Dec. 27, 1927. 1,654,265

O. J. LEINS

TIP FOR IGNITING DEVICES AND THE LIKE

Filed Dec. 22, 1924

Fig. 1.

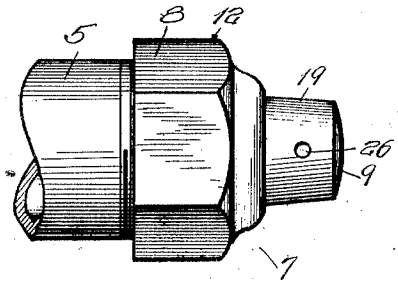



Fig. 2.

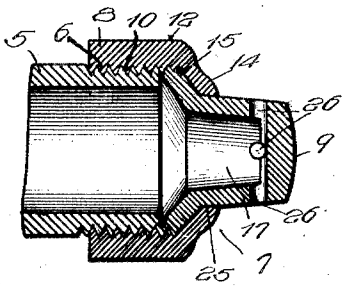



Fig. 3.

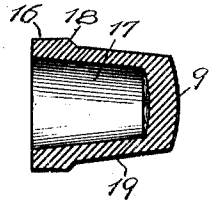



Fig. 4.

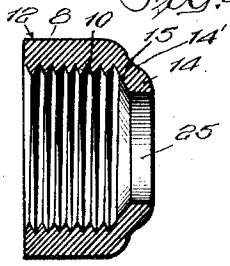



Fig. 5.

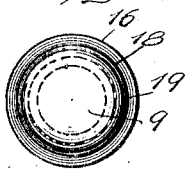
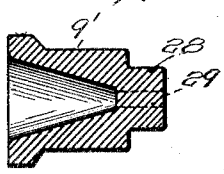



Fig. 6.




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# UNITED STATES PATENT OFFICE.

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## TIP FOR IGNITING DEVICES AND THE LIKE.

Application filed December 22, 1924. Serial No. 757,503.

My invention relates to tips for igniting devices and the like and its object is the provision of a generally improved, simple and inexpensive tip having relatively great structural strength combined with relatively high heat and flame resisting qualities.

The invention is illustrated in the accompanying drawings, in which:

Figure 1 is an enlarged fragmentary side elevation of the outlet tube of an igniter showing a tip embodying my invention thereon;

Figure 2 is a longitudinal section substantially centrally through the tip and adjacent end of the tube;

Figures 3 and 4 are longitudinal sections substantially centrally through the tip proper and nut respectively;

Figure 5 is an end view of the tip proper looking from the right in Figure 3, and

Figure 6 is a longitudinal section substantially centrally through another form of tip.

In present day practice, tips of this sort are usually made of a material having sufficient strength and body to permit convenient cutting therein of the internal threads for engagement with the external threads on the outlet tube of the igniter and to carry said threads without stripping in assembling the device or threading the tip upon the igniter tube. Brass has been commonly employed. Because of the fact that it is an alloy of relatively high specific gravity, certain negative phases are encountered, namely, the flame temperature is somewhat reduced because of the brass conducting heat from the flame to other parts of the igniter. Also, brass being an alloy containing low melting point metals, these metals where gas of a relatively high B. t. u. is encountered melt or tend to disintegrate out of the alloy, causing premature breaking down of the tip. Also, because of the specific heat factor of brass, when impurities are encountered in the gas, or other fuel, that is being burned, I find that a deposit of ash or pure carbon or partly consumed hydrocarbons takes place on the tip. These disadvantages are, of course, all undesirable.

I find that all other materials having the desired structural strength and body to permit convenient threading and to carry the thread against stripping have generally the above disadvantages, and I propose to provide in a tip of this sort a material of great structural strength and body along the threaded or mounting portion in combination with another material of relatively high heat and flame resisting qualities along the outlet orifice or orifices. Aluminum seems to overcome all of the heat and flame difficulties of brass, but cutting of the threads therein is difficult and after the threads are cut in such material I find that they are very readily stripped.

In the drawings, the outlet tube of the igniter is designated at 5 and said tube is shown threaded externally at its outer end at 6 to receive tip designated generally at 7. The tip 7 comprises a nut or mounting portion 8 and a tip proper 9.

