March 4, 1958 A. MOSCH 2,825,216

PYROPHORIC LIGHTER WITH FLINT STORAGE MAGAZINE

Filed Jan. 25, 1956

Fig. 1.

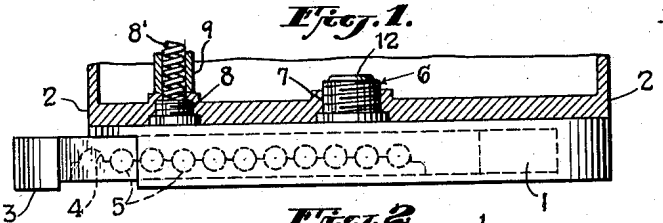


Fig. 2

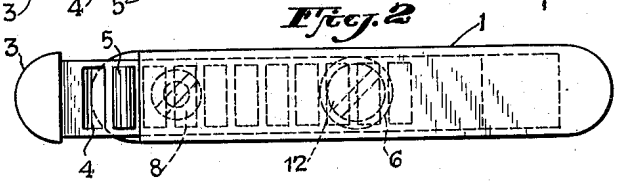


Fig. 3.

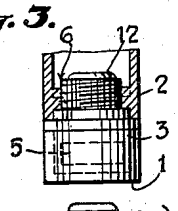


Fig. 4.

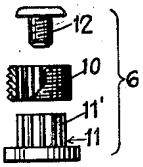


Fig. 5.

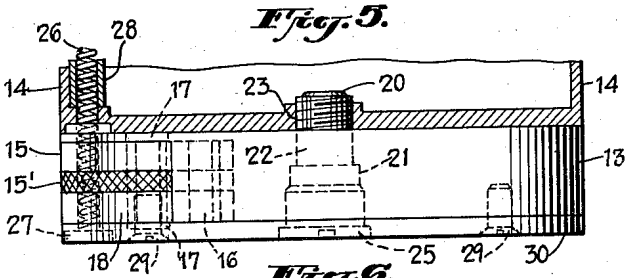


Fig. 6.

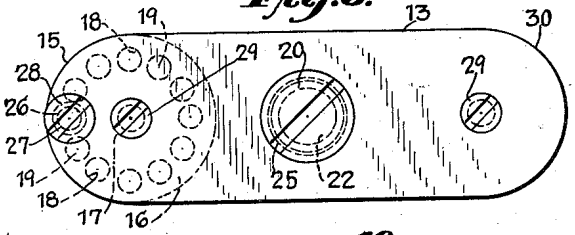


Fig. 7.

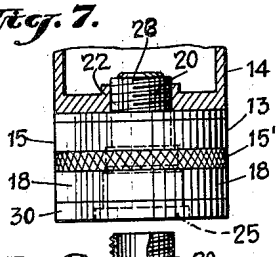


Fig. 8.

Fig. 9.

Fig. 10.

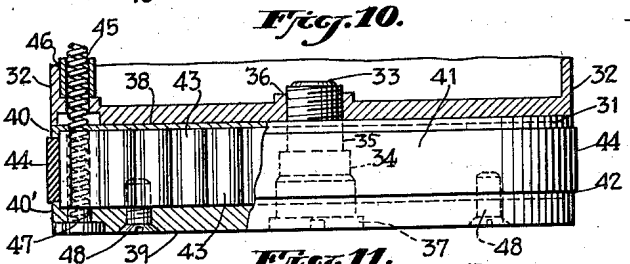


Fig. 11.

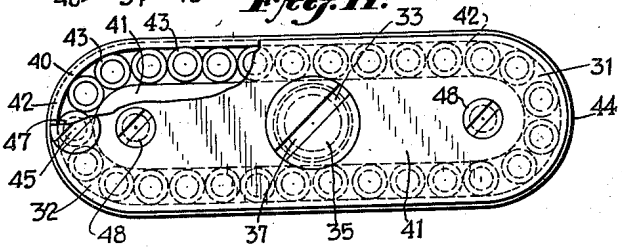
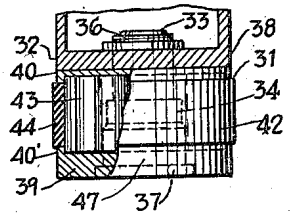


Fig. 12.



