

Nov. 12, 1929.

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1,735,182

BURNER STRUCTURE

Filed Nov. 2, 1927

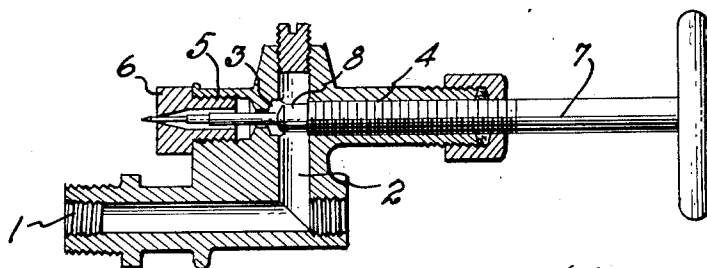


*Fig. 1*

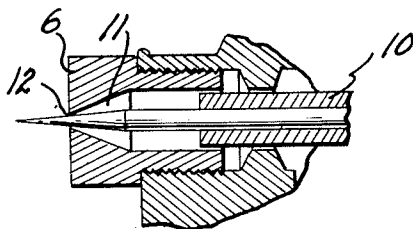


*Fig. 2*

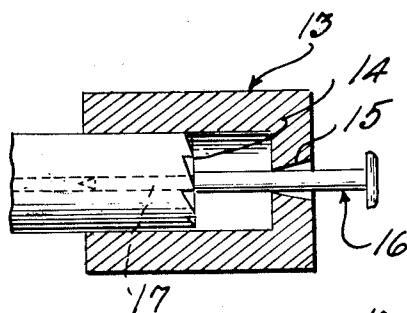


*Fig. 3*

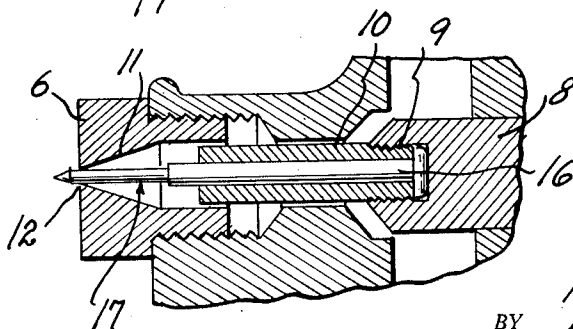


*Fig. 4*

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## BURNER STRUCTURE

Application filed November 2, 1927. Serial No. 230,426.

This invention relates to burner structure for torches, and has to do particularly with a novel burner cleaner structure adapted to cooperate with the jet block for accurately and uniformly controlling and ejecting the vaporized fuel.

Burners of the type utilized in blow torches have heretofore been constructed along two common lines, one type of burner being known as the "sharp needle point burner", and the other as the "double needle burner". In the single burner type it has been customary to use a single sharp pointed needle, while in the double burner type, one needle has been used as a shut-off and the other as a cleaner for the jet block.

The present invention relates to that type of burner structure having a wire tip or cleaner for cleaning the jet block. It also relates to that type of burner structure disclosed in the copending application to William Blaskewitz, Serial No. 224,324, filed October 6, 1927. The object of the present invention is to provide a cleaner tip for the valve or needle stem of the burner, which cleaner tip may be quickly and removably inserted or replaced in the end of the valve stem or needle, and which may preferably consist of a standard common pin. A further object of the invention relates to the novel method of forming this standard common pin to cooperate in a novel manner with the valve or needle stem and the jet block.

In the drawings:

Fig. 1 is a longitudinal sectional view of a burner structure of the single needle combined shut-off and cleaner type embodying my invention.

Fig. 2 is a detail sectional view illustrating the relative position and parts of the cleaner tip and the jet block when a common pin is used.

Fig. 3 is a detail sectional view of a high speed cutting tool which may be utilized in turning down the cleaner portion of a common pin for use in my burner structure.

Fig. 4 is an enlarged detail sectional view illustrating the preferred manner of positioning the common pin within the end of the valve stem, and also showing the cooperating

relation between the end of the pin and tapered outlet of the jet block.

In setting forth the essential characteristics of the present invention, I have disclosed the same as embodied in a burner structure of the single needle type wherein the end of the needle acts as a cleaner for the jet block, and another part of the needle acts as a blunt shut-off valve spaced longitudinally from the jet block, although it will be understood that it is equally well adapted for use with any burner structure wherein the needle or valve stem is provided with means adapted to clean the jet block.

Standard blow torches usually consist of a suitable tank for receiving and placing the gasoline or other fuel under pressure, and a suitable vein tube and generator leading to the burner structure, and a suitable nozzle or burner tube leading from the burner structure and jet block, and also assisting in the heating of the generator to vaporize the liquid fuel. This is all standard construction and well understood by those skilled in the art. In the drawings I am therefore only showing a burner structure which, preferably, has an integral passageway consisting of an inlet 1 for receiving the vaporized fuel in the generator, and a passageway 2 for conducting the vaporized fuel towards a suitable valve seat 3 positioned at right angles to the axis of the passageway 2. The burner casting is also provided, in alignment with the valve seat 3, with a suitably threaded aperture 4 for receiving the valve stem, and a suitably threaded outlet 5 for receiving a jet block 6.

