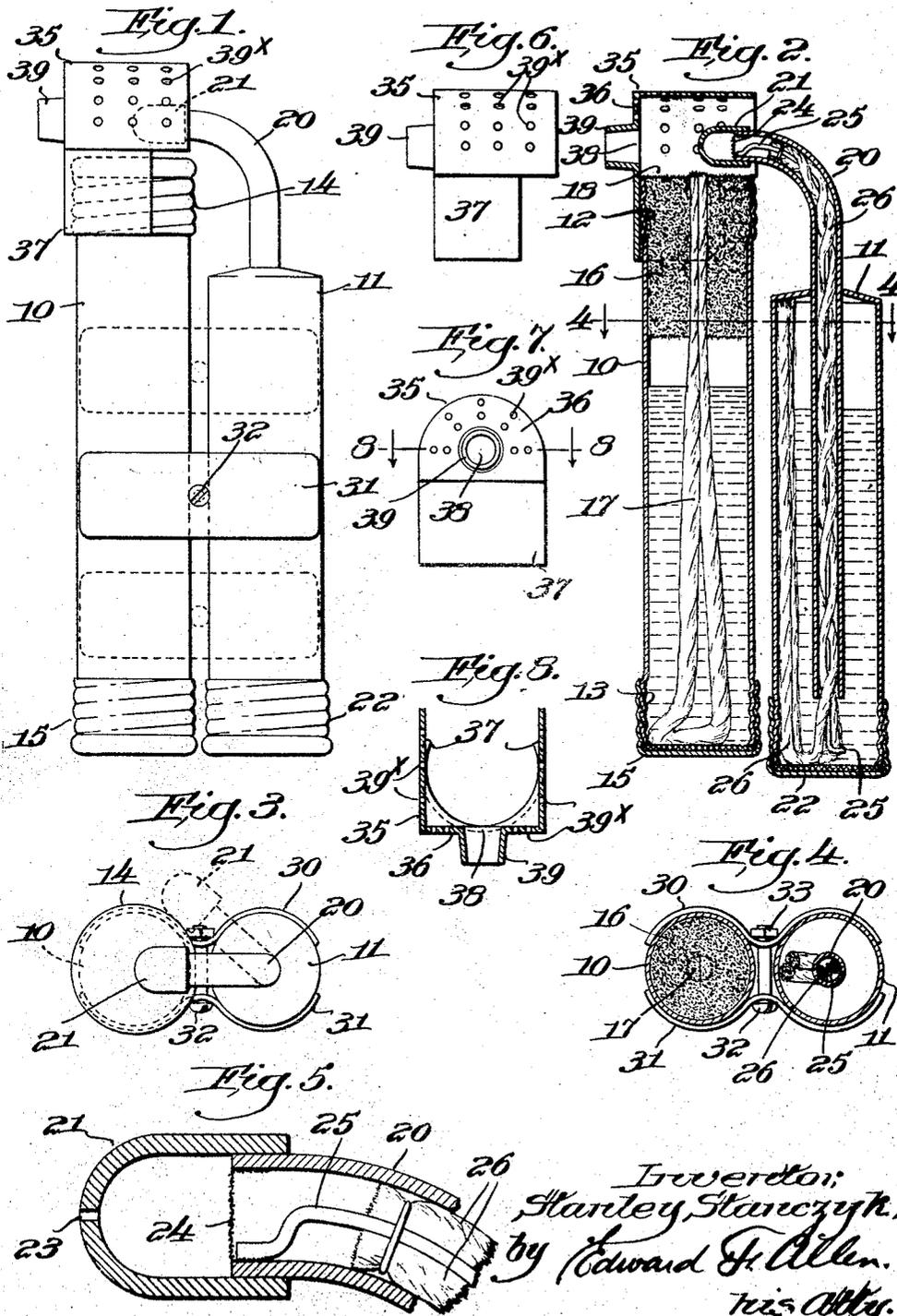


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S. STANCZYK
AUTOMATIC BLOWTORCH
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UNITED STATES PATENT OFFICE.

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AUTOMATIC BLOWTORCH.

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To all whom it may concern:

Be it known that I, STANLEY STANCZYK, a subject of the Government of Poland, and a resident of West Lynn, in the county of Essex and Commonwealth of Massachusetts, and whose post-office address is #4 Stickney Street, have invented certain new and useful Improvements in Automatic Blow-torches, of which the following is a specification.

