Oct. 12, 1954 A. MOSCH 2,691,287

PYROPHORIC LIGHTER AND UTILITY COMPACT

Filed Oct. 26, 1949 2 Sheets-Sheet 1

Fig. 1.

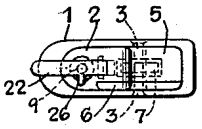


Fig. 2.

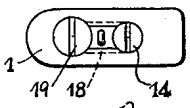


Fig. 3.

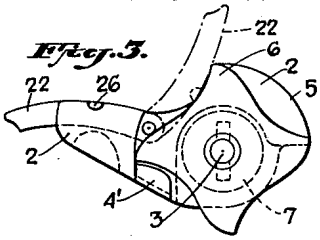
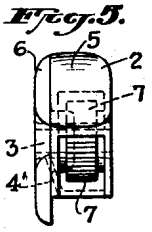


Fig. 5.



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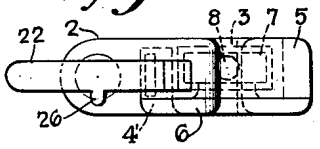

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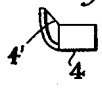

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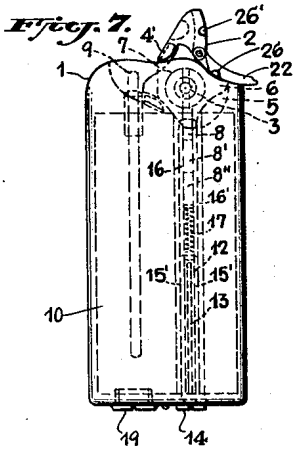

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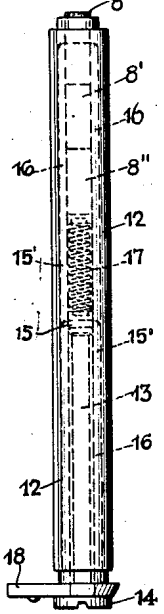

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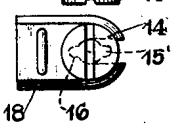
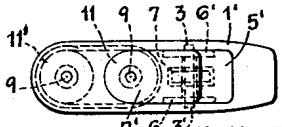


Fig. 10.



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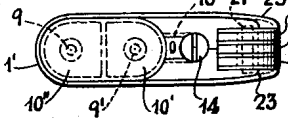

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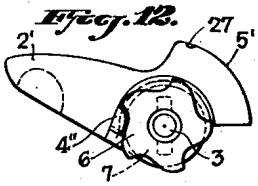

Fig. 14.

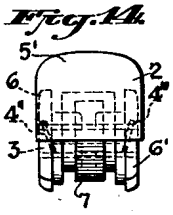

Fig. 13.

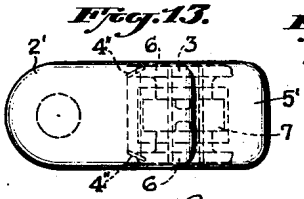

Fig. 15.

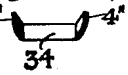

Fig. 16.

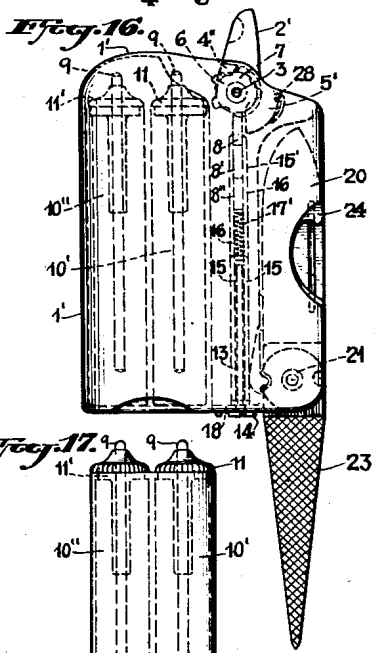

Fig. 17.

