

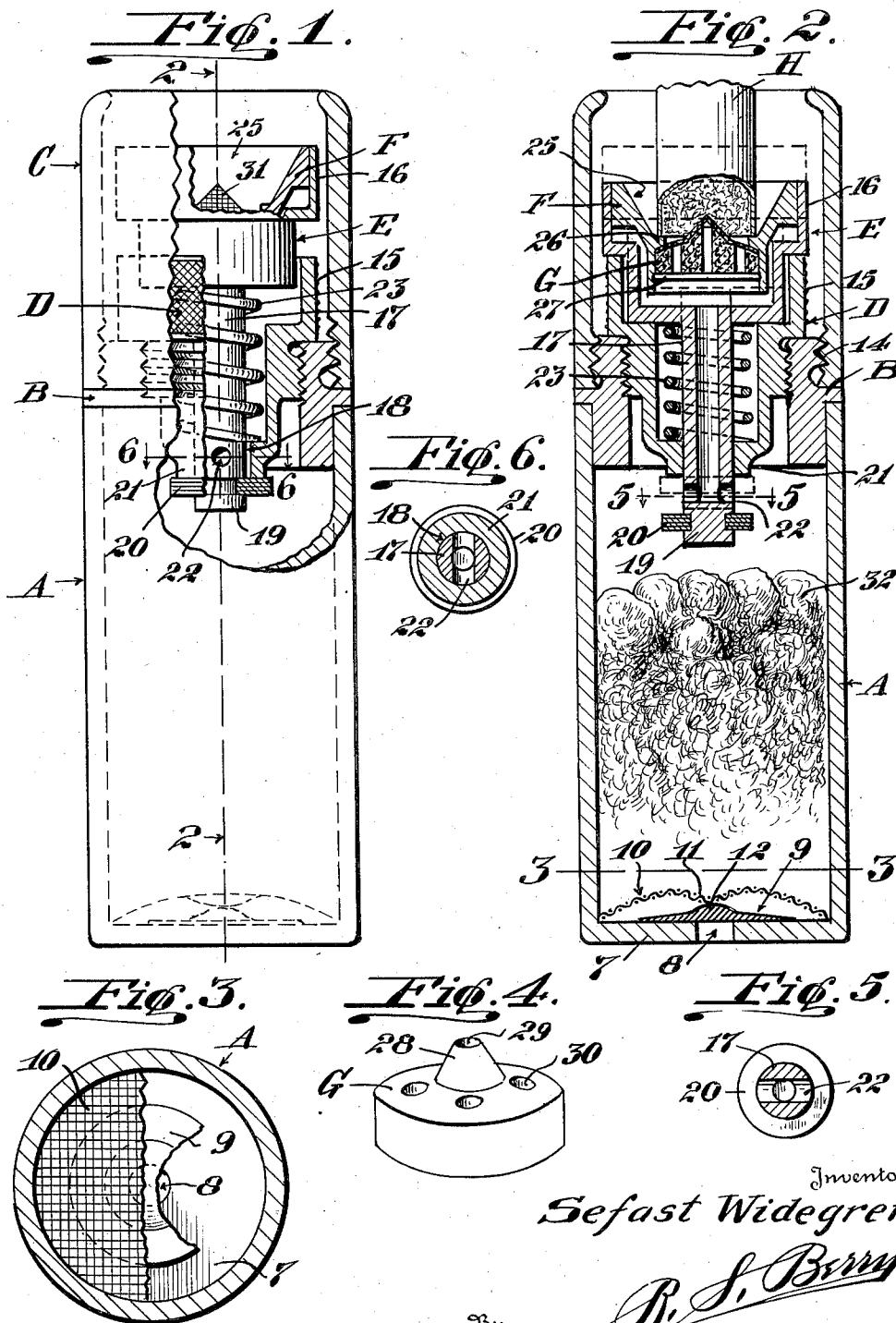
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CIGARETTE LIGHTER

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## CIGARETTE LIGHTER

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### 1 Claim. (Cl. 67-7)

This invention relates to a cigarette lighter and more particularly pertains to cigarette lighters of the type in which ignition is effected by the flow of a vaporous fuel through an apertured disc of catalytic material and in which the flow of fuel is effected by draught induced through a cigarette applied to the disc. In lighters of this character it is essential that the catalytic igniter be unexposed to the fuel vapors when the device is not in use, and various constructions have heretofore been contrived to accomplish this purpose, which construction usually involves valves or dampers that require opening and closing by manual operation of an actuator.

15 An object of the present invention is to provide means controlled by the application of the cigarette to the catalytic igniter and its removal therefrom for effecting opening and closing of a fuel feed passage between a fuel reservoir and the apertured catalytic disc, and in which the passage is normally closed by spring controlled means adapted to be operated to open the passage on application of a cigarette under pressure to the igniter.

25 Another object is to provide a construction in the catalytic igniter whereby loose tobacco in the tip of a cigarette applied thereto will be compacted in a fashion to facilitate its ignition under the kindling action of the vaporous fuel passing through the catalyzer.

30 A further object is to provide a device of the above character which is simple in construction and composed of few parts which may be readily assembled and which is highly efficient in its operation.