This invention relates to an automatic blow torch and particularly to a class of torch in which alcohol is used for fuel and is especially adapted for the use of jewellers, dentists and the like for soldering and brazing.

An object of the invention is the production of a torch of this class that automatically generates pressure for the purpose of producing the blast.

A further object of the invention is to so construct and arrange the torch that it is susceptible to various adjustments which may be rapidly made to suit the occasion or use intended.

A further object is to produce a blow torch wherein the initial production of pressure to cause the blast is greatly accelerated, whereby the lapse of time between the lighting of the torch proper and the production of the blast is reduced to the minimum.

It is a still further object of the invention to provide a blast pipe with a gas chamber at the end thereof of an appreciable size, having an opening therein for the escape of generated gas, which is protected from clogging by a screen. The said screen being of fine mesh and somewhat removed from the said opening, forming a wall for the chamber through which gas is forced.

It is also an object of the invention to provide the torch with an adjustable shield to protect the flame from air currents, the shield being so arranged as to be readily removed from the torch or positioned therewith so as to aid in directing the flame to the best advantage.

To the attainment of the above objects the invention consists in certain novel features of construction and arrangement of parts which will be fully understood by reference to the drawings and the claims hereinafter given.

Of the drawings:

Figure 1 represents in side elevation the

improved blow torch as it would appear when not in use with the flame shield applied.

Figure 2 is a view looking in the same direction as Figure 1 but showing the torch in vertical longitudinal section, and in one of the positions it may assume for operation.

Figure 3 a top plan view of Figure 1 with the flame shield removed.

Figure 4 a section on the line 4—4 Figure 2.

Figure 5 a greatly enlarged view of the gas chamber as shown in Figure 2.

Figure 6 a side elevation of the flame shield shown as removed from the torch.

Figure 7 a left hand elevation of the shield viewing Figure 6.

Figure 8 a section on the line 8—8 Figure 7.

Like characters designate like parts throughout the several figures of the drawings.

Referring to the drawings:

The blow torch in the present instance consists of a flame cylinder 10 and a pressure producing cylinder 11 both of which are adapted to contain fuel of intense heat giving qualities such as alcohol.

The flame cylinder 10 is composed of a length of tubing having screw threaded portions 12 and 13 at the top and bottom thereof to receive caps 14 and 15, the cap 14 being applied only at such time as the torch is not in use to prevent evaporation of fuel, while the cap 15 is for the purpose of replenishing the fuel supply in the cylinder and forming a bottom thereto.

At the upper or flame end of the said cylinder a wick plug 16 is inserted which is preferably of the braided kind ordinarily used for torches, but it will be understood that the invention is not limited to the use of a braided wick even though it is preferably used as it is obvious that other forms of wick plug might be used so long as they effectively prevent leakage and otherwise offer flame producing qualities.

The plug 16 is preferably of short length and depends upon a feeder wick 17 to furnish its exposed top surface 18 with fuel. The wick 17 is such as is commonly used and in this instance a strand of wick is doubled, the ends being inserted in the plug for the entire length thereof leaving the bight of wick of more than sufficient length to reach

the cap 15 which forms the bottom of the fuel reservoir.

From the foregoing it will be readily seen that the fuel will, by capillary attraction, be fed to the end of the wick 17 where it will be distributed over the flame surface of the plug wick 16 which, as its name would imply, is inserted in the cylinder end quite firmly. In fact, the plug is so firmly inserted that leakage therethrough is practically eliminated and yet the material of the plug is not so compact as to entirely prevent the slow seepage of fuel therethrough, particularly adjacent the wick 17, nor is the passage of gas therethrough entirely eliminated.

Heretofore plugs that have been in use were of such character that tipping of the torch would cause leakage through the plug that was both wasteful and dangerous. The pressure generating cylinder 11 is preferably of shorter length than cylinder 10 and has fast therewith a tube 20 the upper end of which is curved and extends beyond the closed upper end of the cylinder and terminates in a gas chamber 21 which is attached thereto in such manner as to normally overhang the plug wick 16 of the cylinder 10. The said tube extending downwardly into cylinder 11 to within a short distance of the bottom thereof which in this instance is formed by the removable screw threaded cap 22.

The gas chamber 21 has a restricted outlet 23 through which gas is forced to be later ignited as it reaches and passes over the flame from plug 16.