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PYROPHORIC LIGHTER AND UTILITY COMPACT

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Fig. 18.

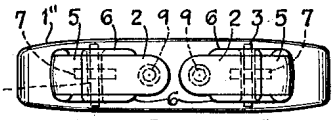


Fig. 19.

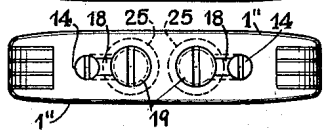


Fig. 24.

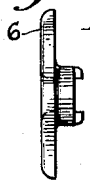


Fig. 26.

Fig. 25.

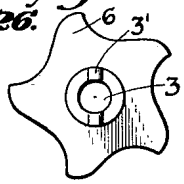


Fig. 20.

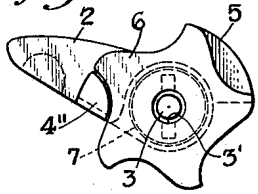


Fig. 21.

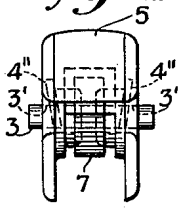


Fig. 27.

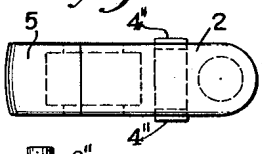


Fig. 22.

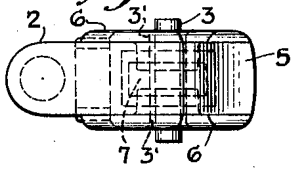


Fig. 28.

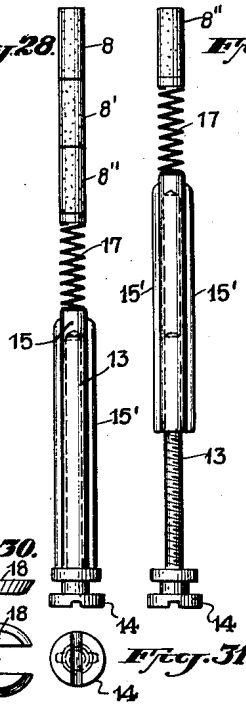


Fig. 29.

Fig. 30.

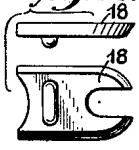
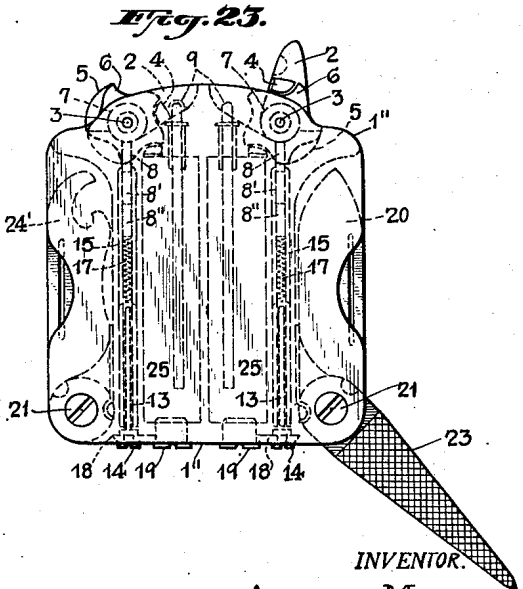


Fig. 31.

Fig. 23.



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UNITED STATES PATENT OFFICE

2,691,287

PYROPHORIC LIGHTER AND UTILITY COMPACT

Alfred Mosch, Jackson Heights, N. Y.

Application October 26, 1949, Serial No. 123,675

5 Claims. (Cl. 67—7.1)

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The present invention relates to a new pyrophoric lighter and to a combination of the lighter with a holder for tools such as a knife, bottle and can opener, nail file, and similar articles.