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PYROPHORIC LIGHTER WITH FLINT STORAGE MAGAZINE

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6 Claims. (Cl. 67—7.1)

The present invention relates to pyrophoric lighters in which a flint and abradant wheel are used to produce a spark to ignite fuel which is stored in the casing of the lighter, more particularly to a pyrophoric lighter of the aforesaid type including a removable magazine for storing spare flints.

The present application is a continuation-in-part of my copending application Serial No. 310,788, filed September 22, 1952 which matured into Patent No. 2,737,796 on March 13, 1956.

It is an object of the present invention to provide a member movably accommodating a magazine element for storing spare flints, the member being adapted to be attached to a conventional pyrophoric lighter and to be operated when attached to the lighter without necessitating any changes in the structure of the lighter.

It is a further object of the present invention to provide a conventional lighter having a threaded filler plug for closing the fuel magazine with a member for storing spare flints, the member including a threaded portion which fits into the threaded hole for the filler plug so that the filler plug can be replaced by the said threaded portion, the member having a portion adapted to receive a flint storing element and to serve as a handle when screwing the threaded portion into or unscrewing the threaded portion from the filler plug hole.

Another object of the invention resides in the provision of a member for storing spare flints which member can be attached to a conventional pyrophoric lighter having a fuel container and a threaded filler hole in the bottom of the container, a threaded sleeve being inserted in the aforesaid member which sleeve fits into the filler plug hole and means being provided to close the bore in the sleeve.

The novel features which are considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself however and additional objects and advantages thereof will best be understood from the following description of embodiments thereof when read in connection with the accompanying drawing in which

Fig. 1 is a part sectional side view of the bottom portion of a lighter according to the invention;

Fig. 2 is a bottom view of the lighter shown in Fig. 1;

Fig. 3 is a part sectional end view of the lighter shown in Figs. 1 and 2;

Fig. 4 is an exploded view of a detail of the structure shown in Figs. 1 to 3;

Fig. 5 is a part sectional bottom view of a modified lighter according to the invention;

Fig. 6 is a bottom view of the lighter shown in Fig. 5;

Fig. 7 is a part sectional end view of the lighter shown in Figs. 5 and 6;

Fig. 8 is a side view of a sleeve member used in the lighter according to Figs. 5 to 7, a part of the sleeve being broken off;

Fig. 9 is a top view of the sleeve shown in Fig. 8;

Fig. 10 is a part sectional side view of another modification of a lighter according to the invention;

Fig. 11 is a bottom view of the lighter shown in Fig. 10 with a part broken off;

Fig. 12 is a part sectional end view of the lighter shown in Figs. 10 and 11.

Referring more particularly to Figs. 1 to 4 of the drawing, numeral 2 designates the casing of a conventional lighter of which only the lower part is shown. A hollow member 1 having an outside configuration conforming with that of the casing 2 is attached to the bottom of the latter. A flint magazine element 3 is slidably inserted in the member 1. The element 3 has a plurality of cavities 4 for individually receiving a spare flint 5.

The member 1 containing the flint magazine element is secured to the casing 2 by means of a threaded plug 6 which is rigidly connected with the top of the member 1, preferably at the center of the top surface. The plug 6 fits into a threaded bore 7 in the bottom of the casing 2, replacing the conventional filler plug. The member 1 can serve as a handle for turning the plug 6 when removal of the latter is desired for filling fuel into the casing 2.

For replacing a worn flint the member 1 need be swung only to the extent that the conventional plug 6 retaining a spring 8' in a tube 9 can be removed for pulling the spring 8' out of the tube 9. The spring 8', when in position inside the tube 9 presses a flint in the conventional manner against an abradant wheel (not shown). By pulling the drawerlike magazine element 3 out of the member 1 a spare flint 5 can be taken from one of the cavities 4 and inserted in the tube 9. Thereupon the element 3 is pushed back all the way into the member 1, the spring 8' is inserted into the tube 9, and the plug 6 is screwed in place. The member 1 can now be swung back into its normal position.

