PATENT SPECIFICATION

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Index at acceptance:—Class 75(i), H1(e: m), H(3a: 4f), H5(a3: f5).

COMPLETE SPECIFICATION

An Adjustable Burner for Liquid Fuel

I, JOSEF BORDE, a German Citizen, of 20, Bahnhofstrasse, Zurich, Switzerland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to adjustable burners for liquid fuel, primarily of the type which are suitable for cooking on mountain or ski tours, picnics and the like. Known apparatus of this type are frequently too large and unwieldy, and apart from this they have the drawback that the flame cannot be regulated to a sufficient extent.

The adjustable burner for liquid fuels according to the present invention, which largely eliminates these disadvantages, comprises a main fuel container, a carburettor jet body opening into the said container, and a carburettor case with a jet adjusting pin projecting into the carburettor jet orifice, the said pin being provided with a coned part which in conjunction with the jet orifice permits of regulating the issuing gas and hence the flame, and also of closing the carburettor jet.

The attached drawing shows one constructional embodiment of the burner according to the invention.

In the drawing:—

Figure 1 is a vertical section through the carburettor case fixed on the jet body;

Figure 2 is a plan view of the carburettor case;

Figure 3 is a longitudinal section through the burner;

Figure 4 is a plan view of the burner.

The burner shown in the drawing has a main fuel container 9 of rectangular or round cross section. On the upper wall 11 is fastened a tubular jet body 7 extending downwards into the container. On the jet body 7 a carburettor case 15 is screwed. This is best made from a sheet of copper alloy and has four oval apertures 3 in its wall. At the top the carburettor case has a dished disc-shaped part 5 which serves as flame-trap and is fastened by means of resilient arms 4 to the wall of the case. On the disc-shaped part 5 is fixed a jet pin 6 which projects through the jet orifice 1 into the inside of the container 9. At its lower end the pin 6 has an enlargement 16 the diameter of which is equal to the diameter of the jet orifice 1. The jet pin also has a conical part 1 which co-operates with the outlet of the jet orifice 1 to close the latter when the carburettor case 15 is screwed downwards.

Below the jet orifice 1 is loosely mounted inside the container 9 an auxiliary reservoir 10, which acts as a gas collecting chamber. Owing to the jet body tube projecting into it, the reservoir 10 cannot slip out of position. The reservoir 10 as shown in Figure 3 does not extend right to the upper wall 11 of the fuel container 9. A screw plug 14 closes the filling hole of the container 9. To this plug is fastened a stirrup-shaped handle 13, which can be folded over, and is fastened. In the position shown in Figures 3 and 4 by continuous lines, the handle 13 serves for handling the burner whilst in use. When not in use, the handle can be folded over into the position shown by dotted lines, in which it protects the carburettor case. The method of operation of the burner is as follows:—

Before use the burner is slightly heated with the jet orifice 1 closed, for example by holding it for a short time in the hand or by heating the part of the jet body 7 projecting out of the container by means of a lighted match. The jet orifice is then opened slightly by unscrewing the carburettor case 15 and a volatile fuel, such as petrol, is poured in and ignited. In this way the fuel in the chamber of the auxiliary fuel container 10 is heated still more by the heat conducted by the jet body 7 and the pin 6, and begins to gasify. The gas flows out of the jet 1 and mixes with air entering through the apertures 3 of the carburettor 15, so that a mixture

of gas and air is produced. The rising stream of gas and air is divided by the flame-trap and flows upwards between the arms 4 in four directions, igniting above the arms 4, where it burns with a hot flame. The proper combustion of the mixture depends upon the convexity of the part 5. Before all the fuel in the chamber 10 is consumed, the heat of combustion has spread to the remaining fuel in the main container 9, so that the gas developed in that container can continuously flow to the nozzle of the jet.

The quantity of gas for combustion is regulated by the pin 6. The carburettor case 15 may be turned whilst the burner is in operation with a small piece of wire or a match in order to move the conical part 8 of the pin 6 more or less into or out of the jet orifice 1. If the pin is lifted, more gas can escape through the opening 1 into the carburettor case 15 and the flame burns more brightly.

If the pin is pushed into the jet orifice the supply of gas is throttled and finally cut off. The conical part 8 of the pin 6 ensures complete closure of the jet orifice 1, so that it can be carried with absolute safety.

For use with different kinds of fuels varying in adaptability for carburetting the conical part 8 may have a greater or lesser pitch.

The jet pin 6 also has the advantage that choking of the jet is out of the question, as when the carburettor case 15 is turned the pin 6 is moved up and down at the same time, thus removing foreign bodies in the jet. If the pin is entirely withdrawn from the jet, the enlarged end 16 of the pin slides along the jet wall and removes any soot or other impurity.

The carburettor case serves at the same time as a safety valve in order to avoid the development of excessive gas pressure inside the container. By virtue of the resilience of the arms 4 carrying the disc 5, any excessive gas pressure in the container 9 acts on the conical part 8 to press the pin 6 slightly upwards by deflecting the disc 5 and the arms 4 elastically upwards, so that the conical part 8 is separated further from the jet nozzle. More gas can then escape from the container so that the normal operational pressure in the container is rapidly restored.