It is an object of the present invention to provide a new pyrophoric lighter which is positive and safe in operation and consists of a minimum of simple parts. The lighter consists of a conventional fuel reservoir and wick, as well as a flint and friction wheel arrangement and has an improved snuffer cap and actuating arrangement by means of which the friction wheel is revolved whenever the cap is removed from the wick, the cap and friction wheel revolving about the same axis. The actuating means comprise a pin on which a drive wheel and a conventional abradant surface or friction wheel are fixed and on which swings a cap member which has a portion straddling the friction wheel and which is connected with the drive wheel by ratchet means in such a way that the drive wheel and thereby the friction wheel are revolved when the cap is opened and are not rotated when the cap is closed on the wick but held in closed position. The lighter actuating means are always immediately ready for the next following actuation of the lighter, when the snuffer cap is on the wick.

A further object of the present invention is the provision of a flint magazine for a pyrophoric lighter which magazine holds a plurality of flints and comprises means for adjusting the pressure of a flint on the friction wheel independently of the number of flints which are in the magazine. This novel magazine arrangement is suitable for use in combination with pyrophoric lighters of conventional designs.

Another object of the invention resides in the provision of a pyrophoric lighter mounted on the frame or casing member of a utility compact, which member also holds other implements such as a pocket knife, nail file, and the like, the fuel reservoir with the wick holder, as well as the flint magazine, forming independent units which are inserted in suitable cavities of the casing member and removed therefrom for refilling. The fuel reservoir may have two separate compartments, each being provided with a wick holder and wick, and may be so designed that it can be inserted in its cavity in two different positions so that whichever compartment is filled with lighter fluid and whose wick is in good working order is in operating position.

A further object of the invention resides in the provision of a lighter whose casing for the lighter fluid reservoir and flint storage has extended wall

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portions forming a cavity for receiving tools such as a pocket knife, nail file, or similar implements which are hinged to said wall portions for swinging same out of the cavity to operating position. Two independent lighters may be provided in the same casing which is the body member of the compact. The two lighters have individual fuel reservoirs and flint magazines, and there is always one ready for use when the fuel and/or flint supply of the other is exhausted.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and claims and shown in the drawings, which by way of illustration show what I now consider to be preferred embodiments of the invention.

In the drawings:

Fig. 1 is a top view of a pyrophoric lighter according to the invention;

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

Fig. 3 is a large scale side view of the actuating mechanism of the lighter according to the invention illustrated in Figs. 1 and 2;

Fig. 4 is a top view of the mechanism shown in Fig. 3;

Fig. 5 is a rear view of the mechanism shown in Figs. 3 and 4;

Fig. 6 shows a detail of the mechanism according to Figs. 3 to 5;

Fig. 7 is a side view of the lighter illustrated in Figs. 1 and 2;

Fig. 8 is a large scale side view of a flint magazine according to the invention for use in combination with the lighter shown in Figs. 1 to 7;

Fig. 9 is a bottom view of the flint magazine shown in Fig. 8;

Fig. 10 is a top view of a utility compact including a modified lighter according to the invention;

Fig. 11 is a bottom view of the compact shown in Fig. 10;

Fig. 12 is a large scale side view of the actuating mechanism of the lighter forming part of the compact according to Figs. 10 and 11;

Fig. 13 is a top view of the mechanism shown in Fig. 12;

Fig. 14 is a rear view of the mechanism shown in Figs. 12 and 13;

Fig. 15 illustrates a part of the mechanism according to Figs. 12 to 14;

Fig. 16 is a side view of the compact shown in Figs. 10 and 11 in assembled condition;

Fig. 17 is a side view of the fuel magazine of the compact according to Fig. 16;

Fig. 18 is a top view of a modified general utility compact according to the invention;

Fig. 19 is a bottom view of the compact according to Fig. 18.

