March 30, 1948. F. P. BUSHMAN 2,438,632

AUTOMATIC LIGHTER

Filed July 19, 1945

Fig. 1.

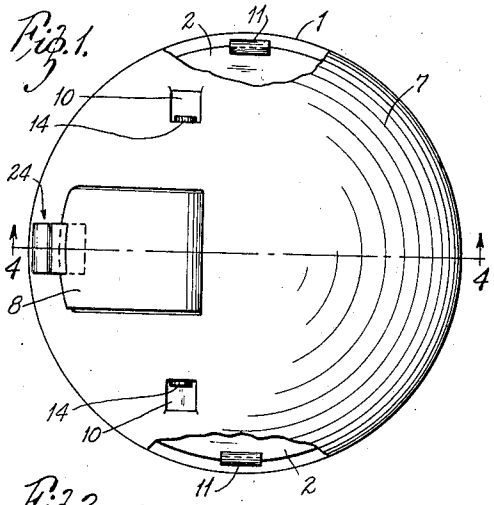



Fig. 3.

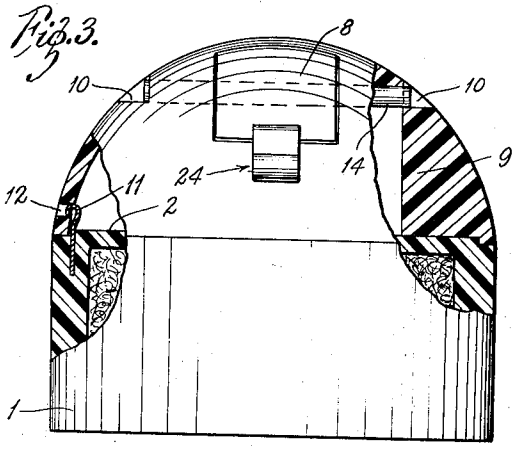



Fig. 2.

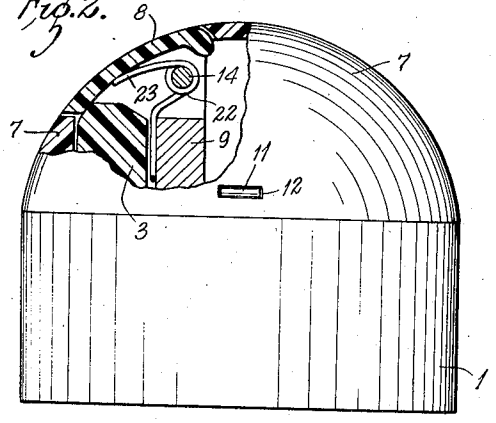



Fig. 5.

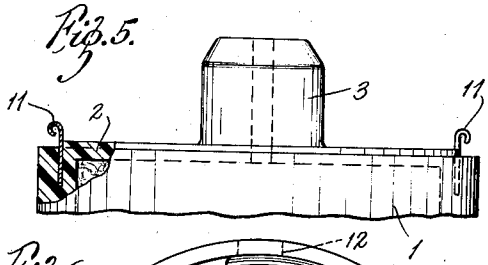



Fig. 6.

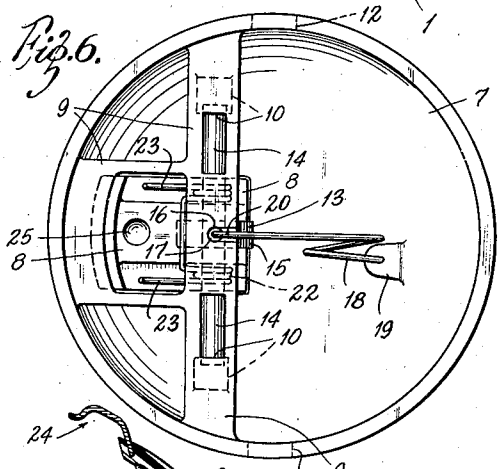



Fig. 4.

