fig. III is a cross section on line III—III of Fig. I.

Fig. IV is a sectional detail on line IV—IV of Fig. I, showing one of the inlet valves of our improved device.

Fig. V is a fragmentary longitudinal section of the mixing chamber of our device.

Fig. VI is a cross section on line VI—VI of Fig. I.

Fig. VII is a perspective showing the handle of our device, a portion thereof being broken away to show the key associated with said handle.

In the drawing, A designates a handle connected to a discharge head B to which is secured a tip, or nozzle, C. The handle comprises a tubular member 1 at one end of

which is located a housing 2 containing the inlet valves 3 and 4 of the device, and at the other end a housing 5 within which check valves 6 and 7 are located. Arranged adjacent to the valve housing 5 and secured thereto, preferably being welded, is a member 8 having passageways 9 and 10 formed therein. The member 8 is provided with a reduced portion 11 having internal and external screw threads, and said reduced portion 11 is provided with an annular depression 12 (Figs. I and V).

13 designates an inner member arranged centrally within the device, said member comprising a rearmost portion 14 having a passageway 15 and a stem portion 16 which extends forwardly in the device. 17 designates a depressed seat which is formed in the member 8, said depressed seat 17 being adapted to receive the rearmost end of the inner member 13 as shown clearly in Fig. V. 18 designates an annular shoulder which is formed on the inner member 13. Arranged to surround a portion of the inner member 13 is a sleeve 19, the rearmost face of said sleeve being in contact with the annular shoulder 18 on the member 13, and said sleeve extends forwardly in the device from said annular shoulder 18, as shown in Fig. V. By referring to Fig. V it will be seen that the rearmost portion 14 of the inner member 13 is of greater diameter than the stem portion 16 of said inner member, and as the inner diameter of the sleeve 19 is approximately the same as the outer diameter of the portion 14 of said member 13, there will be an annular space 20 between a portion of the stem 16 and the inner face of the forward portion of the sleeve 19. 21 designates a plurality of passageways which connect the passageway 15 in the portion 14 of the member 13 with the annular space 20 just mentioned. Located at the rearmost end of the sleeve 19 is an annular collar portion 22, which is provided with external screw threads, and an annular flange portion 23 of greater diameter than the threaded portion of said collar portion.

When it is desired to assemble the parts of the device which have been described, the inner member 13 is arranged in place with its rearmost end in the depressed seat 17. The sleeve 19 is then passed over the inner member 13 and is moved rearwardly until the screw threads on the collar portion en-

gage the internal screw threads within the reduced portion 11 of the member 8. The sleeve 19 is then screwed into the portion 11 until the rearmost face of said sleeve contacts with the shoulder 18. This will cause the rearmost end of the member 13 to be forced tightly into the depressed seat 17, whereby a fluid-tight joint will be obtained between the member 8 and the member 13.

When the parts mentioned are assembled as described, the annular face of the flange portion 23 of the collar 22 will contact with the face of the annular depression 12.

24 designates the shell of the mixing chamber of the device, said shell having an annular flange 25 at one of its ends and a threaded portion 26 at its other end. 27 designates a coupling member which is adapted to connect the shell 24 of the mixing chamber to the member 8, said coupling member being provided with internal screw threads, which engage the external screw threads on the reduced portion 11 of said member 8, and an annular shoulder 28 which engages a face of the annular flange 25 on the shell 24. It is apparent from this that when the coupling member 27 is screwed on the reduced portion 11 of the member 8 the annular flange 25 of the shell 24 will be tightly gripped between the end face of said reduced portion 11 and the annular shoulder 28 within the coupling member 27. 29 designates a coupling member which is similar to the coupling member 27 just described, said coupling member 29 being adapted to connect the head B of the device to the shell 24.

By referring to Figs. I, IV and VI it will be noted that there is an annular space 30 between the outer face of the sleeve 19 and the inner face of the wall of the shell 24 of the mixing chamber. It will also be noted that this space 30 is tapering, due to the fact that the inner face of the wall of the shell 24 is inclined. Formed in the collar portion 22 of the sleeve 19 is a plurality of openings 31, said openings being extended entirely through said collar portion, as shown in Fig. V. The sleeve 19 is provided with a non-circular portion 32, said portion 32 having a plurality of flat faces as shown clearly in Fig. VI. It will be noted that when the non-circular portion 32 of the sleeve 19 is introduced into the rearmost portion of the circular opening in the shell 24, spaces 33 will be provided between the flat faces of said non-circular portion and the curved face of the opening, and these spaces 33 are in registration with the openings 31 (Fig. VI). It is therefore plain that fluid which passes from the passageway 10 in the member 8 will pass through the openings 31 and through the spaces 33 into the tapering space 30. It is likewise plain that fluid which passes through the passage-

way 9 will pass through the passageway 15 and through the passageways 21 into the space 20.

Arranged in the housing 2 is a pair of passageways 34 and 35 through which oxygen and acetylene pass from reservoirs, said passageways having the inlet valves 3 and 4 associated with them so that the flow of oxygen and acetylene from said passageways into the passageways 35' and 36 may be regulated. 37 designates a tube by which the passage 34 is placed in communication with the valve chamber within which the check valve 6 is located, and 38 designates a tube by which the passageway 35 is placed in communication with the valve chamber within which the check valve 7 is located. It will be noted that the valves 3 and 4 are arranged approximately at right angles to each other, and it will also be noted that comparatively large spaces 3' and 4' are provided adjacent to the valve seats so that a sufficient space is provided for the unrestricted passage of fluid when the valve heads of the valves 3 and 4 are withdrawn from their seats.

