PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements in and relating to Pocket Lighters.

I, FRANK BOWLEY MITCHELL, of 8, St. Aubyns, Hove, Sussex, British subject, do hereby declare the nature of this invention to be as follows:—

The object of this invention is to make certain improvements in pocket lighters of the type where the sparks produced by abrading or cutting a "flint" are made to ignite a petrol (or the like) saturated wick.

Pocket lighters of this type are extensively in use, but they mostly have an unsatisfactory method of holding the "flint". Also as the flints in use are very short they require to be frequently renewed, and as the action entails rapid wear of the flint, it requires frequent adjustment.

I propose to use long flints and to provide improved means for adjusting same.

According to one form of my invention below the cutting edge of the grinder or friction member is a tubular receptacle for the long flint, presenting its end to the grinding surface, this is placed in a suitable tubular casing. When said casing is inside the main body of the petrol chamber it may be made fluid tight to prevent the flint getting saturated with petrol. Either the inner tube has a screw thread outside or in another construction the outer tube has one inside.

The flint is propelled to press the grinding surface by the longitudinal adjustment of a nut member adjustable in one form by turning a washer-shaped head (of the screwed tube) with milled edge, placed axially perpendicular to and just under the grinder having the flint protruding from its centre. Screwing does not move the head or tube longitudinally, but causes a short flint-pushing nut member to traverse inside.

As it is also necessary to keep the flint in contact with the cutting or grinding surface by spring pressure, I provide longitudinal spring pressure to the flint holding member by placing a really substantial permanently placed spring to move same; if placed on top it may be of the flat type.

This spring need not give more than say a 16th of an inch movement and may be adjustable and the whole so arranged that it cannot press the metal top of the flint holder into actual contact with the grinder. The flint is adjusted therein so that it projects slightly to take the spring pressure to the cutting surface.

Instead of the flint holding member being longitudinally moved by a spring, of course a small spring may move the flint direct.

Thus a long flint, say one inch, may be inserted in the inner tube until it rests on a shelf carried by the nut member, so arranged that when the tube, that has the screw thread, is turned, the nut member and shelf shall be screwed along the tube moving the flint telescopically.

It is not necessary to fix the inner end of the flint to the shelf member.

The tube to be turned for propulsion, whether it be the inner or outer, carries a milled edge flange and is (in one form) between the grinder surface and the body of the casing having the flint projecting from its centre.

A grinding wheel may be mounted in a strong fork member to make room for the milled flange below the wheel. This forked wheel holder may be bolted to the casing by passing over the wick tube which is screwed outside and has a nut for same; thus when it is desired to insert a fresh length of flint, the last mentioned nut is loosened and the grinder wheel frame turned sideways till the wheel is no longer over the flint; the flint is now inserted and the wheel placed in position and fixed.

It may be in the form of a plain box with lid, thus the petrol chamber may have one lid to cover same and another lid to be removed each time lighter is used and both lids may form the closed plain box.

If the inner tube is screwed on its outside it may carry a nut which is prevented from turning by traversing a square section outer tube, so that turning the inner tube will cause the nut to travel lengthwise. The inner tube may be slotted lengthwise and a shelf member for the flint inside may have arms projecting through the slots and resting on the nut

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outside, by turning the tube and moving the nut the flint will move longitudinally.

In the latter form the flint is not only propelled but is rotated.

If the inner tube is rigidly attached to the bottom end of casing and slotted and with flint as last mentioned, but not screwed outside, another operating tube may surround it with a screw thread on its inner face, turning the second tube (by its milled flange) may propel the flint by the nut member engaging the screw thread by its projections through the slots. In this case the flint is propelled but not rotated.

Of course the flint operating tube and the flint apparatus may be mounted at one side of the petrol chamber instead of inside.

Dated the 27th day of July, 1927.

F. B. MITCHELL.

COMPLETE SPECIFICATION.

Improvements in and relating to Pocket Lighters.

