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W. J. GLADITZ ET AL
GAS LIGHTER

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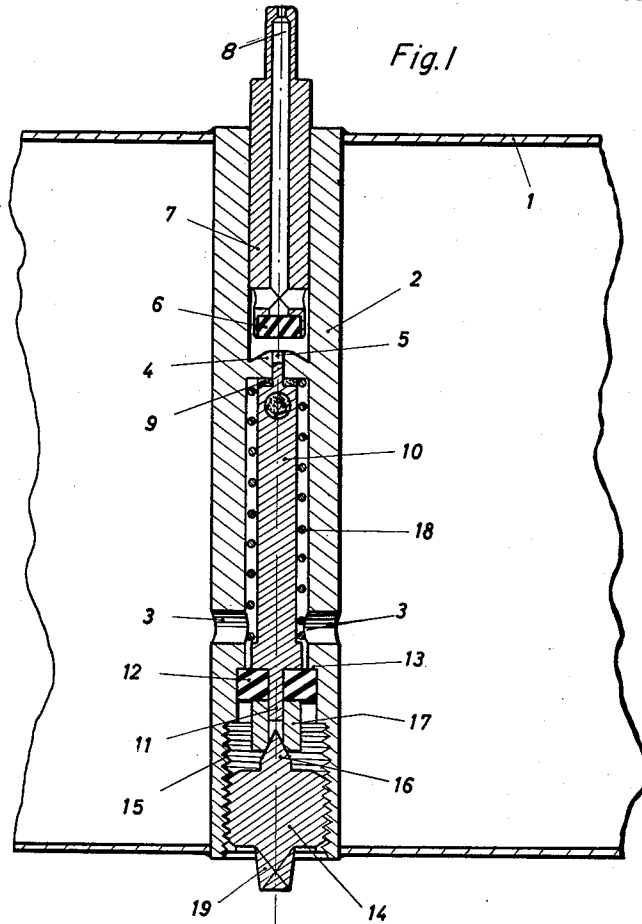
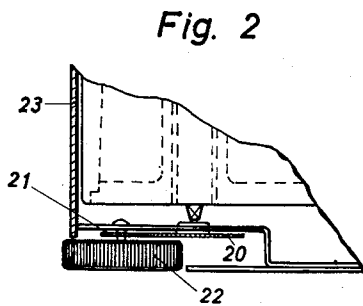
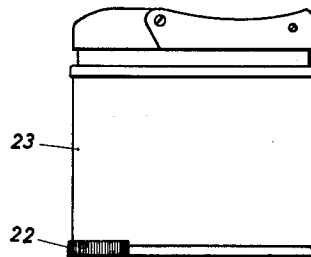


Fig. 3



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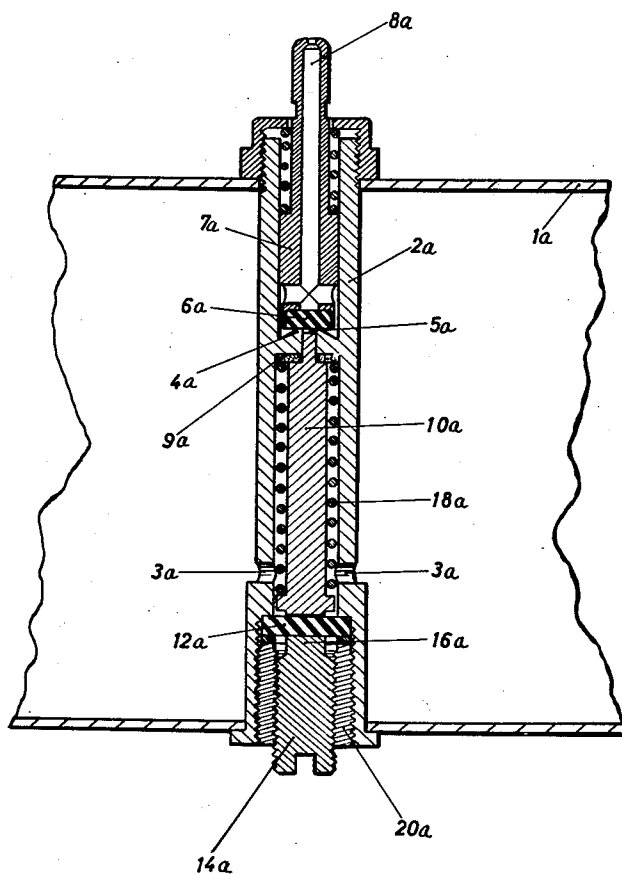