Fig. 20 is an enlarged side view of the actuating mechanism of one of the lighters forming part of the compact according to Figs. 18 and 19;

Fig. 21 is a rear view of the mechanism illustrated in Fig. 20;

Fig. 22 is a top view of the mechanism shown in Figs. 20 and 21;

Fig. 23 is a side view of the compact illustrated in Figs. 18 and 19 with one lighter and one of the implements in operating position;

Fig. 24 is a side view of a ratchet wheel forming part of the mechanism according to Figs. 20 to 22;

Fig. 25 is a rear view of the wheel shown in Fig. 24;

Fig. 26 is a side view of the friction wheel forming part of the mechanism shown in Figs. 20 to 22;

Fig. 27 is a top view of the lid and friction wheel actuating member of the mechanism shown in Figs. 20 to 22, with the pawl member in engaging position;

Fig. 28 is a large scale side view of a flint magazine according to the invention in fully loaded condition;

Fig. 29 is a side view of the magazine shown in Fig. 28 with but one flint left;

Fig. 30 is a side and bottom view of a member for retaining the magazine according to Figs. 28 and 29 in the lighter body;

Fig. 31 is a bottom view of the flint magazine shown in Fig. 28.

Like parts are designated by like numerals in all figures of the drawings.

Figs. 1 to 9 of the drawings illustrate a lighter according to the present invention which may be used independently but which is particularly suitable for being inserted into the body of a general utility compact comprising, for example, a nail file, bottle opener, knife, and the like.

The new lighter comprises a casing 1 and a cap or snuffer member 2 which is pivoted to the casing by pin 3 on which it rotates. The cap 2 has a gripper or handle extension 5 whose contour of a section transverse to pivot 3 conforms in part to a ratchet wheel 6 which has the shape of a star and is supported by pin 3. In this way, a convenient thumb rest recess is formed facilitating operation of the device. Cap 2 straddles and covers an abradant or friction wheel 7 and has for this purpose a cavity accommodating the friction wheel which is supported by pin 3 and unrotatably connected to wheel 6. The extension 5 of the snuffer 2 and the teeth of wheel 6 are so formed as to easily accommodate the thumb of the hand holding the lighter or the compact in which the lighter may be inserted. Upon pressing with the thumb and revolving cap 2 clockwise, the star wheel and the friction wheel are also turned clockwise into the position shown in Fig. 7. Wheel 7 is in contact with a flint 8 and a spark is produced which ignites the fluid in wick 9. For closing the lighter, the cap 2 is turned counter-clockwise into the position shown in Figs. 1, 3, and 4. The wheels 6 and 7 do not revolve when the lighter is closed because they are held in their positions by frictional engagement of wheel 7 with flint 8. When turning cap 2 counter-clockwise, the resilient lateral flap 4' of a pawl member 4 snaps into a gap between

the teeth of wheel 6. When the cap is closed, the flap 4' snaps into the tooth gap which is next to the tooth gap in which it rested when the cap was in open position, holding the cap in closed position, because wheel 6, being connected with wheel 7, is held by the flint pressed to the latter. The lighter actuating assembly consisting of friction wheel 7, ratchet wheel 6, cap member 2, and pawl 4 is now ready for the next following actuation of the lighter. For providing a better finger-hold for actuating the lighter, a lever 22 is swingably connected to cap 2 and is so formed that it fits snugly to the cap surface when the cap is closed as in Figs. 1, 3, and 4 and is swung up and over to rest on the handle extension and, with a lateral projection 26, on a tooth of wheel 6 as shown in dash-dot lines in Fig. 3 when actuation of the lighter is desired. Upon continued pressing on lever 22, wheels 6 and cap 2 are moved clockwise till the position is reached which is shown in Fig. 7. During this movement, a spark is produced by friction between wheel 7 and a flint. For closing the lighter, cap 2 and/or lever 22 may be manipulated. The wick 9 extends into the fuel reservoir 10 which may be filled by removing cap screw 19.