I, FRANK BOWLEY MITCHELL, of 8, St. Aubyns, Hove, Sussex, British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The object of this invention is to make certain improvements in portable lighters of the type wherein the sparks produced by abrading a flint or pyrophoric rod, are used for igniting a self contained wick lamp.

Portable lighters of this type are extensively used but they have mostly an unsatisfactory method of holding and feeding the spark producing member hereinafter called "the flint"; also as the flints in use are very short they require to be frequently renewed, and as the action entails rapid wear, frequently adjusted.

According to one form of the invention I provide below the cutting edge of the grinding wheel a long receptacle for the flint, presenting its end to the grinding surface, together with means to give spring pressure of the flint on the friction surface and a screw for advancing the flint operated by means of a milled edge flange placed to encircle it at the projecting end between the grinder and the casing.

The member or flange by means of which the flint is adjusted does not travel with the flint but keeps its place so that a long flint may be used. The apparatus for holding the flint may be under spring pressure to give spring contact of the flint onto the friction member, or there may be a short spring immediately under the flint, or the friction member frame may spring press the friction member onto the flint according to which is most suitable for the form of the apparatus chosen.

I also provide means to prevent the spring pressure causing contact between the top of the flint holder and the friction member when the flint does not protrude sufficiently.

The flint and the parts for adjusting it may be encased inside the petrol chamber so that the petrol cannot wet the flint. All the apparatus may be completely encased in a plain box and the striker may be operated by the action of opening the lid in any well known or suitable manner. The friction member may of course be a plain sharp ratchet wheel to be pulled round by the finger pressure.

Provision is also made (in one form of the apparatus) for the friction member to be moved for the insertion of new flints or the removal of parts, also arrangements are made for obtaining a light when the wind is blowing on the apparatus.

I will now describe the invention with reference to the accompanying drawings, in which:—

Fig. 1 is a wind guard.

Fig. 2 is an elevation of a complete lighter with lid removed.

Fig. 3 is a top view of the gear.

Fig. 4 is an elevation of a rotatable flint-holding member.

Fig. 5 is an elevation of a flint-pushing member.

Fig. 5[a] a plan of same.

Fig. 6 a screw for moving flint shown fixed to the bottom of the casing.

Fig. 7 a flint-holding member showing a spring for flint contact, and shown fixed to the bottom of the casing.

Fig. 8 a rotatable screw-member for same.

Fig. 9 shows a complete lighter with lid removed.

Fig. 12 the lid for same in elevation.

Fig. 13 the lid in plan.

Fig. 10 is a spring to press flint onto grinder.

Fig. 11 is a plan, and

Fig. 14 an elevation of the lamp and spirit chamber.

Fig. 15 an elevation of the holder of

grinder wheel showing a wind-guard for the wick.

Fig. 16 an elevation of a flint adjusting screw member.

Fig. 17 is a closed casing for same fixed to the top of the casing O^{20}.

Fig. 18 is a plan of the Figure 9.

Fig. 19 is an elevation of a flint.

Fig. 2 shows a complete pocket lighter (except the lid). A is a knurled edge wheel for adjusting the flint: The other parts of this member can be seen in Figs. 4, 5 and 6. Fig. 4 shows a tube K with a bore A^1 and a slot right through at K^1; in this slot is the screw member *i* (Fig. 5). This tube fits inside the part shown at Fig. 6, which is fitted to the bottom F of the fuel chamber F, see Fig. 2 (dotted line).

On turning the knurled head, the flint support *i* is caused to move up or down the tube by means of the screw, carrying the flint with it. In this form, a short spring J is inserted in the bore below the flint (Fig. 19) which may be adjusted by the wheel A until the spring presses the flint onto the edge of the friction wheel B; raising or lowering will also rotate the flint. Instead of the spring J I may employ a spring washer between the nut E and the surface of the frame C, Fig. 2.

