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(71) Applicant: **Buzzi, Enrico**
Via Europa 120
I-25062 Concesio (Province of Brescia)(IT)

(72) Inventor: **Buzzi, Enrico**
Via Europa 120
I-25062 Concesio (Province of Brescia)(IT)

(74) Representative: **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB
Modiano & Associati Via Meravigli, 16
I-20123 Milan(IT)

(54) Improved gas lighter of the flame and spark type.

(57) The present invention relates to an improved gas lighter of the flame and spark type having the peculiarity of comprising elastically deformable means (17) arranged upstream with respect to the delivery valve (10) of the tank (5) in the direction of the flow of fuel which are adapted to define at least one section with variable opening size for the delivery of said fuel.

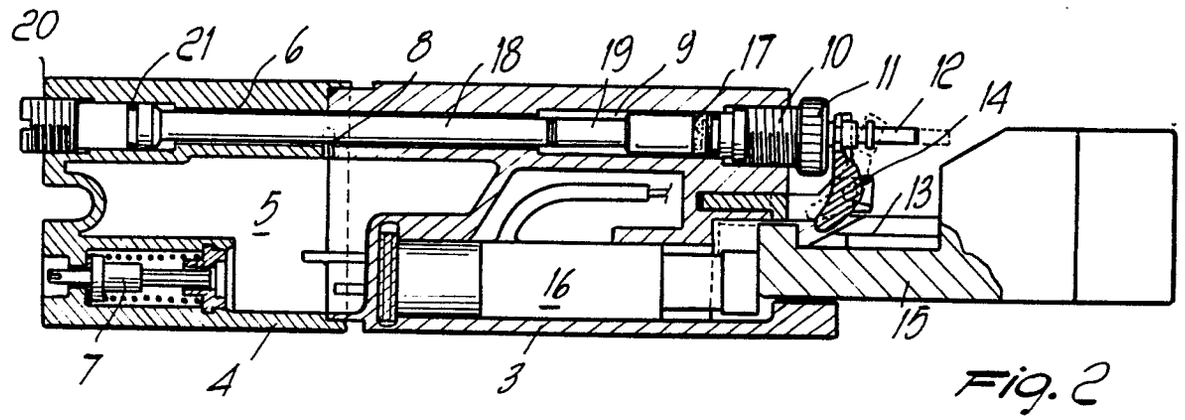

Fig. 2

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IMPROVED GAS LIGHTER OF THE FLAME AND SPARK TYPE

The present invention relates to an improved gas lighter of the flame and spark type.

As is known, various types of gas lighters for domestic use are available which are capable of producing the spark required to ignite town gas, methane, liquid gas and the like, as well as gas lighters which are capable of producing a flame, for example for the ignition of chimneys, barbecues, and the like.

Such gas lighters essentially consist of a handle which includes the piezoelectric mechanism for the production of the spark and the fuel tank, as well as systems for the delivery and the orientation of the spark and of the flame towards the outer environment.

Conventionally, the handle of such devices is hollow and accommodates in its interior a tank and a gas delivery system. The delivery valve is provided with a knurled wheel mechanism which allows to perform the manual control of said valve and therefore also of the flame which forms on the tip of the delivery pipe.

However, external environment factors, such as for example temperature, air humidity, atmospheric pressure and so on, affect the delivery of the combustible gas, thus often rendering ineffective the abovesaid valve control mechanism. More generally, the influence of said environmental factors prevents the achievement of a correct and durable setting of the gas lighter, the flame whereof must be consequently adjusted according to the requirements.

Together with the abovesaid environmental factors, or even regardless thereof, other elements negatively affect the operation of gas lighters of the flame type. Among these, the most important resides in the technical characteristics of the gaseous fuel which is in various occasions introduced in the tank of the lighter during refuelling. In fact it is known that products are available on the market which have characteristics (volatility, chemical composition, impurities, ignition point, heat value, specific heat, oxygen demand for combustion, and the like) which are so differentiated that the adjustment performed initially with technical gas may be inadequate depending on the gas used by the user. Often the external adjustment ring of the device actually exceeds its range, said ring being conceived, for obvious safety reasons, so that the flame remains within a present range of adjustment.