An important advantage of our improved torch, or blowpipe, over those used heretofore resides in the unique manner in which the tube 1, which constitutes the handle of the device, is retained in place. By referring to Fig. II it will be noted that the tube 1 is provided with a key 40 which extends from end to end of said tube. It will be noted from Fig. I that the housing 2 containing the inlet valves at the rear end of the handle of the device and the check valve housing 5 at the forward end of said handle are each provided with a notch 40' which is adapted to receive said key 40. The notch in the check valve housing 5 extends from the rearmost face of said housing to the point indicated by the reference character X, and said check valve housing is provided with external screw threads 41 adjacent to the point X. To arrange the tube 1 in place on the device, the head B is disconnected from the shell 24 by unscrewing the coupling member 26. The tube 1 may then be passed over the shell 24 and member 8, said tube being so positioned that the key 40 thereof will pass through the notch in the check valve housing 5. A continued longitudinal movement of the tube 1 will cause the rearmost end portion of the key 40 to enter the notch in the inlet valve housing 2, and it is plain that with the key 40 located in the notches as described, the tube 1 may not be rotated relative to the device. To prevent the tube 1 from being moved forwardly after it has been arranged in place as described, I employ an internally threaded ring 42 which is screwed on the member 5, the threads of said ring engaging the screw threads 41 on said member 5 and said ring

abutting against the forward end of the tube 1.

Another important feature of our invention resides in the construction which permits of the easy introduction and removal of the check valves 6 and 7. It will be noted that the check valve housing 5 and the member 8 are cut away as shown clearly in Fig. II to provide pockets which are in alignment with the chambers within which said check valves are located. The pockets mentioned permit the valves 6 and 7 to be moved longitudinally relative to that portion of the device whereby said valves may be moved freely when they are being inserted or removed without interference from any portion of the device. It is apparent that if the parts mentioned were not so arranged the check valve housing would have to be much larger in diameter than the adjacent parts of the device to permit longitudinal movement of the check valves.

In the use of our improved device, oxygen passes from the reservoir through the tube 37 and through the valve chamber which contains the check valve 6. The oxygen then passes through the passageway 9 and passageways 21 into the annular space 20. At the same time the acetylene passes from the reservoir through the tube 38 and through the valve chamber which contains the check valve 7. The acetylene then passes through the passageways 31 and spaces 33 into the space 30. It is therefore apparent that there is a tubular body of oxygen surrounding a tubular body of acetylene, and as these bodies of oxygen and acetylene are discharged from the spaces 20 and 30 they will commingle with each other, thereby producing a complete mixture of ingredients. It is important to notice in connection with the parts just described that the individual passageways 21 are a sufficient distance from the forward end of the space 20 to permit the oxygen passing through said passageways 21 to be converted from individual streams of fluid to a single tubular body of fluid having a very thin wall. Also, the individual passageways 31 are located a sufficient distance from the forward end of the space 30 to permit the acetylene to be converted from individual streams of fluid to a tubular body of fluid having a very thin wall. It is therefore plain that when these two tubular bodies of fluid are brought together after leaving the spaces 20 and 30, the thin walls of fluid may be very thoroughly commingled, thus producing a complete mixture of said fluids.

42 designates a clip which is secured to the tubes 37 and 38 adjacent to the points where said tubes are bent, said clip being intended to prevent elongation of said tubes.

It will be seen by referring to Fig. V that the annular space 16' between the stem

16 and the inside face of the wall of the shell 24 is also tapering, thus compelling the gases to pass through a very narrow annular opening at the forward end of said space 16', whereby a complete commingling of said gases is obtained.

B' designates a nozzle which is located within the head B of the torch disclosed herein, the purpose of said nozzle being to prevent formation of eddies as the fluid passes into and through the tip C.

We claim:

1. A torch having a handle, a nozzle, and conductors leading from said handle to said nozzle, said handle comprising a pair of oppositely disposed members provided with notches and a tubular member, said tubular member being provided with a member adapted to be introduced into said notches to lock said tubular member in place.

2. A torch having a handle, a nozzle, and conductors leading from said handle to said nozzle, said handle comprising a pair of oppositely disposed members, and a tubular member, one of the elements of said handle being provided with a notch and another of the elements of said handle being provided with a member adapted to be introduced into said notch to lock said tubular member in place.

3. A torch having a handle, a nozzle, and conductors leading from said handle to said nozzle, said handle comprising a pair of oppositely disposed members provided with notches and a tubular member, said tubular member being provided with a longitudinally extended member adapted to be introduced into said notches to lock said tubular member in place.

4. A torch having a handle, a nozzle, and conductors leading from said handle to said nozzle, said handle comprising a pair of oppositely disposed members provided with notches, a tubular member, said tubular member being provided with a member adapted to be introduced into said notches to prevent rotation of said tubular member, and means whereby longitudinal movement of said tubular member is prevented.

5. A torch having a handle, a nozzle, and conductors leading from said handle to said nozzle, said handle comprising a pair of oppositely disposed members provided with notches, a tubular member, said tubular member being provided with a member adapted to be introduced into said notches to prevent rotation of said tubular member, and means comprising an internally threaded member whereby longitudinal movement of said tubular member is prevented.

6. A torch having a handle, a nozzle, and conductors leading from said handle to said nozzle, said handle comprising a pair of oppositely disposed members provided with notches, a tubular member, said tubular

member being provided with a key on its inner face which key extends from end to end of said tubular member, said tubular member being adapted to be arranged in place on said device in such manner that said key will be extended into said notches, and an internally threaded ring adapted to abut against an end of said tubular member to prevent longitudinal movement thereof. In testimony that we claim the foregoing we hereunto affix our signatures. 10

ARTHUR J. FAUSEK.
IRWING F. FAUSEK.