Instead of the parts shown in Figs. 4, 5, 6 and 10, I may use the parts shown in Figs. 7 and 8, thus:—The slot tube, Fig. 7, may be permanently attached to the part F, Fig. 2, the spring M placed thereon, then the part Fig. 8 inserted as shown at A, Fig. 2. Now turning this will screw the flint support *i* (which works in the screw thread) up or down. The flint is inserted and adjusted by turning the knurled wheel A until it touches the cutting edge of the friction wheel B: Further screwing or turning will cause the spring M to give a spring pressure of the flint on the friction wheel.

The bores of the tubes shown in Figs. 7 and 8, are a close but easy fit for the actual flint.

In case the flint is not protruding, the top of the knurled metal wheel A would be pushed by the spring M into contact with the friction wheel, and when the friction wheel is rotated it would do damage; to prevent this I provide a limiting stop C^1, Fig. 2.

In this form, Fig. 2, the friction wheel B is mounted in a frame C, which has a hole so that it may pass over the wick holding member N, also a slot at H^2, Fig. 3, for engaging a pin fixed in the casing, and is held on the casing by a knurled nut E. This frame is movable; on loosening the nut E it may be turned to one side for the removal of the parts for cleaning purposes or for the insertion of a new flint.

The part D, Fig. 1, is a wind guard to be hinged to the frame C at D^1 and to surround the wick. When it is desired to loosen the frame C or adjust the wick the wind guard is first thrown up on its hinge D^1 out of the way of the nut E.

Fig. 3 shows a plan of the top part of the lighter with the wind guard in place.

A cap is provided (but not shown) quite similar to the casing G to cover the top parts.

In the form of the apparatus last described, turning the adjuster A will not rotate the flint; also the spring movement need not exceed, say, 1/16″.

Figs. 11 to 18 show the parts of the lighter shown complete in Fig. 9 with fixed wind guard H^{21}.

Fig. 17 shows a square tube P closed at the bottom to receive the parts shown in Fig. 16, the part A^{21} fitting the hole in the top of the tube P and the nut i^{23} loosely fitting the square tube P. J^{20} is a spring to press the parts shown in Fig. 16 and the contained flint upwards.

Figs. 11 and 14 show the fuel casing with the wick tube N^{20}.

The tube P is fixed to the under side of the top plate O^{20} of the fuel chamber so as to protect the flint from the fuel.

The screw, Fig. 16, has a hole bored down its centre to receive the flint, Fig. 19.

In Fig. 9 a casing G^{20} is provided and a similar cap G^{21}, Figs. 12 and 13, to cover the upper part.

The fuel chamber, Figs. 11 and 14, containing the flint operating parts, Figs. 16 and 17, is inserted as shown in Figs. 9 and 18, leaving a space between its side walls O^{21} and the casing G^{20} for the insertion of the member H^{20}, Fig. 15. This forms a wind guard H^{21}, Fig. 9, and carries the friction wheel to be operated by the finger pulling it round. The tube N^{20} carries the wick.

The fuel chamber, Fig. 14, is filled with wadding and the inner part of the wick; this may be saturated with petrol so that a spark will ignite the wick in the usual way.

The part shown in Fig. 16 is a screw bored lengthwise and slotted at i^{22}, having a head A^{20} and A^{21}. On this screw is a loose fitting nut i^{23} and a separate cross piece i^{20} passes through the slot for the flint to rest on.

It is obvious that the invention is capable of wide variations and the component parts may be combined or modified to suit the particular practical requirements that are to be met. The flint

adjusting member may for example lie horizontally, or may make any other suitable angle with the other components, and the associated parts may be constructed in various shapes, sizes, and materials, according to the circumstances in which the device is to be utilised.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A portable lighter of the kind described, in which a screw or part for adjusting the flint is rotatable by a head placed adjacent the abrading member and surrounding the operative end of the flint.

2. A portable lighter as claimed in Claim 1, in which the screw or part does not travel longitudinally, but causes the flint to do so, and in which a spring is adapted to cause pressure between the flint and the abrading member.

