April 26, 1960 S. L. KAUFMANN 2,934,308

PISTOL-TYPE SOLDERING TORCH

Filed Sept. 12, 1955

FIG. 1.

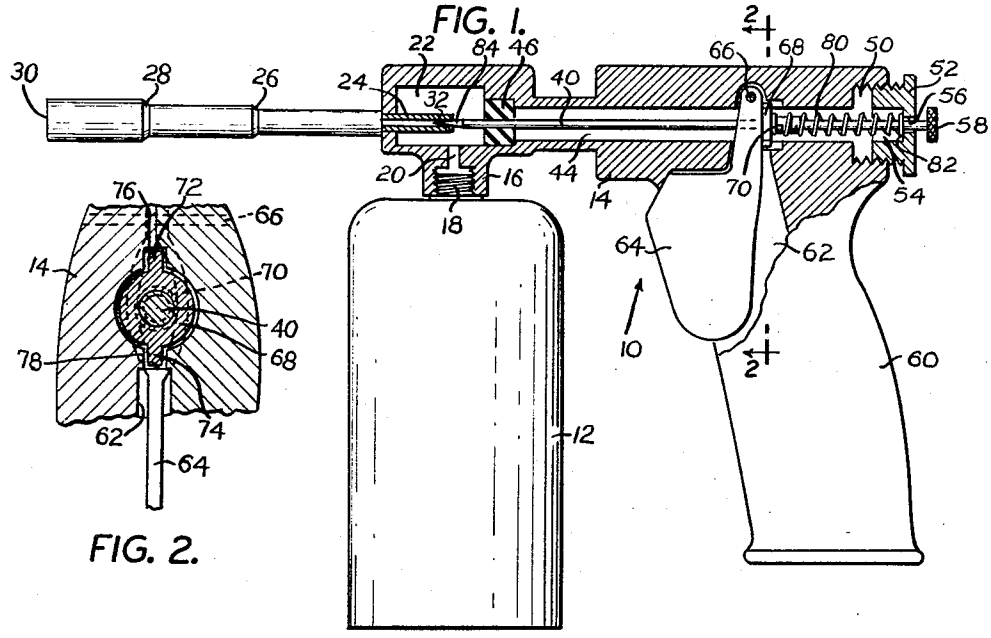


FIG. 2.

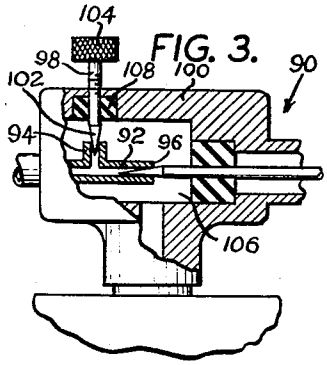


FIG. 3.

FIG. 4.

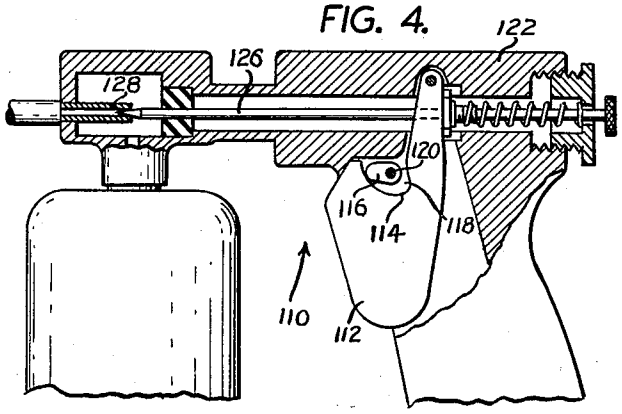


FIG. 5.

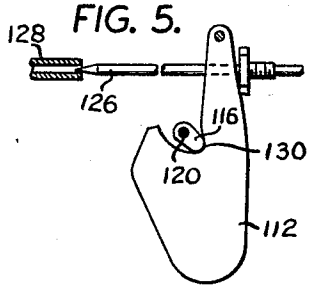


FIG. 6.

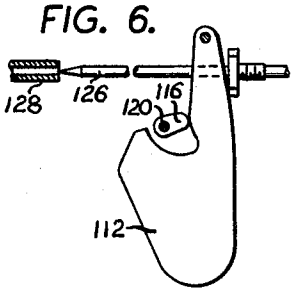
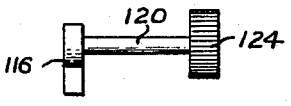


FIG. 7.