Since normal position of the member 1 relatively to the casing 2 will not always coincide with the position in which the plug 6 tightly closes the opening 7, the plug 6 is preferably so constructed that the relative angular position of the threaded portion of the plug and of the member 1 can be changed. For this reason the plug 6 preferably consists of three parts: a part 11 permanently attached to the top surface of the member 1 and having a splined cylindrical surface portion 11' fitting into a splined interior surface of an externally threaded sleeve 10. The part 11 is secured in the sleeve 10 by means of a screw 12. Removal of the latter affords pulling of the sleeve 10 from the part 11 and relative rotation of the sleeve 10 and of the part 11 so that upon reassembly of the plug 6 the thread on the outside of the sleeve 10 is in a different position with respect to the part 11 and the member 1.

In the modification illustrated in Figs. 5 to 9 a member 13 is removably attached to the bottom of the casing 14 of a conventional lighter of which only the lower portion of the casing containing the fuel is shown. One end of the member 13 is provided with a semicylindrical recess 16 into which a cylindrical flint magazine 15 is rotatably fitted, the member 15 rotating on a pin 17 and having a knurled surface portion 15' facilitating manual rotation of the member 15. The latter is provided with a plurality of bores 18 arranged on a circle around the pin 17, the bores 18 being parallel to the pin 17 and adapted to individually receive a spare flint 19.

The cylindrical magazine 15 and the pin 17 are held in the cavity or recess 16 by means of a plate 30 secured to the bottom of the member 13 by means of screws 29 one of which extends into the pin 17.

The member 13 is secured to the base of the lighter casing 14 by means of a sleeve 20 whose outside is threaded for screwing into the threaded hole 23 in the

lighter casing designed to receive the conventional filler plug which has been removed. The lower part of the sleeve 20 extends through a bore 22 in the member 13 and has a collar 21 abutting against a shoulder in the bore 22. As shown in Fig. 8 the sleeve 20 has a bore whose lower part 24 is adapted to receive a suitable tool for tightening the threaded sleeve in the threaded bore 23. The bore 22 is closed by a threaded plug 25 serving as a filler plug for the fuel reservoir in the lighter casing 14.

For replacing a worn flint a plug 27 which is screwed into the plate 30 is removed so that a conventional spring 26 which extends through a tube 28 in the lighter casing 14 and through one of the bores 18 in the magazine member 15 can be removed through a hole in the member 30 which hole is in line with the tube 28 and which is closed by the closure 27. The spring 26 presses a flint against an abradant wheel (not shown) in the conventional manner. The magazine element 15 can now be rotated to align a bore 18 containing a spare flint 19 with the tube 28 for pushing a new flint thereinto. Thereupon the spring 26 and the plug 27 are reinserted.

When all spare flints in the member 15 are used up the screws 29 and the plate 30 are removed, exposing the lower surface of the member 15 so that a new supply of flints can be inserted in the bores 18 of the magazine member 15.

Figs. 10 to 12 illustrate a modification in which a member 31 is attached to the bottom of the casing 32 of a conventional lighter of which only the bottom part is shown. The member 31 is secured to the casing 32 in the same manner as the member 13 of the embodiment of the invention shown in Figs. 5 to 9 is mounted to the bottom of the lighter casing 14. A threaded sleeve 33 is screwed in the threaded bore 36 provided for the filler plug. The sleeve has a collar 34 abutting against a shoulder in a bore 35 of the member 31. The interior of the sleeve is so shaped as to receive a correspondingly shaped tool for tightening the sleeve. A threaded filler plug 37 is screwed into the member 31 for closing the bore 35.