A screen 24 is arranged to cover the opening of tube 20 and conveniently forms a partition or wall for the gas chamber through which gas may pass, but foreign particles of dust or dirt will be held to be incinerated and not permitted to enter the chamber and clog the outlet 23 thereof.

It is an object of this invention to produce a blow torch that generates the blast with greater speed than heretofore in torches of this class.

To accomplish this result the invention includes the use of a heat transmitting medium that is simple in nature and effective in operation.

The invention further includes the use of the above medium in conjunction with a restricted auxiliary fuel chamber, and also the use of the medium, the auxiliary chamber and a feed wick for the gas chamber. This combination makes it possible to cause the heat transmitting medium to contact with and transmit heat to a much more limited amount or volume of fuel than would be the case if the chamber were not used, hence blast producing pressure is much more rapidly obtained.

The heat transmitting medium 25 is herein shown as a flat wire or ribbon of metal

of comparatively high heat conductivity being fixedly secured to the inner wall of the tube 20 at approximately the upper end thereof (see Figure 5). The wire is otherwise loose in the said tube and extends downwardly beyond the lower end thereof to nearly the cap 22 or bottom of the reservoir.

So, too, the feed wick 26 is fast in any suitable or convenient fashion adjacent the end of said tube 20 and is also loose with respect to the rest of the tube through which it passes, but if desired it may be lightly wrapped or spirally wound about the wire 25 as shown in the drawing. The wick 26 is of such length that, regardless of the position the torch may be made to assume, vertical or horizontal, it will reach any fuel that may be contained in the reservoir. The drawing shows the wick as in contact with the top and bottom of the cylinder for the purpose of illustration of the above assertion.

It is preferred that the wire and wick shall not occupy all the space inside the tube or chamber to the exclusion of the fuel, but rather that the fuel shall have some space therein exclusive of the amount or volume absorbed by the wick. The object of this being, as before stated, to provide a somewhat limited volume of fuel to contact with the wire to cause a rapid expansion thereof, and consequently pressure, which induces a more rapid feed of fuel to the gas chamber.

It will be understood, however, that it is not intended that the fuel space in the said tube or conduit shall be excessive, but rather that it should be limited so that when the torch is tilted to a position where its end is below a horizontal the cooler fuel of the reservoir will not freely flow towards the gas chamber but will be perceptibly retarded in its progress thereto, and consequently has ample time to become heated on its way. In fact, the spirally wound wick 26 is in practice composed of loosely twisted material fibrous in nature and quite fluffy, and because of the spiral wind and the nature of the material a sudden influx of fuel to the tube 20 would cause the wick to bunch at the tube opening and form an effective barrier preventing a detrimental flow thereof towards the gas chamber.

As previously stated, a limited amount of fuel space is provided for in the tube 20 by the winding of the wick or as shown in the drawing by the two strands of wicking which have been referred to as a wick. The two strands oppositely wound and contacting with the wall of the tube and the wire 25 form separate pockets or traps for the fuel, the size of which depending upon the pitch of the spiral, the convolutions of wick between the pockets act as partitions which effectively prevent sudden flow of fuel from one to the other.

The drawings herewith show the two cylinders 10 and 11 as held in operative position by means of a clamp device. This device consists of two comparatively rigid plates 30 and 31 which are so shaped as to partly embrace each of the cylinders and held separated from each other by the cylinders. A screw 32 and a nut 33 constitute the means to retain the device in operative position.

As it is an object of this invention to assemble the cylinders so that various adjustments may be made thereto in the minimum amount of time and attention on the part of the user, the means to cause adjustment must be of a simple nature.

For this purpose the plates 30 and 31 are so constructed and arranged as to be drawn towards each other to firmly retain the cylinders within their grasp to a degree suitable to the user. Preferably the screw will be set up to such extent that the cylinders, one or both, may be moved longitudinally in the device with but little effort, and if occasion requires that one of the cylinders should be tilted toward the other for the best flame results, that too may be accomplished with but slight squeezing effort of the hand on the proper end of the cylinders to give the direction of tilt required.

While the plates are quite snugly held to the cylinders and they are made of comparatively rigid metal, yet they are so made as to yield upon squeezing the cylinders to allow of the tilt just referred to and upon release of the stress will cause the cylinder or cylinders to assume their or its normal parallel position.

Figure 1 shows the clamp device in two dotted line positions, the upper one of which would be assumed when it is desired to retract the gas chamber slightly and direct the flame more or less upwardly. In this instance squeezing pressure below the device would cause this action.