According to the invention, a self-contained tubular flint magazine 12 is provided which extends through reservoir 10 and is secured therein. This magazine is an independent unit and is shown separately in Figs. 8 and 9. The magazine holds a plurality of flints 8, 8', 8'' which are forced with equal pressure to the friction wheel 7, independently of the number of flints which are in the magazine, by a coil spring 17. The latter is guided in tube member 12 and rests on top of a slide 15 which has lateral extensions 15' guided in internal longitudinal slots 16 of member 12. Slide 15 has a steeply pitched internal thread conforming with the thread of a screw 13. The screw has a head 14 disposed outside the lighter and having an annular groove receiving the recessed end of a lock member 18 which is slid into the lighter casing after removal of filler plug 19. Thus the screw is secured against axial movement and, upon turning, displaces the slide member 15 for producing the desired tension of spring 17. The construction of the multiple flint magazine may be better understood from Figs. 28 to 31 which illustrate the magazine in exploded position and without the tube member 12.

In the modification of the device according to the invention illustrated in Figs. 10 to 17, the friction wheel and lighter cap assembly is mounted on a body member 1' which also holds certain implements, such as a nail file 23 and a knife 20. A bottle opener 24 is formed by the body member. The fuel reservoir or container has two separate compartments 10' and 10'', the compartments being closed by individual caps 11 and 11', respectively, which also serve as holders for the wicks 9. The fuel reservoir and the flint magazine form separate self-contained units which are removably inserted in suitable cavities of the body member 1. For refilling, the fuel reservoir must be removed from its cavity in member 1'. It can be reversed so that the compartment 10', which is shown in operative position in Fig. 16, takes the place of magazine 10'' and the latter is in operative position.

The construction of the lighter operating mechanism is substantially the same as in the modification per Figs. 1 to 7. Instead of one ratchet wheel 6, two such wheels are provided,

one on each side of cap member 2', 5', and the pawl member 34 has a substantially U-shaped configuration, the legs or flaps 4'' being pressed together by the teeth of wheels 6 when the cap is turned counter-clockwise for closing the lighter. The finger-piece portion 5' of the snuffer member 2' extends over the friction wheel 7 and the two ratchet wheels 6. It has a notch 27 for receiving a resilient catch 28 mounted in body 1' for holding the snuffer in open position as shown in Fig. 16.

Figs. 18 to 27 illustrate a modification of the invention in which two lighters are symmetrically arranged in a general utility compact and are constructed integrally with the body 1'' of the compact. Each lighter has its own fuel reservoir 25 which is a cavity in member 1'' and is refilled by removing filler plug 19. Each lighter has its own flint magazine which is constructed substantially as in the embodiment illustrated in Figs. 8 and 9. There is, however, no cylinder member 12 because the magazine is inserted in a bore of body 1'' which takes the place of member 12 in Figs. 8 and 9. The cap and friction wheel arrangement is substantially the same as in Figs. 1 to 7, two ratchet wheels, however, being provided, one on each side of the lighter cap as in the lighter according to Figs. 10 to 17.

The body member 1'' has lateral recesses into which implements such as a knife 20, a bottle opener 24', and a nail file 23, may be swung about pivots 21 when not required. Member 1'' serves as a handle for the implements when they are in operating position, such as the nail file in Fig. 23.

While I believe the above described embodiments of my invention to be preferred embodiments, I wish it to be understood that I do not desire to be limited to the exact details of method, design and construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. A general utility compact comprising a body member having a longitudinal lateral recess; a plurality of different utensils movably connected with said body member and receivable in said recess; a pyrophoric lighter having a longitudinal fuel reservoir placed parallel to said recess, a wick projecting from said reservoir, a longitudinal flint magazine disposed parallel to said reservoir and a flint projecting therefrom; a friction wheel having a periphery contacting said flint for projecting a spark toward said wick upon rotation of the friction wheel, a ratchet wheel, and a cap member pivoted on the same axis as said friction wheel and said ratchet wheel and having a cap portion fitting on said wick, said friction wheel and said ratchet wheel being interconnected for simultaneous rotation, said ratchet wheel having radial teeth and plane lateral surfaces and gaps between said teeth, said cap member having a lateral surface parallel to and being opposed to and facing a lateral surface of said ratchet wheel and of its teeth, and a pawl means having a portion connected with said cap member and having a resilient lateral flap extending substantially at a right angle to the rotation axis of said ratchet wheel and between said opposed lateral surfaces of said cap member and of the teeth of the ratchet wheel and affording relative movement of the cap member and the ratchet wheel upon rotation of the cap portion toward the wick and

adapted to laterally and axially of said ratchet wheel snap into one of said gaps for taking along the ratchet wheel upon rotation of the cap portion from the wick.

