

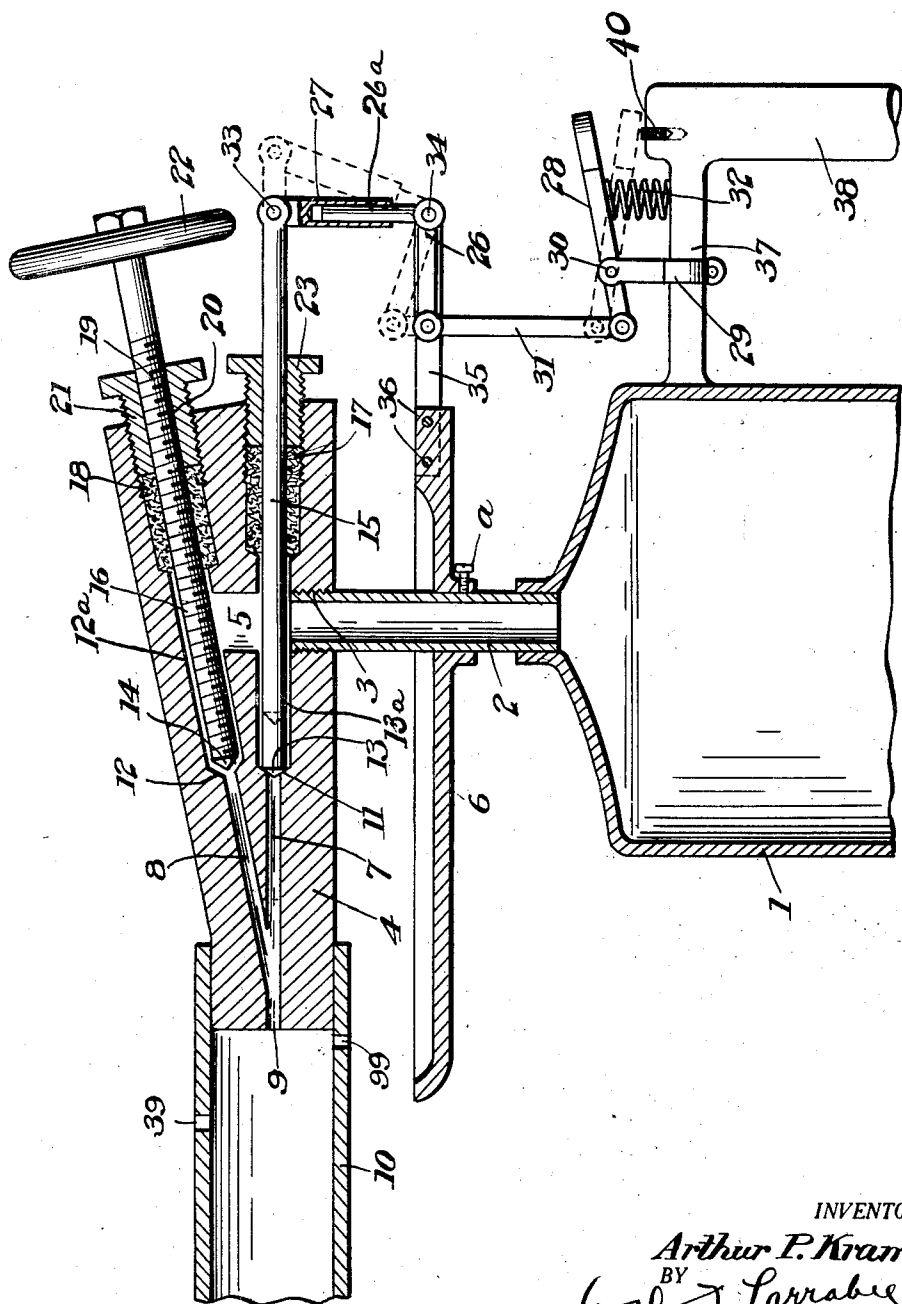
Aug. 14, 1934.

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1,970,237

BLOW TORCH

Filed Feb. 25, 1928



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UNITED STATES PATENT OFFICE

1,970,237

BLOW TORCH

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Application February 25, 1928, Serial No. 256,891

7 Claims. (Cl. 158-33)

This invention relates to blow torches, and more particularly to a burner head for blow torches and automatic regulating means for such burner head.

5 The main object of the invention is to provide novel automatic regulating means for gasoline blow torches, whereby the full fuel flow of the torch may be automatically shut off, and which means may be easily and quickly operated to
10 instantaneously supply a full fuel flow.