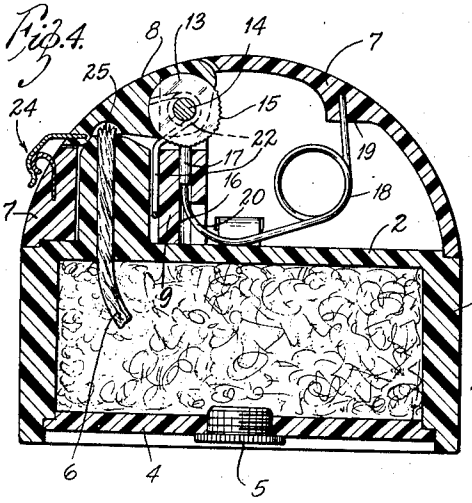
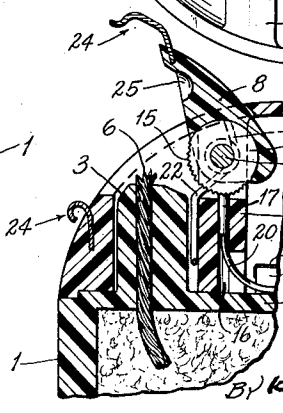



Fig. 7.




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# UNITED STATES PATENT OFFICE

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## AUTOMATIC LIGHTER

Frederick P. Bushman, Vallejo, Calif.

Application July 19, 1945, Serial No. 605,904

2 Claims. (Cl. 67—4.1)

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This invention relates to improvements in automatic lighters, and consists in the novel construction hereinafter disclosed.

An object of the invention is to provide an automatic lighter of the type including an abrasive wheel a flint and wick that will be efficient in operation and which may be economically manufactured.

An additional object of the invention is to provide a new combination of parts in a lighter of the class described which is particularly adapted to be fabricated primarily from molded plastic material which, when assembled, will be durable in use and inexpensive to manufacture.

Additional advantages of the construction will be apparent from the following detailed description of the invention, taken in connection with the accompanying drawing, in which:

Fig. 1 is a plan view;

Fig. 2 is a side elevation, partially in section;

Fig. 3 is a front elevation partially in section;

Fig. 4 is a vertical section through the device, substantially on the line 4—4 of Fig. 1;

Fig. 5 is a fragmentary side elevation, partially in section, with the top cover removed;

Fig. 6 is a bottom plan view of the cover section; and

Fig. 7 is a vertical section of certain of the parts illustrated in Fig. 4 in open adjustment.

In the embodiment of the invention illustrated in the drawing the bottom section of the device comprises a reservoir including a cylindrical side wall 1, a top wall 2, having an upstanding boss 3 on the top face thereof, and a bottom wall 4. This reservoir section is preferably molded in one piece, preferably of plastic material, with the exception of the bottom wall 4 which may be separately molded and attached at the bottom of the cylindrical wall 1 with a miter joint and cemented in place.

The bottom wall is provided with a filler cap 5 and an axial opening is formed in the boss 3 through which a wick 6 extends from the reservoir to the top face of the boss 3.

The cover section of the device is likewise preferably formed from molded plastic material and comprises a hemispherical wall 7 and a separate segmental lid 8 that is fitted into an opening in the wall 7 at the front thereof. The upper section also has formed therewith a web 9, having the form best shown in Fig. 6, and supports on its top face extending ends of the abrasive wheel shaft, later to be described.

In the top section are angular aligned notches

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10 on either side, providing means for mounting the wheel shaft.

The top section is mounted over the bottom section and has miter joints therewith. The top section is held in place by a series of spring snaps 11, carried around the periphery of the upper face of the wall 1 near the upper edge thereof, which engage in openings 12 formed in the face of the top section 7 near the lower edge thereof. Releasable means are therefore provided for removing the top section and to hold the two sections together in assembled relations.

In the under face of the lid 8, and molded therein, is an abrasive disc or wheel 13, through which a shaft 14 extends, said shaft 14 being of a sufficient length to be seated in the bearings therefor on the top wall of the web 9. The angular notches 10 provide means for moving said shaft lengthwise in either direction, to position it, so that the lid 8 may be centered, and pivotally supported at each side.