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PISTOL-TYPE SOLDERING TORCH

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2 Claims. (Cl. 251—114)

This invention relates to a pistol-type soldering torch.

The principal object of this invention is the provision of a pistol-type soldering torch or soldering gun having superior valve and valve control characteristics. In devices of this general character, it is quite difficult to control the flame. It is important that the valve mechanism be capable of delivering just the right quantity of fuel to support a pilot flame. It is also important that the valve mechanism permit a freer flow for a relatively strong or hot soldering flame. And similarly, it is desirable that a lesser flame be available, not quite the hottest but still stronger than a pilot flame.

The valve mechanism herein described and claimed is well adapted to control the flow of fuel to the extent required to provide a pilot flame, a strong soldering flame, and at least one intermediate flame. The mechanism, furthermore, is well adapted for adjustment as to each of these flames so as to provide a larger or smaller pilot flame, a stronger or weaker soldering flame and a stronger or weaker intermediate flame. Consequently, the valve mechanism herein claimed is subject to a virtually infinite number of virtually micrometric adjustments.

The present invention may be adapted in various ways to different requirements. In its simplest form, it is provided with a single adjustable valve which is trigger controlled. The adjustment is independent of the trigger mechanism and it may be adjusted to provide a pilot flame in addition to an operative flame of any desired intensity. The pilot flame is produced when the trigger is in inactive position. The stronger flames are produced by simply operating the trigger. The adjustment mechanism nonetheless remains operative even when the trigger is actuated since it can determine and control the extent of the strongest or hottest flame, irrespective of the various operative positions of the trigger. Furthermore, the adjustment mechanism can be so adjusted as to prevent any flow whatsoever of the fuel irrespective of the position of the trigger and whether or not the trigger is actuated. This is an important safety feature.

In a second form of this invention, there are two valve mechanisms, one for the pilot flame and the other for the soldering flames. Once, again, the valve mechanisms would be independent of the trigger except, of course, when the two are operated conjointly.

In a third form of this invention, certain positive stops or operative positions are provided for the trigger. In the illustarted form of this version of the invention, there are three such positions: The first provides a pilot flame, the second an intermediate flame and the third a strong soldering flame. Again it must be stated that the valve adjustment mechanism may be operated to modify the effect of the trigegr in each of its said three positions.

The invention is illustrated in the accompanying drawing in which:

Fig. 1 is a side view of a pistol-type soldering torch made in accordance with one form of this invention, the barrel of said device being partly broken away and in section to expose the valve and trigger mechanisms.

Fig. 2 is a fragmentary enlarged section on the line 2—2 of Fig. 1.

Fig. 3 is another fragmentary sectional view showing a modification of the invention wherein a second adjusting mechanism for the pilot flame is shown in addition to the primary adjusting mechanism shown in Fig. 1.

Fig. 4 is a view similar to that of Fig. 1 but showing a modified trigger mechanism providing for a plurality of positive positions, the position in Fig. 4 being the pilot flame position.

Fig. 5 is a fragmentary view showing an intermediate flame position for the trigger.

Fig. 6 is a view similar to that of Fig. 5 showing a strong flame position of said trigger.

Fig. 7 is a side view of the cam member which locks the trigger in various positions.

The pistol-type soldering torch or soldering gun **10** shown in Fig. 1 makes use of a tank **12** of fuel under pressure, such as butane or liquified petroleum or any other suitable pressurized gas. This tank is provided with a conventional normally closed valve (not shown) and conventional means whereby the tank may be connected to the pistol torch. By way of illustration, the housing or barrel **14** of said pistol torch is provided with an annular, internally threaded boss **16** and the tank **12** is provided with an externally threaded nozzle **18** which screws into said boss **16**. The normally closed valve opens when the tank is secured to said annular boss **16** by conventional means also not shown. It will be observed that a passage **20** provides communication between said nozzle **18** and a chamber **22** in said barrel or housing **14**. A tube **24** projects into said chamber **22** from the forward or muzzle end of the pistol housing. This tube also projects outwardly and forwardly from said pistol housing and it may be stepped as at **26** and **28** to provide progressively larger portions. The outlet end **30** of tube **24** is considerably larger in both internal and external diameter than the inlet end **32** which is disposed within chamber **22**.