Another object is to provide blow torch regulating means of the character above stated in the form of an attachment which may be attached to standard blow torches now on the market.

15 The invention is particularly useful when the operator is required to work in close quarters and when it is necessary to set the torch down when not in use. My invention provides a novel and simple means whereby a workman may in such
20 close quarters safely use a torch.

It is an important aid to fuel economy and a high grade fuel may be used in my torch at about the same or lower cost as a low grade fuel could be used in torches heretofore.

25 The invention includes the parts and combinations of parts more particularly hereinafter referred to.

Other objects, advantages and features of invention may appear from the accompanying
30 drawing, the subjoined detail description and the appended claims.

The accompanying drawing illustrates the invention in a form I at present deem preferable.

35 The figure in the drawing is a vertical longitudinal section of my invention. Dotted lines indicate the parts in full fuel flow position.

In the drawing 1 designates a liquid fuel tank of common construction for containing gasoline or other suitable liquid fuel, in the top of which
40 tank is welded an outlet tube 2. The tank has the usual pump arrangement (not shown) common to blow torches for forcing the fuel from the tank into the burner. The upper end 3 of the outlet tube 2 is threaded and screw seated in the
45 lower side of a burner head 4 and is in communication with the fuel inlet 5 of said head.

A small open fuel receptacle 6 is secured on the outlet tube 2 between the top of the tank 1 and the under side of the burner head 4 by means
50 of a set screw *a*. The tube 2 extends upwardly through said receptacle 6. The head 4 is provided with a full fuel flow duct 7 and with a pilot fuel flow duct 8 leading forwardly from the main fuel inlet 5, said fuel ducts converge into a single
55 fuel outlet duct 9 that extends through the for-

ward end of the head 4. On the forward end of the burner head 4 is fitted the usual torch nozzle 10 into which the outlet duct 9 opens. Valve seats 11 and 12 are respectively provided in the fuel ducts 7 and 8 for valves 13 and 14 respectively and which valves are formed in the forward ends of stems 15 and 16 respectively. The valve stems 15 and 16 extend rearwardly through stuffing boxes 17 and 18 respectively in the rear end of the burner head 4, and the stem 16 has threads 19 which engage threads 20 in the gland 21 of the stuffing box 18. A hand wheel 22 is secured on the outer rear end of the valve stem 16 for turning the stem to open or close the valve 14. The valve stem 15 slidably extends through the gland 23 of stuffing box 17.

Where the valve stems 15 and 16 pass through the burner 4, cutting across the fuel passage 5, the bores through which they pass are substantially larger than the diameters of the valve stems, so that sufficient space is allowed for the fuel vapor mixture to pass around the valve stems to the valve seats 11 and 12. The enlarged portions extend from the stuffing boxes 17 and 18 to the valve seats 11 and 12 respectively and are denoted
80 by numerals 12*a* and 13*a*.

Automatic control means for controlling the flow of fuel from the tank to the torch nozzle are provided and include a bell crank lever 26, a sleeve arm 27, an operating lever 28, a clamp bracket 29
85 on which the lever 28 is pivoted at 30, a link 31 connecting one arm of said bell crank lever and one end of the operating lever 28, and a spring 32 engaging the operating lever 28. The sleeve arm 27 is pivoted at its upper end at 33 to the rear end of the valve stem 15 and telescopes over the arm 26*a* of bell crank lever 26. The bell crank lever 26 is pivoted at 34 to the outer end of a support or arm 35 secured by screws 36 to the fuel receptacle 6. The clamp bracket 29 is clamped about the upper connecting member 37 of the handle 38 of the liquid fuel tank 1 and the spring 32 bears against said connecting member and the lever 28 and normally urges said lever up, and through the medium of said lever, link 31, bell crank lever 26,
100 and its arm 26*a*, sleeve arm 27 and stem 15, normally holds the valve 13 upon its seat 11 in closed position.