The aim proposed by the invention is indeed to overcome the limitations and the disadvantages of conventional solutions by providing a gas lighter wherein the formation of the flame is not affected by the abovementioned technical environmental factors.

Within the scope of the above described aim, a particular object of the invention is to provide a gas lighter wherein it is possible to provide a tank having such a structure as to allow the differentiation of the production of gas lighters without thereby having to intervene with particular modifications on said tank.

Still another object of the present invention is to provide a gas lighter which is extremely simple from a structural point of view and which furthermore is considerably advantageous from a functional point of view.

The above described aim, as well as the objects mentioned and others which will become apparent hereinafter, are achieved by an improved gas lighter of the flame and spark type, according to the invention, characterized in that it comprises elastically deformable means, arranged upstream with respect to the delivery value of the tank in the direction of the flow of fuel, said means being adapted to define at least one section with variable opening size for the delivery of said fuel.

Further characteristics and advantages of the invention will become apparent from the description of a preferred, but not exclusive, embodiment of an improved gas lighter of the flame and spark type, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic overall perspective view of the gas lighter;

figure 2 is a partial longitudinal cross section view of the tank detail of the device of figure 1.

With reference to the above described figures, the gas lighter, generally indicated by the reference numeral 1, comprises a tank wherefrom there extends a deliver pipe 2.

Advantageously, the tank is made of two partially hollow parts 3 and 4 which are mutually joined so as to define an inner tank for the fuel, indicated by 5, and a conduit 6, arranged laterally with respect to the tank 5, for the delivery of the gas.

The loading of the liquid fuel into the tank 5 is performed through a valve 7; a through hole 8 provides a connection of liquid between said tank 5 and the conduit 6.

The conduit 6 is furthermore provided, on its side facing the fuel discharge section, with a widened vaporization chamber 9 wherein the change of state of the fuel from liquid to gas occurs. The discharge section of the chamber 9 is provided with a delivery valve 10, adjustable by means of the knurled knob 11, which valve 10 is provided with a nozzle 12 for the outflow of the gas towards the pipe 2.

The complete opening and closure of the valve 10 can be controlled by a cam 13-bracket 14 assembly, which in turn is controlled by means of a manual operating button 15.

In the accompanying drawings, the reference numeral 16 generally indicates the piezoelectric mechanism for the production of the spark, the electrodes whereof reach the free end of the pipe in which the flame is also produced.

The correct set-up of the device 1, in a manner which is regardless of the outer environmental factors and of the technical factors described above, is achieved by interposing on the fuel delivery conduit 6 a small disk 17 of spongy and elastically deformable material. Said small disk 17 is arranged upstream, in the direction of the flow of the gas, with respect to the delivery valve 10 and, precisely, it is arranged at the section of inflow of the gas into said valve.

The degree of compression of the small disk 17, which determines the variation of the size of the opening for the passage of the combustible gas, is controlled by a stem composed of two parts, 18 and 19, respectively accommodated in the liquid fuel delivery conduit 6 and in the vaporization chamber 9.

The stem 18/19 is arranged in the body of the gas lighter device so as to be able to perform a translatory motion within the path of the fuel; said translatory motion, on one hand, can be controlled by means of a threaded pin coupling 20 and, on the other hand, causes the greater or smaller compression of the small disc of spongy material 17.

The relative dimensions of the diameter of the stem 18/19 with respect to that of said path 6 and 9 are such as to leave, around said stem, an interspace which is sufficient to allow the passage of the fuel from the tank 5 towards the disc 17.

The end of the stem part 18 directed towards the threaded-pin adjustment mechanism 20 is provided with an o-ring 21 adapted to provide a seal for the fuel circulating in the conduit 6.

By acting on the stem 18/19 by means of the threaded adjustment mechanism 20, the desired degree of compression of the disc 17 in spongy material is therefore achieved. This compression causes the desired reduction of the size of the microchannels of said material through which the transfer of gas from the chamber 9 towards the inlet section of the valve 10 is performed. This system of double adjustment of the flow of gas allows the use in safety conditions of the gas lighter in all situations and with any type of fuel.