Chamber **22** is normally filled with gas, that is, when the tank **12** is secured to the boss **16**. The gas would normally tend to escape through tube **24** but a valve needle **40** is provided to close off the inlet end **32** of tube **24** when it is desired to prevent the gas from passing through said tube. This valve needle **40** extends longitudinally through the pistol housing or barrel **14** and more particularly through a longitudinal passage **44** formed therein. A gasket **46**, made of rubber, natural or synthetic, or any other suitable material, is disposed between chamber **22** and passage **44** and said valve needle **40** projects through said gasket as Fig. 1 clearly shows. The gasket provides a gas-tight seal between said chamber and said passage and functions in the manner of a bushing relative to said valve needle.

At the breech end of the pistol barrel or housing **14**, passage **44** enlarges to form a relatively wide socket **50** which is internally threaded to receive an externally threaded plug **52**. This plug has a recess **54** and a hole **56** which opens into said recess. The valve needle **40** projects through said recess **54** and said hole **56** and its outwardly projecting end is provided with a knob **58** which may be gripped between the fingers.

Projecting downwardly from the pistol housing or barrel **14** is the pistol grip or hand grip **60**. It will be observed that a recess **62** is formed in said hand grip **60** and that said recess extends upwardly into the barrel or housing **14**. A trigger **64** is pivotally mounted in said recess **62** and it will be observed that its upper end is supported by means of a cross-pin **66**, which serves as the pivot. Abutting the back edge of trigger **64**, a short distance below the pivot **66** is a nut **68** mounted on a threaded sleeve **70** secured to valve needle **40**. It

will be observed in Fig. 2 that nut **68** has a pair of lugs **72** and **74** projecting radially outwardly therefrom, lug **72** projecting upwardly and lug **74** projecting downwardly. These two lugs are disposed within grooves or channels **76** and **78** respectively formed in the pistol housing or barrel **14**. Nut **68** is thereby prevented from turning but it remains free to move longitudinally of said slots **76** and **78** and of the valve needle **40** to the extent permitted by said slots and by the trigger, as will shortly appear.

A coiled compression spring **80** is mounted on valve needle **40** and its back end bears against shoulder **82** of plug **52**, which is formed between recess **54** and hole **56**, and its forward end bears against nut **68**. The action of said spring, therefore, is to urge nut **68**, and hence sleeve **70** and valve needle **40**, forwardly and to bring the needle point **84** into engagement with the inlet end **32** of tube **24**, thereby closing said inlet end and preventing the escape of gas therethrough. To open said inlet end of tube **24**, all that need be done is to actuate the trigger **64**. As has been indicated, this trigger is in abutment with nut **68** and consequently when the trigger is drawn backwardly, said nut **68** is pushed backwardly, carrying the valve needle along with it. When the trigger is released, spring **80** will push the nut and also the valve needle forwardly and the pointed end of said valve needle will once again engage the inlet opening of tube **24** and close said opening. By the same token, trigger **64** will itself be pushed forwardly by the action of said spring to its original or inoperative position.

It will be understood that the valve mechanism thus described may be adjusted by simply turning knob **58**. This has the effect of changing the position of valve needle **40** relative to nut **68**. For example, should it be desired to provide a pilot flame which would burn even when the trigger is in its forward inoperative position, all that need be done is to turn knob **58** until the pointed end **84** of the valve needle clears the inlet opening **32** of tube **24** just sufficiently to enable the gas to escape through said tube at a rate of flow sufficient for a pilot flame. This would not interfere with obtaining a hotter soldering flame since the trigger would remain available to be operated for that purpose. To shut off the pilot flame, knob **58** would return in the opposite direction until the pointed end of the valve needle is seated in the inlet end **32** of tube **24**.