In operation, the valve 14 is adjusted to provide a pilot flame and a small quantity of fuel is admitted to the fuel receptacle 6 through the orifice 99 formed in the nozzle 10 as is common practice and after the burner head is heated by burning such quantity of fuel in the receptacle 6 for the usual purpose, a full flow of fuel is obtained by the
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operator grasping the handle 38 and with his thumb, he may conveniently depress the lever 28 and instantly open the valve 13 through the medium of link 31, bell crank 26, sleeve arm 27 and stem 15 so that a full flow of fuel will pass from the tank 1 through outlet tube 2, inlet 5, ducts 7 and 9 to the nozzle 10 where it is burned. While using the torch the operator usually holds the tank 1 in one hand by grasping the handle 38 and may, without difficulty, keep his thumb on the lever 28 and hold the valve 13 open so that the full fuel flow will pass through the torch and maintain a full flame, or such pressure of the thumb on lever 28 may be removed and the pilot flame will keep the torch burning low for instant use when full fuel flow is desired.

The size of the fuel flame can be regulated by means of the set-screw 40 in the handle 38. The adjustment of the screw will limit the downward travel of lever 28 and consequently the extent of opening of the valve 13. The further the screw 40 is turned into the handle 38, the wider the valve 13 will be opened and the greater will be the flame in the nozzle.

When the operator releases the lever 28, the spring 32 automatically closes the valve 13 through the medium of lever 28, link 31, bell crank 26, sleeve arm 27 and stem 15, and shuts off the full fuel flow through the burner head while the pilot valve 14 remains open and the pilot flow of fuel passes from the tank 1 through tube 2, inlet 5, ducts 8 and 9 into the nozzle 10 where it is further mixed with air admitted through an opening 39 in said nozzle, to provide a combustible mixture.

It will be obvious that the special arrangement of fuel valves herein shown need not be followed. The full fuel flow valve may just as well be placed above the pilot burner valve as below it. Such a change is within the province of any skilled mechanic, and is within the spirit of this invention.

I claim:

1. In a blow torch, a fuel containing tank; a burner head, there being a passage connecting said tank and said head including a full fuel flow duct, and a valve controlling said duct; a bell crank; a sleeve arm telescoping over one arm of said bell crank and pivoted to one end of said valve; an operating lever; a link connecting said lever and the other arm of said bell crank; and means for normally holding said valve in closed position, said operating lever being mounted relative to said torch in position to be operated by the thumb of the operator for opening said valve.
2. In a blow torch, a fuel containing tank; a handle secured to said tank; a burner head detachably connected to said tank; a fuel passage in said burner head; a valve controlling said passage; a bell crank; a sleeve arm pivoted to one end of said valve, and telescoping over one arm of said bell crank; a clamp bracket connected to said handle; an operating lever pivoted

to said clamp bracket; a link connecting said operating lever and one arm of said bell crank, and means for normally holding said valve in closed position.

3. In a blow torch, the combination of a fuel containing tank; a burner head; a fuel passage leading from said tank to said head, a valve in said head controlling said passage; an operating lever mounted on said tank in position to be depressed by the operator when said tank is held in one hand; means interposed between said lever and said valve whereby said valve is opened when said lever is depressed and closed when said lever is elevated, and means for normally holding said lever elevated.

4. In a blow torch, the combination of a fuel containing tank; a burner head connected to receive fuel from said tank; a fuel outlet duct opening from said head; means for permitting a predetermined amount of fuel flow from said tank to said duct; and means connected to said tank and to said head for permitting increased flow of fuel from said tank through said duct when said tank is held by an operator.

5. In a blow torch, the combination of a fuel containing tank; a burner head connected to receive fuel from said tank; a fuel outlet duct opening from said head; means for permitting a predetermined amount of fuel flow from said tank to said duct; means connected to said tank and to said head for permitting increased flow of fuel from said tank through said duct when said tank is held by an operator; and means for holding said last mentioned means in position to normally prevent increased flow of fuel from said tank to said duct.

6. In a blow torch comprising a fuel containing tank; a burner head connected to receive fuel from said tank; a fuel outlet duct opening from said head; a plurality of passages in said head opening into said duct; means for permitting a predetermined amount of fuel flow from one of said passages to said duct; regulating means rigidly mounted on said tank adapted to control the fuel flow into said duct from the other of said passages; said regulating means being positioned on the tank so as to be operated by the thumb of the operator when the tank is held in one hand by an operator to instantly increase or decrease fuel flow to said duct.

7. In a blow torch, the combination of a fuel containing tank having a handle; a burner head connected to receive fuel from said tank; a fuel outlet duct opening from said head; means for conducting a predetermined amount of fuel from said tank to said duct; a slidable valve in said means; and means for operating said valve to increase the flow of fuel from said tank through said duct operable by the thumb of the operator when said tank is held by said handle.

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