Another important aspect of the invention furthermore resides in the fact that the particular structure adopted in the tank design allows, in a way, to standardize gas lighter production processes, thus allowing to reduce the production costs in general, as well as that of the finished product.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are within the scope of the inventive concept.

Moreover, all the details may be replaced with other technically equivalent elements.

In practice, the materials employed, as well as the dimensions and the contingent shapes, may be any according to the requirements.

Claims

1. Improved gas lighter of the flame and spark type, characterized in that it comprises elastically deformable means (17) arranged upstream with respect to the delivery valve (10) of the tank (5) in the direction of the flow of the fuel, said means (17) being adapted to define at least one section with variable opening size for the delivery of said fuel.

2. Gas lighter, according to claim 1, characterized in that said elastically deformable means consist of a layer of spongy material (17) interposed along the path of said fuel upstream with respect to the delivery valve (10), a stem (18, 19) with adjustable translatory motion being furthermore provided to interfere with said layer (17) to cause an elastic deformation in order to obtain the variation of the size of the passages for said fuel.

3. Gas lighter, according to the preceding claims, characterized in that said stem with adjustable translatory motion is composed of two parts (18, 19) respectively accommodated in portions (6, 9) of the path of the fuel, a stem part (18) being provided with a threaded-pin coupling (20) adapted to actuate a controlled translatory movement inside said fuel path (6, 9), said path being formed by the interspace defined between the outer wall of said stem (18, 19) and the inner walls of said adjustment path portions (6, 9) of said fuel.

4. Gas lighter, according to one or more of the preceding claims, characterized in that said stem part (18) comprises an O-ring (21).

5. Gas lighter, according to one or more of the preceding claims, characterized in that said tank (5) is made of two separate and partially hollow parts (3, 4) which can be combined with one an-

other to define said fuel tank (5) with built-in fuel loading (7), delivery (10) and adjustment systems (17, 18, 19, 20).

6. Tank for improved gas lighters of the flame and spark type according to the preceding claims, characterized in that it comprises two separate partially hollow parts (3, 4) which can be combined with one another to form a fuel tank (5) with built-in fuel loading (7) and delivery (10) systems.

7. Tank according to the preceding claim, characterized in that said separate partially hollow parts (3, 4), which can be combined with one another, also define flame adjustment means (17, 18, 19, 20).

8. Tank according to the preceding claims, characterized in that it comprises elastically deformable means arranged upstream with respect to said delivery valve (10) in the direction of the flow of said fuel, consisting of a layer (17) of spongy material interposed along the path of said fuel upstream with respect to said delivery valve (10), a stem (18, 19) with adjustable translatory movement being furthermore provided to interfere with said layer (17), so as to cause its elastic deformation to obtain the variation of the size of the passages for said fuel.

9. Tank according to one or more of the preceding claims, characterized in that said stem with adjustable translatory motion consists of two parts (18, 19) respectively accommodated in portions (6, 9) of the path of the fuel, a stem part (18) being provided with a threaded-pin coupling (20) adapted to actuate its controlled translatory motion inside said fuel path, said path being formed by the interspace defined between the outer part of said stem (18, 19) and the inner part of said portions (6, 9) for the delivery of said fuel.

10. Tank, according to one or more of the preceding claims, characterized in that comprises an O-ring (21) provided on said stem (18).