Fig. 4

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6 Claims. (Cl. 67-7.1)

The present invention concerns a gas fuel cigarette lighter particularly one having a stop valve disposed co-axially with the burner nozzle within a housing and a throttle diaphragm subjected to a regulable compressive pressure. This throttle diaphragm is in most cases made of a porous material and serves the purpose of reducing the pressure from approximately 5-6 atmospheres, i.e. that obtaining in the liquid gas, e.g. butane (C_4H_{10}), in the fuel container. The ability to regulate should permit the size of the flame to be adjusted by choice.

According to the present invention a pressing ram bears against the throttle diaphragm situated below the stop valve, this ram extending within a tubular housing throughout the full height of the fuel container to beneath the radial apertures of the tubular housing communicating with the interior of the fuel container, and a soft packing which is supported against an annular shoulder of the tubular housing is caused to abut against the underside of the pressing ram with this soft packing being impacted on its lower surface by a pressing ram of a setting screw accessible from the outside of the lower end of the container.

Adjustment of the flame is usually effected while the flame is alight in order to allow the effect and the extent of adjustment to be observed. The present invention allows the flame to be regulable from the lower end of the lighter, remote from its flame region, thus the user not even having to be particularly careful, avoids burning his fingers as is the case in known embodiments where the setting screw is arranged close to the burner nozzle. At the same time another feature of the invention yields reliable sealing of the adjusting flue relative to the interior of the fuel container, which is particularly important since the sealing effect has to be effective against the full excess pressure prevailing in the interior of the container and not against the reduced pressure in known embodiments where the setting screw is close to the burner nozzle. The sealing is reliable despite the aggravated circumstances because, although disposed in the adjusting flue, it remains stationary against the collar of the annular shoulder of the tubular housing and at this point in the annular angle space fits flush against the tubular housing with particular force.

For a further increased sealing effect in a preferred form of the invention the soft packing is constructed as a closed diaphragm disc firmly clamped between the tubular housing and a screw-sleeve. This diaphragm packing seals hermetically and is not susceptible to faults; on account of the nature of its material even with the prevailing minimum dimensions permits a transmission of thrust as it is required.

The invention will be described further by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a longitudinal section of one embodiment;

FIG. 2 is a fragmentary section showing the mounting of a knurled screw in a decorative sleeve;

FIG. 3 is a side elevation of the lighter according to FIG. 2; and FIG. 4 is a longitudinal section of an alternative embodiment.

A tubular housing 2 the interior of which communi-

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cates with the interior of the fuel container 1 via radial apertures 3 extends throughout the full height of the fuel container. The tubular housing 2 has a transverse wall 4 which has a central bore 5 above which is disposed the stop valve with its packing 6, which is mounted on the lower end of a hollow spindle 7, the upper end of which projects outwardly accommodating the burner nozzle 8. Below the transverse wall 4 there is disposed one or more throttle plates 9 of porous material in front of the bore 5. Below this throttle there is situated a pressing ram 10 which leaves an annular space between it and the inner wall surface of the tubular housing to permit passage of the liquid gas. On the underside the pressing ram 10 has a slide shoulder 11 and a soft packing ring 12, e.g. of rubber. The latter is supported on the one side against a collar 13 of an annular shoulder of the tubular housing. The drawing shows the soft rubber ring 12 in a non-compressed state. If, however, the setting screw 14 accessible from the outside is progressively screwed into the tubular housing then the hollow pressing ram 17 which is centered on a point 16 of the setting screw 14 progressively compresses the soft packing 12, causing it to fit with its outer surface against the cylindrical wall surfaces of the tubular housing until the point 16 directly abuts against the lower end surface of the slide shoulder 11 and, when the setting screw 14 is progressively screwed, tends to displace the pressing ram 10 directly, which however does not occur to a noticeable extent, because the throttle 9 is compressed simultaneously and the size of the flame is reduced at the burner nozzle 8. The opposite adjustment of the flame can become effective by means of the flexibility of the throttle 9 or a return spring 18 when the setting screw 14 is turned in reverse.