35 With the foregoing objects in view, together with such other objects and advantages as may subsequently appear, the invention is carried into effect as illustrated by way of example in the accompanying drawing, in which:

40 Fig. 1 is a view of the lighter as seen in side elevation with portions broken away depicting parts thereof in vertical section, and showing the parts as disposed in their normal position, that is with the communication between the fuel reservoir and the igniter closed;

45 Fig. 2 is a view in vertical section and elevation taken on the line 2—2 of Fig. 1, but showing the parts as positioned in effecting opening of the communication between the fuel reservoir and igniter;

50 Fig. 3 is a detail in horizontal section and plan taken on the line 3—3 of Fig. 2 with parts broken away;

Fig. 4 is a perspective view of the catalyzer disc;

Fig. 5 is a detail in horizontal section taken on the line 5—5 of Fig. 2;

Fig. 6 is a detail in horizontal section taken on the line 6—6 of Fig. 1.

Referring to the drawing more specifically A indicates generally a casing which is here shown as comprising a hollow cylinder having an end wall 7 formed with a central opening 8 constituting an air inlet. The opening 8 is normally closed by a valve 9 preferably comprising a flexible elastic disc which seats on the inner face of the end wall 7 and is retained in place thereon by a reticulated false bottom 10 arranged in the casing A and having a depressed central portion 11 which bears on a central protuberance 12 of the valve 9 as particularly shown in Fig. 2.

Mounted on the open end of the cylindrical casing A is a collar B which is formed with external threads 14 to detachably receive an internally threaded open ended cap C; the collar B being also formed with internal threads into which is screwed a tubular housing D having an enlarged knurled upper end portion 15 which seats on the upper end of the sleeve 14. Carried by the housing D is a reciprocal plunger E having an open ended head portion 16 and embodying a tubular stem 17 which leads from the head portion 16 through the housing D and projects through an opening 18 in an inner end wall of the latter into the interior of the casing A. The inner end of the stem 17 is closed by a wall 19 on which is carried an annular flexible ring 20 adapted to seat on an end flange 21 on the housing D when the plunger E is in its elevated position as shown in Fig. 1.

Formed in the stem 17 is a laterally extending passage 22 which leads from the interior of the stem in inwardly spaced relation to the ring 20 and at a point where the passage will be covered by the end wall of the housing D when the plunger E is in its outermost position.

Means are provided for normally yieldably maintaining the plunger E in its outermost position which means is here shown as comprising a helical spring 23 wound around the stem 17 and bearing between the end wall of the housing D and the head portion of the plunger E; the spring 23 acting to normally urge the flexible ring 20 into a seated position on the end of the flange 21.

Mounted in the head of the plunger E is a ring F formed with an internally beveled outer end portion 25 and having an inwardly projecting

annular flange 26 at the base of its converging interior. Carried by the ring F is a disc G formed of suitable catalytic material which disc is held in place against the inner face of the flange 26 by a split ring 27 as particularly shown in Fig. 2. The disc G is provided with a frusto-conical projection 28 as particularly shown in Fig. 4, which protrudes through the space bounded by the flange 26 and into the space bounded by the inclined inner walls of the outer end portion of the ring F. Leading axially through the disc G and the conical projection 28 thereon is an aperture 29, and formed in the body of the disc between its margin and the base of the conical projection 28 is a series of apertures 30. The outer face of the disc G is covered by a metallic screen 31 which includes a central conical portion that projects over the conical projection 28 on the disc G. The projection 28 with its screen covering serves as a means for packing loose tobacco on the end of a cigarette H thrust endwise against the igniter disc G, as particularly shown in Fig. 2.

The casing A constitutes a reservoir for a vaporizable fuel of the character commonly employed in cigarette lighters of the type employing catalytic igniters, methanol or the like being generally used, the fuel being placed in the casing through the sleeve B on removing the housing D therefrom. The casing contains a quantity of fibrous material 32, such as cotton, which is saturated with fuel. The catalyst may consist of platinum-black composition or the like, as is usual with this type of lighter.

In the operation of the invention, a cigarette H is inserted through the open end of the cap C and positioned against the igniter carried by the plunger E, as particularly shown in Fig. 2, with the protruding conical portion of the igniter

projecting into the cigarette. Pressure is then imposed on the plunger E either manually or by a thrust imposed upon the cigarette, thus causing the plunger to advance into the housing D in opposition to the spring 23 so as to cause the passage 22 in the stem 17 to be opened to the interior of the casing A. On then drawing on the cigarette H, air will be directed through the intake 8 around the valve 9 into the interior of the casing and through the saturated fibrous mass 32 such as to cause vaporization of the fuel vapors thus formed then passing through the tubular stem 17 and through the perforations of the catalytic disc G which reacts upon the vapors to produce a kindling temperature such as to effect ignition of the cigarette. On withdrawing the ignited cigarette from the igniter the spring 23 will act to restore the plunger E to its normal innermost position thereby automatically cutting off the communication between the fuel vapors within the casing A and the catalytic disc so that the disc will not be exposed to the fuel vapors when the device is not in use.

#### I claim:

In a lighter, a casing formed with a fuel reservoir having an air inlet, a collar on said casing, a demountable housing on said collar, a plunger mounted on said housing having an open ended head and a tubular stem extending from said head through said housing, said stem having a lateral passage adjacent its inner end, an annular ring on said stem arranged between said passage and the inner end of the stem, spring means for normally maintaining said plunger in an advanced position with said ring abutting the inner end of said housing, and an apertured catalytic disk carried in the open-ended head of said plunger.

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