The carburettor case 15 can be mounted on any container for liquid fuels which has a jet orifice. The main container 9 is preferably as flat as possible in order to be suitable for use in low cookers.

The method of installation of the auxiliary fuel container 10 presents the advantage of simplifying the construction of the burner, since no welding or soldering work is necessary for assembly, it being only necessary to bring the container 10 in position inside the main container 9 before the final closure of the latter and the insertion of the jet body 7.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An adjustable burner for liquid fuel comprising a main fuel container, a carburettor jet body opening into the said container, and a carburettor case with a jet adjusting pin which projects into the jet orifice, the said pin being provided with a coned part which in conjunction with the jet orifice permits of regulating the issuing gas and hence the flame, and also of closing the carburettor jet.

2. An adjustable burner as claimed in claim 1, wherein the adjusting pin is carried by a resiliently mounted part of the carburettor case operating as flame-trap, so that any excessive pressure of gas in the main fuel container axially displaces the pin against the pressure of the said resiliently mounted part so as to withdraw the pin from the jet orifice, thus enlarging the latter and allowing the escape of the excess gas.

3. An adjustable burner as claimed in claim 1 or 2, wherein axial displacement of the jet pin is effected by turning the carburettor case.

4. An adjustable burner as claimed in claim 3, wherein the carburettor case is rotatably fastened by means of a screw thread on the jet body.

5. An adjustable burner as claimed in any of claims 1 to 5, wherein inside the main fuel container and below the carburettor jet body is arranged an auxiliary fuel container into which fuel can enter from inside the main container, so that the amount of fuel in the auxiliary chamber, the capacity of which is less than that of the main container, is heated and gasified more rapidly than the fuel in the main container when the burner is set in action.

6. An adjustable burner as claimed in any of the preceding claims, wherein the adjusting pin, when in working position, passes entirely through the jet orifice and projects into the auxiliary fuel container.

7. An adjustable burner as claimed in any of the preceding claims, wherein the main fuel container has a filling hole provided with a screw plug to which is attached a foldable stirrup-shaped handle, which latter permits of handling the burner whilst in use and can be folded on

to the carburettor case when not in use, thus protecting the said case.

8. An adjustable burner for liquid fuel substantially as described with reference to the accompanying drawings.

Dated this 31st day of December, 1947.
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[This Drawing is a reproduction of the Original on a reduced scale.]

FIG. 1.

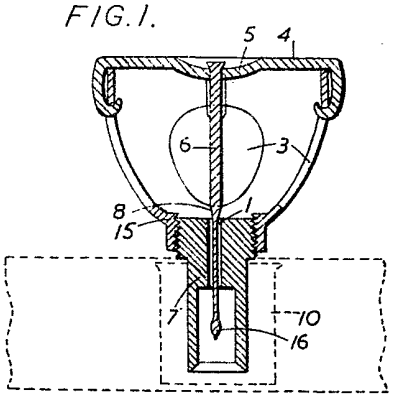


FIG. 2.

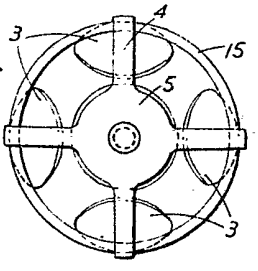


FIG. 3.

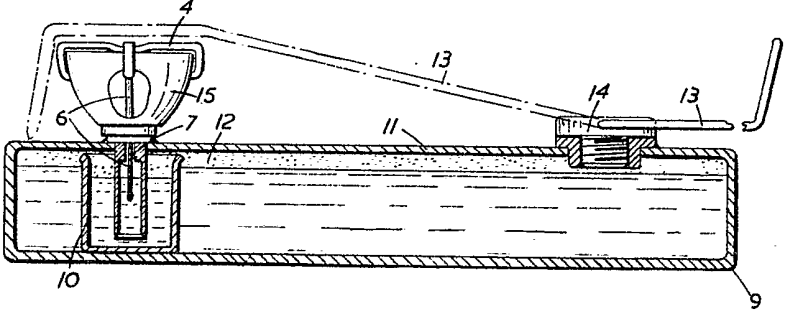
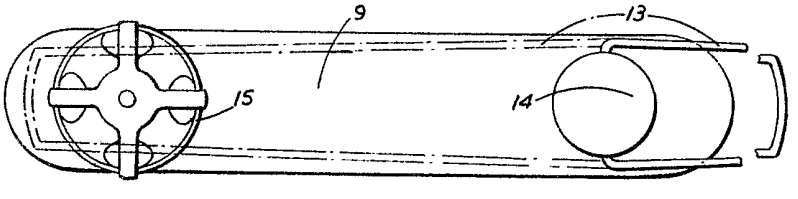


FIG. 4.



H.M.S.O.(Ty. P.)