2. A general utility compact as set forth in claim 1, said cap member having a curved thumb rest recess and said gaps having a curved portion adjacent to and conforming with said recess for simultaneous engagement by a thumb.

3. A general utility compact comprising a body member having a longitudinal lateral recess; a plurality of different utensils movably connected with said body member and receivable in said recess; a pyrophoric lighter having a longitudinal fuel reservoir placed parallel to said recess, a wick projecting from said reservoir, a longitudinal flint magazine disposed parallel to said reservoir and a flint projecting therefrom; a friction wheel having a periphery contacting said flint for projecting a spark toward said wick upon rotation of the friction wheel, a ratchet wheel, and a cap member pivoted on the same axis as said friction wheel and said ratchet wheel and having a cap portion fitting on said wick, said friction wheel and said ratchet wheel being interconnected for simultaneous rotation, and a pawl member connected with said cap member and having at least one resilient flap portion adapted to snap into the gaps between the teeth of said ratchet wheel, said cap member having a notch, and said body member having a resilient catch means adapted to snap into said notch when the cap member is opened for holding it in open position.

4. A general utility compact comprising a body member; a plurality of different utensils connected with said body member; one of said utensils being a pyrophoric lighter having a fuel reservoir, a wick projecting from said reservoir, a flint magazine and a flint projecting therefrom; a friction wheel having a periphery contacting said flint for projecting a spark toward said wick upon rotation of the friction wheel, a ratchet wheel, and a cap member pivoted on the same axis as said friction wheel and said ratchet wheel and having a cap portion fitting on said wick, said friction wheel and said ratchet wheel being interconnected for simultaneous rotation, and a pawl means connected with said cap member and adapted to engage said ratchet wheel, said pawl means and said ratchet wheel being so constructed that the ratchet wheel is turned with said cap member when the cap portion is turned away from the wick and said wheel is not turned when said cap member is turned toward said wick, said ratchet wheel having radial teeth and having a side adjacent to said cap member, a lever for actuating said lighter, said lever being pivoted to said cap member and swingable about an axis parallel to the pivot axis common to said friction wheel, ratchet wheel, and cap member and having a lateral portion adapted to rest on one of said teeth for turning said ratchet wheel and said cap away from the wick, said lever being adapted to be swung to rest on said cap member for turning it toward said wick upon manipulation of said lever.

5. A general utility compact comprising a body member having a recess, a plurality of implements pivoted to said body member adjacent to said recess for placement therein when not in use; a second recess in said body member; an abradant wheel and a ratchet wheel disposed in, and a snuffer receivable in said second recess and coaxially journalled on said body member;

said ratchet wheel and said abradant wheel being connected for simultaneous rotation; a cavity in said body member; a fuel container inserted in said cavity and comprising two separate fuel compartments, and a wick projecting from each compartment; one of said wicks being adapted to be covered by said snuffer; a flint magazine inserted in said body member below said second recess and between said first recess and said cavity and comprising means urging a flint into engagement with said friction wheel; a pawl member connected with said snuffer and having a resilient flap portion extending substantially at a right angle to the rotation axis of said ratchet wheel and tending to laterally snap into the gaps between the teeth of said ratchet wheel, the teeth of the latter having a concave portion, said resilient flap having a convex edge portion engaging said concave portion upon rotation of said snuffer away from the wick, the teeth of said ratchet wheel having a convex portion engaging said convex edge portion and pushing said resilient flap to the side of the teeth upon rotation of said

snuffer toward the wick; said fuel container being reversible in said cavity for selectively placing said wicks in position for being covered by said snuffer.

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