The nut 8 is of a material having structural strength and body sufficient to permit convenient forming of the threads 10 therein and to hold or carry said threads against stripping, this part of the tip being preferably of brass and it may be inexpensively and conveniently formed on a screw machine. Externally, the nut 8 is shown as being of hexagonal formation at 12 or otherwise formed for engagement by a wrench or other suitable tool for threading it on and off the tube 5, and at one end said nut 8 has an inwardly turned or extending annular flange 14 offset at 14′ and provided internally with a tapered surface 15, the internal threads 10 preferably extending to or substantially to the internal tapered surface 15 for a purpose which will hereinafter appear.

The tip proper 9 is of a material having high flame and heat resisting properties, preferably aluminum. This part which may be inexpensively stamped from a suitable billet has a base flange 16 and is hollowed out internally at 17. A tapered surface 18 between the periphery 19 of the tip proper and the periphery of the base flange 16 has substantially the same inclination as the internal tapered surface 15 to seat snugly and tightly thereon when the two parts are assembled. The two parts are assembled by inserting the tip proper 9 into the nut part 8 and swaging it into the position shown in Figure 2, the tapered surface 18 seating firmly on the internal tapered surface 15 and the periphery of the base flange 16 being swaged up tightly upon the surface 15 and into the adjacent internal threads 10 and by such engagement therewith securing the parts firmly and tightly together. This provides

a simple and inexpensive yet highly effective union of the two parts. The periphery 19 of the jet proper 9 is preferably tapered slightly and the bore opening 25 in the nut part 8 preferably of a diameter slightly less than that of the inner end of the periphery 19 so that in swaging or pressing the two parts together the opening 25 will conform itself to the periphery 19 and fit snugly thereover.

The flame or pilot orifice or orifices 26, as the case may be, open outwardly from the interior 17 of the tip proper 9 and are preferably drilled after assembling or uniting the two parts. A tip is thus produced having a material of high flame and heat resisting qualities at the flame or pilot orifices and a material of relatively great strength and body along the threaded portion and the union between the two is simple and inexpensive and provides a tight joint and in effect a one-piece tip.

Any suitable number of outlets or flame orifices 26 may, of course, be provided. In Figure 6, I have shown another form of tip proper 9′ having a reduced closed end 28 projecting therefrom through which a single outlet or flame orifice is formed after assembling the parts as indicated in dotted lines at 29. The tip shown in Figures 1, 2, 3, 4 and 5 is especially suited for use where manufactured gas is employed while the tip proper of Figure 6 is especially adapted for single flash igniters and for use with natural gas, but it is to be understood that either tip may be used with any sort of fuel or wherever found desirable. The aluminum at the flame or outlet orifices minimizes the reduction of flame temperature and the heat that is conducted to other parts of the igniter, avoids premature breaking down of the tip, because of melting or disintegrating of certain elements thereof and minimizes the ash, carbon and other deposits, while the brass along the mounting portion takes a good thread which will not strip readily.

I claim:

1. As an article of manufacture, an igniter tip comprising a brass nut adapted for engagement with an igniter tube, a tip of aluminum forming the outlet and having fixed pressed fit in and integrally joined to and sealed in said nut solely by the interengagement between the tip and nut and common means in said nut engaging the pressed fit portion of the tip and opposing longitudinal displacement between the nut and tip in opposite directions.

2. An igniter tip comprising a nut having an internally threaded recess adapted to be threaded upon an igniter tube, an annular flange defining a reduced opening at the outer end of the nut, a tip part fitting in the nut and having an externally tapered outlet extending through said nut opening and having pressed fit therein, the extending outlet of the tip part having orifice means adapted to open from the igniter tube and a flange on the inner end of the tip part co-operating with the nut flange and swaged up tightly upon the nut flange and into fixed engagement with the threads in the nut part to permanently join and seal the joints between the nut and tip parts and provide in effect a one-piece jet.

3. An igniter tip comprising an internally threaded nut formed of material of relatively great strength and body and provided with an annular flange at one end and a tip formed of relatively softer material of greater heat and flame resisting properties extending through the flanged end of the nut and having pressed fit therein and a flange at the inner end of the tip swaged into engagement with the nut flange and with the the adjacent internal threads of the nut.

4. As an article of manufacture, an igniter tip comprising an internally threaded brass nut adapted to be threaded upon an igniter tube and an aluminum tip with a relatively thick outlet having fixed pressed fit in the nut with the joint between the nut and the tip sealed independently of the igniter tube and a relatively thick flange at the inner end of the tip swaged into engagement with the adjacent internal threads of the nut.

In witness whereof, I hereunto subscribe my name this 18″ day of December, 1924.

OSCAR J. LEINS.