The lower dotted position with squeezing pressure brought to bear above the device would cause the opposite effect. These adjustments may be made by the user very rapidly and with but little practice may be accomplished by the hand that holds the torch without other help.

Figure 3 shows a dotted line position of the tube 20 which it may assume when the cap 14 is to be removed or adjusted to the cylinder 10, this being readily accomplished by reason of the almost universal adjustability of the clamp device.

Another feature of this invention consists in providing a shield for the flame which may be readily applied to or removed from the torch cylinder 10. This shield consists of a hood portion 35, a front wall 36, and a resilient spring-like cylinder grip 37, the wall having an aperture

38 therein and a tube-like protuberance 39 through which the blast flame is intended to be directed. The hood and wall are suitably perforated as at 39* to admit of the required amount of air for proper combustion.

The construction of the shield is such that it may be adjusted longitudinally of the cylinder 10 to agree with the position of the outlet 23 of the gas chamber and it may be rotated about the said cylinder so that a coincident alignment of the outlet 23 and the tube 39 may be effected.

It is not known that a shield of this kind having the various adjustments thereof has ever been used heretofore. It is of especial value in protecting the torch flame from contrary air currents which would have but little effect upon the blast flame when once formed and which it is designed is to be projected through the tube 39.

The heat transmitting medium herein referred to as a wire or ribbon may partake of another form if desired, and it may be made of such size as to be equally effective for the purpose intended when not used in conjunction with a restricted fuel chamber.

It is not the intention to limit this invention strictly to the construction herein shown and described, as it is obvious that slight changes might be made without departing from the spirit and scope of the invention.

Having described the invention I claim:

1. A blow torch of the class described, comprising a lamp cylinder; a blast cylinder adapted to contain a vapor forming fuel such as alcohol; a tube in said cylinder adapted to form an open ended chamber therein of less length than said cylinder, said tube extending upwardly from said cylinder in a curve, its end overhanging the flame end of said lamp cylinder; a gas chamber having an outlet at the said tube end; a length of metal of comparatively high heat conductivity in said tube fast therewith at the upper end thereof and of greater length than said tube, whereby heat may be rapidly transmitted to said tube chamber and said cylinder to generate pressure therein; and a feed wick in said tube of greater length than said tube adapted to supply said fuel to said gas chamber.

2. A blow torch of the class described comprising a lamp cylinder adapted to contain fuel such as alcohol; a leak proof plug wick of short length at the flame end of said cylinder; a feeder wick located centrally of said plug wick passing therethrough and depending therefrom; a pressure producing cylinder adapted to contain vapor producing fuel such as alcohol having an up-

wardly and laterally curved tube extending therefrom and therein, terminating adjacent the bottom thereof; a gas chamber having an outlet therein at the curved end of said tube; a wire of comparatively high heat conductivity in said tube and secured at the upper end thereof, its lower end extending beyond said tube end; and a feed wick in said tube adapted to supply said fuel to said gas chamber.

3. A blow torch of the class described, comprising a torch cylinder adapted to contain fuel such as alcohol and a pressure cylinder adapted to contain vapor producing fuel such as alcohol; means to feed the flame of said torch cylinder consisting of a plug wick and a feed wick; means to generate pressure in said pressure cylinder consisting of a tube adapted to overhang the flame end of said lamp cylinder and extending into said pressure cylinder to nearly the bottom thereof, thereby forming an elongated open ended chamber in said cylinder; a gas chamber at the overhanging end of said tube; a fuel wick in said tube communicating with said gas chamber, and a wire in said tube one end of which is fast adjacent said gas chamber, said wire being of comparatively high heat conductivity; and means to normally retain said cylinders in operative relationship consisting of two shaped members of comparative rigidity but susceptible to flexing under stress, adapted to coact but separated from each other by said cylinders and adjustably held in cylinder embracing relationship by a screw.

4. A blow torch of the class described, comprising a lamp cylinder and a blast pressure cylinder normally held in operative position by means of an adjustable clamp device whereby each of said cylinders may be longitudinally adjusted relatively to the other, rotated relatively to the other and tilted relatively to the other; means to retain said clamp device in a fixed position if desired; a main flame wick; a feeder wick coacting with said main wick located in said lamp cylinder; a tube curved at its upper end projecting from said blast cylinder and fast therewith its lower end terminating near the bottom of said cylinder; a gas chamber having an opening therein at the upper end of said tube; a screen in said chamber; a length of metal of comparatively high heat conductivity in said tube and secured at the upper end thereof; and a feeder wick in said tube adapted to supply fuel to said gas chamber.