It will be noted that the abrasive disc or wheel 13 has peripheral serrations forming a roughened segment 15 partially around its circumference, the roughened segment extending about 90°.

There is an opening 16 through the web 9 in vertical alignment with the periphery of the disc 13, which constitutes a mounting and guide for a cylindrical flint 17 which may be inserted from the bottom of the opening 16 when the top section is removed.

In order to resiliently press the flint 17 upwardly, a coil spring 18 is provided, one end of which is secured in a recess in a boss 19 on the under face of the cover section.

An extension 20 of the spring 18 enters the opening 16 in the web 9, and the end thereof engages the under face of the flint 17, after it has been inserted in the opening 16. The tendency of the spring is to force the flint upwardly into contact with the serrated segment 15 of the abrasive disc 13.

An expanding coil spring 22, having two coils spaced apart and mounted around the shaft 14 on either side of the wheel 13, is secured at one end by spring-pressure against the front vertical wall of the web 9. The opposite ends of the coil are extended, forming resilient arms 23 that impinge against the under face of the lid 8.

A spring latch device 24, one member of which is carried in the body of the top section and the other member of which is carried in the forward edge of the lid 8, is provided to hold the lid 8 closed against the tendency of the resilient arms 23 to snap it to open position.

It will be understood that, since the pivot support for the lid 8 is the axis of the abrasive wheel or disc 13, when the spring latch device is released the lid will snap upwardly, and, since it rigidly carries the abrasive disc, the serrated segment 15 thereof will travel across the upper face of the flint 17 with a snapping abrasive movement. This action sparks the flint in proximity with the upper end of the wick 6, lighting the same, as the lid 8 moves to open position.

It will be noted that over the end of the wick and in the under face of the lid there is provided a semi-circular recess 25, which operates as a snuffer device for snuffing the wick when the lid 8 is again brought to closed position and latched in such position by the snap latch 24.

From the foregoing description, it will be understood that the invention provides an efficient device, suitable for an automatic desk lighter, which is especially designed to be fabricated from molded plastics.

I am aware that the invention may be modified in certain particulars without departing from the essentials of the invention.

What I claim and desire to secure by Letters Patent is:

1. An automatic lighter comprising a hollow base forming a fluid reservoir, an upstanding boss on said base having a vertical bore therethrough, a wick in said bore having one end extending above said boss and the other end extending into said reservoir, a cover section removably connected to said base enclosing said boss, a web formed integral with said cover section including a portion adjacent said boss, a well in said web portion, a flint in said well having its upper end near the upper end of said wick, a wire spring having one end anchored in said cover and the other end extending into said well from the bottom thereof into contact with said flint biasing said flint upwardly in well expelling relation, a pivoted lid forming part of said cover section, an abrasive wheel anchored in said lid against relative movement, a shaft extending through the center of said wheel and having bearing support in said web forming a pivotal support for said lid and wheel, said wheel including an exposed serrated portion in contact with said flint maintaining said flint in said well against the force of said spring, latching means normally maintaining said lid closed, and spring means biasing said lid towards open position adapted upon release of said latching means to rotate said serrated portion of the wheel across said flint to effect sparks which strike said wick for igniting the same.



2. An automatic lighter comprising a hollow plastic base forming a fluid reservoir, an upstanding integral boss on said base having a vertical bore therethrough, a wick in said bore having one end extending above said boss and the other end extending into said reservoir, a plastic cover section removably connected to said base enclosing said boss, a web formed integral with said cover section including a portion adjacent said boss, a well in said web portion, a flint in said well having its upper end near the upper end of said wick, a spring located solely in the cover section biasing said flint upwardly in well expelling relation, a pivoted plastic lid forming part of said cover section, an abrasive wheel anchored in said lid against relative movement, a shaft extending through the center of said wheel and having bearing support in said web forming a pivotal support for said lid and wheel, said wheel including an exposed serrated portion in contact with said flint maintaining said flint in said well against the force of said spring, latching means normally maintaining said lid closed, and spring means biasing said lid towards open position adapted upon release of said latching means to rotate said serrated portion of the wheel across said flint to effect sparks which strike said wick for igniting the same.

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