If the setting screw 14 bears a square shoulder 19 on its lower external end face, then it can serve to couple with a corresponding recess in the gear wheel 20, which is mounted in a decorative sleeve 23, which when the latter is fitted over, causes the coupling to engage. A small pinion 21 which is mounted on the shaft of the knurled wheel 22, meshes with the gear wheel 20, the transmission ratio being such that a manageable magnitude of the adjusting movement is possible on the knurled wheel, which permits a very fine adjustment of the size of the flame.

The tubular housing 2 permeating the whole height of the fuel reservoir, instead of being in one piece as shown in the drawings, can be assembled from two sections the joint of which being adapted to receive a packing. Hence it is possible for an advantage of the invention to be promoted, which consists in the use of simple components which are also easy to assemble.

In the embodiment according to FIG. 4 the pressing ram 10a, subjected to the force of a spring 18a, abuts with its underside against a soft packing disc 12a. The latter is firmly clamped in the manner of a diaphragm between an annular shoulder of the tubular housing 2a and a screw-sleeve 20a hence having the same tight seal within the housing as when soldered in position in a metal diaphragm embodiment. Against the underside of this soft packing diaphragm there abuts the upper end 16a of the setting screw 14a accessible from the outside lower end, which screw, when tightened, transmits its thrust movement via the deflecting diaphragm to the pressing ram 10a and hence via the annular shoulder thereof to the throttle plates 9a, while in a reversed slackening movement the elasticity of the throttle plates 9a supported by the spring 18a causes a corresponding return movement.

What is claimed is:

1. A gas fuel cigarette lighter comprising a fuel container, a tubular housing extending throughout said fuel container for the full length thereof, said tubular housing

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having an apertured intermediate transverse wall, a stop valve disposed in said tubular housing above said transverse wall and engageable therewith to seal the same against fuel flow therethrough, a compressible porous throttle plate bearing against the underside of said transverse wall for restricting the flow of gas therethrough, a pressing ram loosely mounted in said tubular housing below said transverse wall and bearing against the underside of said throttle plate, said tubular housing having fuel openings therein intermediate the ends of said pressing ram, the lower portion of the interior of said tubular housing being of enlarged diameter to form a valve face therein, a sealing disc in said enlarged portion of the interior of said tubular housing bearing against said valve face and the lower end of said pressing ram; and a setting screw means threadedly supported in said tubular housing and reacting against said sealing disc and said pressing ram to vary the compressing of said throttle plate and exerting a compressing force on said sealing disc, said setting screw means being completely independent of said pressing ram.

2. The lighter of claim 1 wherein said setting screw means includes a set screw and a tubular member pressing against said sealing disc, and said pressing ram has a reduced extension passing through said sealing disc and into said tubular member with said setting screw means

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bearing against said pressing ram in a compressed condition of said sealing disc.

3. The lighter of claim 1 wherein said setting screw means includes a set screw and a tubular member which tubular member is threaded in said tubular housing and reacts on said sealing disc independently of said set screw.

4. The lighter of claim 3 wherein said tubular member is internally threaded and said set screw is threaded therein.

5. The lighter of claim 1 wherein a decorative sleeve encases said fuel container, a knurled wheel is carried by said sleeve, and drive means connects said wheel to said setting screw means.

6. A gas fuel lighter as claimed in claim 5, in which said drive means comprises a gear wheel transmission between the knurled wheel and the setting screw means.

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