Fig. 3 shows a variation of the pistol torch **10** illustrated in Fig. 1. A pistol torch or soldering gun **90** is shown in Fig.3, wherein a second needle valve is provided for the pilot flame. It will be observed that tube **92**, which corresponds to tube **24**, is provided with a laterally projecting tubular branch **94** which communicates therewith. This branch tube constitutes a secondary inlet opening, in addition to the inlet end **96** of tube **92** which corresponds to inlet end **32** of tube **24**. A valve needle **98** projects through top wall **100** of the barrel or housing of pistol **90** and its pointed end **102** engages said branch tube **94**. This valve needle **98** is provided with screw threads and it extends through a tapped hole in said top wall **100**. The upper end of the valve needle has a knurled knob **104** by which the needle may be turned in either direction in order to move it inwardly or outwardly relative to said branch tube **94**. The branch tube now functions as the valve seat and said valve needle may be manipulated to bring it into and out of engagement with said valve seat. Chamber **106** is normally filled with gas and hence a continuous flow of sufficient gas for a pilot flame may be had by simply opening the needle valve slightly. Leakage of the gas through the tapped hole through which the valve needle **98** extends is prevented by the use of a gasket **108**.

Turning now to Figs. 4, 5 and 6, it will be seen that soldering pistol **110** is basically like the soldering pistol **10** above described except that it is provided with positive positioning means for its trigger **112**. This trigger has a cutout **114** formed therein and occupying said cutout is a stop member or cam **116**. This member is pivotally mounted in recess **118** on crosspin **120**. Said pin projects outwardly from housing or barrel **122** of the pistol torch **110** and a knob **124** is secured thereto so that said pin and the cam affixed thereto may manually be turned to the several positions shown in Figs. 4, 5 and 6.

When the cam or detent **116** is in its Fig. 4 position, the trigger is locked in inoperative position and cannot be retracted. By adjusting the position of the valve needle **126**, as described in connection with valve needle **40**, a pilot flame may be had while trigger is locked in such position. If desired, however, said valve needle may be adjusted so as to close off the outlet tube **128** and thereby to prevent any flow whatsoever of the gas. When the detent or cam **116** is turned to its Fig. 5 position, it occupies a small hollow **130** in trigger **112** and this constitutes an intermediate position wherein a moderate flow of gas is provided. Fig. 6 shows the detent or cam **116** in a third position wherein it holds the trigger in fully retracted position, thereby opening the valve to the fullest extent possible.

The foregoing is illustrative of preferred forms of this invention and it will be understood that these preferred forms may be modified and other forms may be provided within the broad spirit of the invention and the broad scope of the claims.

I claim:

1. An actuating mechanism for the needle valve of a pistol torch of the character described, having a housing adapted to support a fuel tank, a chamber formed at the forward end of said housing and adapted to communicate with said fuel tank, and a tube projecting forwardly from said housing, its back end communicating with said chamber, and wherein the needle valve is adapted to be supported by said housing and adapted to project longitudinally therethrough, and the forward end of said valve needle being pointed and adapted to project into said chamber in alignment with said tube and adapted to engage said tube to close the tube and prevent communication between said tube and said chamber, said actuating mechanism consisting of a body, a stem reciprocably mounted in said body and projecting rearwardly outwardly from said body and having an actuating knob secured thereto, a screw-threaded sleeve on said stem, a nut engaging said screw-threaded sleeve, splines between said nut and said body to prevent the nut from rotating about the axis of said screw-threaded sleeve, while remaining free to move axially of the stem, a compression spring mounted between said nut and the back end of said stem, said spring bearing against a retaining member on the back end of said body to urge said nut and said stem forwardly, and a trigger pivotally mounted on said body in front of and in abutment with said nut, whereby the trigger may be retracted to push the nut and the stem rearwardly against the action of said spring, and whereby the trigger may be released to enable said spring to return said trigger and the nut and stem to their original positions, an adjustable stop member being provided in the body for engagement in a plurality of positions with said trigger to lock the trigger in selected positions against the action of the spring in order to hold the stem in various selected positions.

2. The combination of claim 1, wherein the trigger is provided with a cutout to receive said adjustable stop member, said adjustable stop member comprising a pivotally mounted cam and said cutout having selected nesting places formed therein, said cam being adapted to nest in said nesting places at various angular positions, each such position corresponding to a selected angular position of the trigger and a selected axial position of the stem.

(References on following page)

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UNITED STATES PATENTS

1,362,877	Kreisler	Dec. 21, 1920
1,915,141	Wiley et al.	June 20, 1933
1,970,237	Kramer	Aug. 14, 1934
2,017,317	Magney	Oct. 15, 1935

6

FOREIGN PATENTS

336,884	Germany	May 18, 1921
672,786	France	Sept. 23, 1929