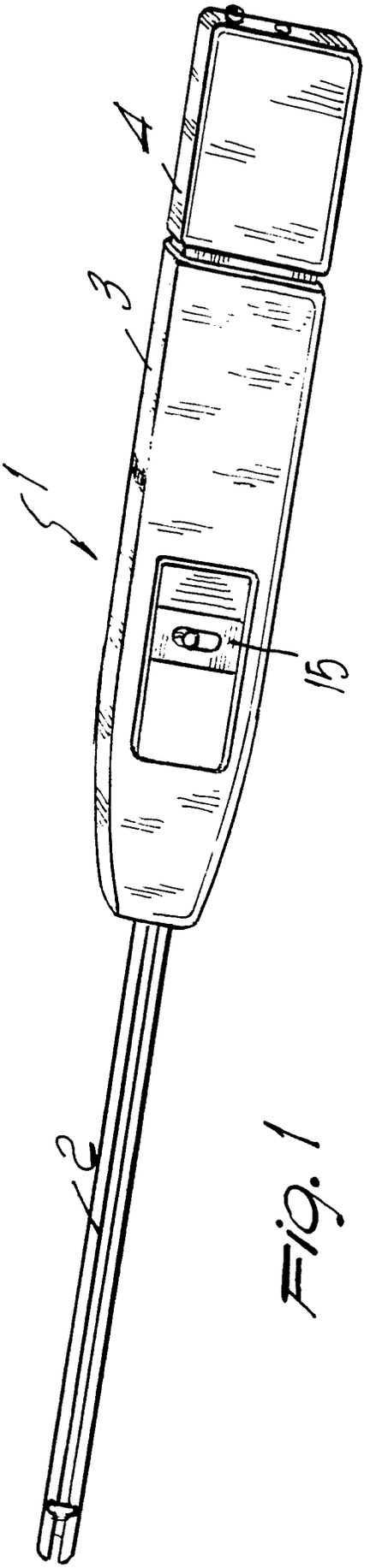

Fig. 1

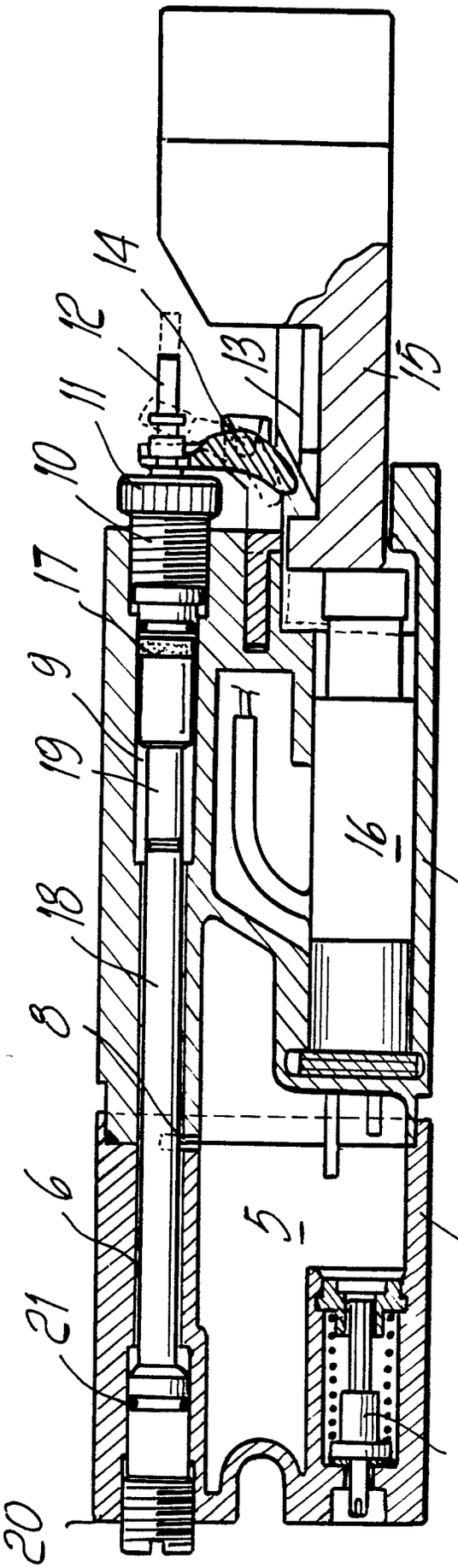

Fig. 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 87 11 3042

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	GB-A- 864 988 (GENOUD) * Page 3, lines 34-101; figure *	1-4	F 23 Q 2/16 F 23 Q 2/42
X Y	GB-A-1 221 337 (QUERCIA) * Page 4, lines 19-38; figures 1,2 *	1,2 5-8	
Y	FR-A-1 588 072 (QUERCIA) * Page 3, lines 23-38; page 6, lines 25-40; figures *	5-8	
X	US-A-3 184 931 (ZENZABURO YOSHINO) * Column 3, lines 2-20; figure 1 *	1,2	
A	GB-A-1 210 947 (MALTNER) * Page 3, lines 34-45; figures *	5-7	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

F 23 Q

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11-12-1987	VANHEUSDEN J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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