The valve stem, which may be designated 7, consists of a threaded portion adapted to engage the threads 4 of the burner casting, and also consists of an extension 8, threaded, as at 9. (see Fig. 4) to receive a suitable nipple or plug 10. This plug is hollow for receiving a suitable wire or cleaner member for cleaning the jet block. The jet block 6 is of standard construction and comprises a tapered outlet 11 terminating in an orifice 12, which orifice is predetermined in diameter according to the capacity of the particular blow torch or similar article. This diameter, for one standard torch is around .017

inch, varying a few thousandths either way.

Heretofore in the making of burner structure along the lines here disclosed, it has been customary to use a plug similar to the plug 10, shown in Fig. 4, such plug having a hole all the way through, or drilled only partially into the plug. Inasmuch as the wire is usually around .017 inches in diameter and the aperture in the plug is necessarily much larger, it has been necessary to swedge the plug so as to secure the wire therein. With such a plug and cleaner member it has been necessary in case of replacements to carry a complete stock of plugs together with the swedged-in wires. When the hollow plug is swedged it often happens that the cleaner wire is slightly eccentric or slightly off center with the axis of the needle valve.

It has been proposed, in order to obviate the swedging of the plugs and the using of the small diameter wire, to use common pins which are usually around .026 inch. This diameter corresponds almost exactly with the smallest practical diameter possible in plugs such as above obtained, that is, where such plugs are bought as hollow plugs in regular commercial quantities. By inserting the pin through the plug whereby the head of the pin is positioned in the portion 8 of the valve stem, it will be seen that the pin is accurately centered and does away with swedging of the plug. However, the point of the standard pin is usually provided with a long taper, as illustrated in Fig. 2, and when such pins are used with a long point, it frequently happens that part of the point of the pin is still protruding through the orifice of the jet block when the valve is opened to the point desired for normal operation of the burner. Furthermore, the pin being .026 inch in diameter, it is obvious that continued reciprocation of the valve stem would tend to enlarge the predetermined orifice of the jet block. A still more important difficulty is the tendency of the tapered pin point to throw the annular stream of fuel out of alignment and thus greatly diminish the efficiency of the torch.

It is the object of the present invention to utilize the step of using the common pin which closely fits the smallest diameter of the plug 10, and also permits of easy replacement. However, instead of using the long tapered point of the common pin, which has heretofore made its use as a cleaner point impractical, I preferably place the common pin in a high speed cutting or milling tool, such as shown in Fig. 3. This tool may be generally designated 13, and may be provided with suitable cutting edges 14 and a tapered aperture 15 for initially guiding the pin. This tool may be chucked in a high speed lathe and the pin inserted through the aperture 15 whereby the end of the pin will be recessed or turned down to the desired diameter accord-

ing to the predetermined orifice of the jet block. A portion of the pin will therefore accurately fit the jet block and the other portion of the pin fit the standard diameter of the plug. This pin may be generally designated 16, and the turned down portion 17.

By recessing the end of the pin to accurately fit the orifice of the jet block, it will be obvious that the long standard taper of the pin will be cut down considerably so that it will be approximately as shown in Fig. 4. By centering the pin accurately in the plug 10, and by recessing the end to accurately fit the orifice, it will be obvious that the pin will be in accurate alignment with the axis of the jet block whereby the annular stream of fuel issuing therefrom will be symmetrical and in alignment with the axis of the jet block so as to give an efficient flame. The recessed portion of the pin, being of the required diameter, will effect efficient cleaning without enlargement of the orifice. If the cleaner pin becomes damaged for any reason, as is frequently the case because of the rough usage given blow torches, it is only necessary to replace the recessed common pin. This novel structure not only reduces the cost of replacement but also materially reduces the production cost in the initial assembly.

In referring to common pins in the specification and claims, it will be understood that I have reference to that type of pin usually known as "common pins" or "dress pins" and having a head that is substantially disk-shaped or that is shaped substantially like the frustum of a cone whose larger base is slightly rounded, a body of uniform diameter, and a sharp point, and usually formed of either brass or steel.

What I claim is:

1. A burner structure for torches and the like, comprising a jet block with an orifice of predetermined size, a valve stem and valve in alignment with the axis of said jet block, a valve seat between said valve and jet block, a plug having a bore of commercial size removably inserted in the end of the valve stem and centrally of said valve, and a common pin having its head positioned between the plug and the valve stem and having its end recessed to fit the jet block orifice.

2. A burner structure for torches or the like, comprising a burner unit for receiving a jet block and a cleaner stem in alignment, the end of the said stem, being recessed and threaded to receive a plug of limited commercial bore, and a common pin positioned in said plug and having its head positioned between said plug and the bottom of the said recess, the end of said pin being turned down to a diameter smaller than the bore of said plug.

3. Burner structure for torches and the like, comprising a burner unit for receiving a jet block and a valve stem in alignment, said

jet block having a bore of approximately .017 inch, a hollow plug fitted into the end of said stem and having a bore of approximately .026 inch, and a cleaner pin having a head adapted to be positioned in said plug with the head positioned between said plug and a part of said stem, the said pin having a portion of its length of approximately the same diameter as the bore of the said plug and being turned down at its point to a diameter approximately the same as that of the bore of the jet block.

In testimony whereof I affix my signature.  
FREDERICK RUEPPEL.

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