5. A blow torch comprising a flame cylinder and a blast pressure cylinder each adapted to contain fuel such as alcohol; an upwardly and laterally curved tube extending from said pressure cylinder and downwardly thereinto to nearly the bottom there-

of whereby an elongated open ended chamber is formed into which fuel rises to the level of that of the pressure cylinder; a gas chamber having an opening therein at the upper end of said tube; a feed wick leading to said gas chamber loosely arranged in said tube and extending beyond the lower end thereof; and a heat transmitting medium fast at the upper end of said tube but otherwise loosely arranged therein and extending beyond the bottom end thereof whereby the transmitted heat rapidly generates pressure in the open ended chamber causing an accelerated feed of the fuel to said gas chamber.

6. In a blow torch of the class described, comprising a flame cylinder and a blast cylinder operably connected in an adjustable manner; a tube in said blast cylinder having an externally extended curved portion; a feed wick in said tube; and a heat transmitting medium in said tube.

7. In a blow torch of the class described, a blast cylinder adapted to contain liquid fuel; a tube in said cylinder terminating adjacent the bottom thereof; a wick in said tube; a heat conducting medium in said tube; and means to heat said medium.

8. In a blow torch of the class described, a blast cylinder adapted to contain liquid fuel; a tube in said cylinder terminating near the bottom thereof; a heat conducting medium in said tube; a wick in said tube so arranged as to form a series of fuel pockets in said tube; and means to heat said medium.

9. In a blow torch of the class described, a blast cylinder adapted to contain liquid fuel; a tube in said cylinder terminating near the bottom thereof; a heat conducting medium in said tube; a wick comprising a plurality of strands so arranged as to form a series of fuel pockets in said tube; and means to heat said medium.

10. In a blow torch of the class described, a blast cylinder adapted to contain liquid fuel; a tube in said cylinder terminating adjacent the bottom thereof; a heat conducting medium in said tube; a plurality of wick strands spirally arranged in opposite directions in said tube whereby a series of separated fuel pockets is formed in said tube; and means to heat said medium.

11. In a blow torch of the class described, a flame cylinder; a blast cylinder having an outlet adjacent the flame portion of said flame cylinder; and a shield adapted to be removably mounted on one of said cylinders of such construction as to house the flame of said flame cylinder whereby the proper working relationship of said flame and said outlet may be maintained.

12. In a blow torch of the class described, a lamp comprising a fuel receptacle; a plug in said receptacle adapted to form a flame

area at the exposed portion thereof; a wick depending from said plug adapted to feed fuel to said flame area; and means coacting with said lamp adapted to create a gaseous blast.

13. In a blow torch of the class described, a lamp comprising a fuel receptacle; a wick plug in said receptacle adapted to form a flame area at the exposed portion thereof; a wick centrally disposed in said wick plug and depending therefrom adapted to feed fuel to said plug and flame area; and means coacting with said lamp adapted to create a gaseous blast.

14. In a blow torch of the class described, a lamp comprising a cylinder having a removable closure at one end thereof; a wick plug at the other end, the exposed portion of which forms a flame area; a wick coacting with said plug adapted to feed fuel to said area; and means coacting with said lamp adapted to create a gaseous blast.

15. In a blow torch of the class described, a lamp comprising a fuel receptacle a permeable plug in said receptacle composed

of absorbent material adapted to present a flame area at the exposed portion thereof; and held therein under compression whereby an effective barrier to free leakage of fuel is provided; a feed wick depending from said plug adapted to feed fuel to said flame area; and means coacting with said lamp adapted to create a gaseous blast.

16. In a blow torch of the class described, a lamp comprising a fuel receptacle having threaded ends to receive caps, a permeable plug of comparatively short length composed of absorbent material such as wicking at one end of said receptacle adapted to form a flame area at the exposed portion thereof; and held in said receptacle under compression whereby an effective barrier is afforded to prevent the free leakage of fuel therethrough; a wick adapted to feed fuel to said plug; and means coacting with said lamp adapted to create a gaseous blast.

Signed by me at Boston, Mass. this 22nd day of November, 1921.

STANLEY STANCZYK.