The member 31 has an upper plate 38 which may be integral with a spacer portion 41 or may be a separate plate. A lower plate 39 of same shape as the upper plate 38 is secured to the bottom of the spacer portion 41 by means of screws 48. The horizontal cross section of the spacer portion 41 is smaller than the plates 38 and 39 so that a recess is formed all around the member 31. A plurality of tubes 43 are placed in the recess 42 and are adapted to individually receive a spare flint. An endless belt 44 is placed between the plates 38 and 39 which belt covers all the tubes 43. The circumference of the plate 38 is provided with a downwardly extending lip 40 and the plate 39 is provided with an upwardly extending lip 40'. The belt 44 is placed between the lips 40 and 40'.

When a new flint is needed a plug 47 is removed from the bottom plate and a conventional spring 45 extending through one of the tubes 43 and through a tube 46 in the lighter casing is removed. The spring 45 presses a flint against an abradant wheel (not shown) in the conventional manner. The belt 44 can now be moved until a tube 43 containing a new flint is in line with the tube 46 and the new flint can be pushed thereinto. Thereupon the spring 45 is inserted into the tube 46 and the plug 47 is screwed into the plate 39. When the supply of spare flints is exhausted the screws 48 securing the lower plate 39 to the member 31 and the plate 39 are removed so that all tubes 43 are accessible and new flints can be inserted in the tubes.

I claim:

1. A pyrophoric lighter of the flint and abradant wheel type, comprising a casing containing fuel, said casing having a bottom, a threaded filler hole in said bottom, flint storage means including a member outside of and adjacent to said bottom and having substantially the same peripheral configuration as said bottom, a magazine element movably connected with said member and adapted to hold a plurality of spare flints, and plug means connected with said member and having a threaded portion fitting into said threaded filler hole for securing said member to the outside of the bottom of said casing and closing said filler hole.

2. A pyrophoric lighter as defined in claim 1, said member having a cavity, said magazine element being received in said cavity and having a plurality of receptacles adapted to individually receive a spare flint.

3. A pyrophoric lighter as defined in claim 1, including a tube extending through said casing, a coil spring inserted in said tube for pressing a flint against an abradant wheel, an opening in the bottom of said casing and in line with said tube, a closure for said opening, said member being swingable on the longitudinal axis of said filler hole for clearing said opening and insertion of a flint into said tube upon removal of said closure.

4. A pyrophoric lighter as defined in claim 1, including a tube extending through said casing, a coil spring inserted in said tube for pressing a flint against an abradant wheel, an opening in the bottom of said casing and in line with said tube, a cavity in said member, a cylindrical magazine element disposed in said cavity revolvable on an axis parallel to the longitudinal axis of said filler hole, a plurality of bores in said element for individually receiving a spare flint, said bores being placed equidistantly of and parallel to the rotation axis of said magazine element and adapted to be individually placed in line with said tube upon rotation of said element, said spring normally extending through one of said bores, a hole in said member in line with said tube, and a removable closure for said last mentioned hole.

5. A pyrophoric lighter as defined in claim 1, including a tube extending through said casing, a coil spring inserted in said tube for pressing a flint against an abradant wheel, an opening in the bottom of said casing and in line with said tube, a circumferential recess in said member, a plurality of storage tubes placed in said recess for individually receiving a spare flint, the longitudinal axis of said tubes being parallel to the longitudinal axis of said filler hole, an endless belt extending around all of said storage tubes for holding the latter in said recess and moving said storage tubes in said recess in a direction at a right angle to the longitudinal axes of said storage tubes for individually aligning said storage tubes with the tube in which said spring is inserted, said spring normally extending through one of said storage tubes, a hole in said member in line with said tube in which said spring is inserted, and a removable closure for said last mentioned hole.

6. A pyrophoric lighter as defined in claim 1, said plug means including a sleeve having a threaded portion fitting into said filler hole, said member having a bore, a shoulder in said bore, said sleeve having a collar abutting against said shoulder, and a threaded filler plug screwed into said bore coaxially of said sleeve, the latter affording filling of fuel into said casing when said filler plug is removed.

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