3. A portable lighter as claimed in Claim 1, in which the screw actuates a flint-supporting member directly engaging the flint (with no spring between) so that long flints may be used and in which spring pressure is provided to push the flint-supporting member towards the abrading member, or to push the abrading member towards the flint-supporting member, together with stop means to prevent the metal top of the flint-holding member from touching the abrading surface.

4. A portable lighter as claimed in any of the preceding claims in which the abrading member and the flint-holding member are removable to allow for inserting fresh flints substantially as described with reference to Figs. 9, 11, and 14 to 18 of the accompanying drawings.

5. A portable lighter as claimed in any of the preceding claims, in which all the parts including the flint adjuster are mounted in a case or box provided with a movable lid to cover the operative parts —the body of which case forms the holder when it is open for use.

6. Portable lighters comprising flint adjusting means as claimed in Claim 1 constructed substantially as described with reference to the accompanying drawings.

Dated this 2nd day of September, 1927.

F. B. MITCHELL.

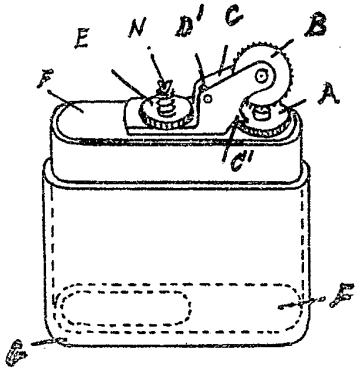

FIG. 2

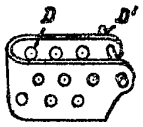

FIG. 1

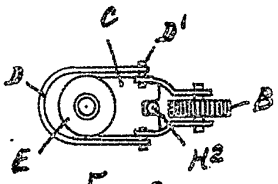

FIG. 3

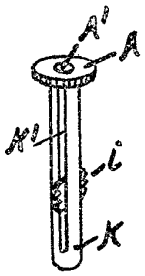

FIG. 4

FIG. 5

FIG. 5a

FIG. 10

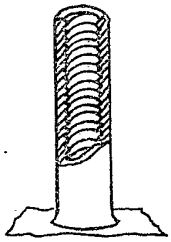

FIG. 6

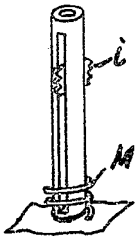

FIG. 7

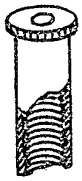

FIG. 8

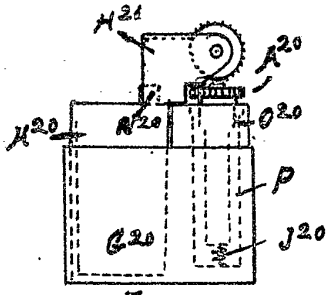

FIG. 9

FIG 11

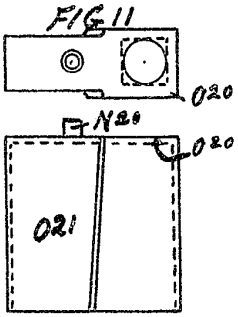

FIG. 14

FIG. 12

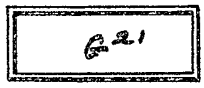

FIG. 13

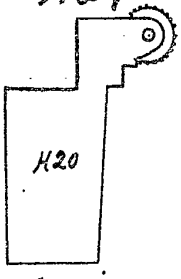

FIG. 15

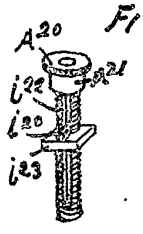

FIG. 16

FIG. 17

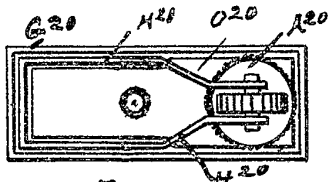

FIG. 18

FIG. 19

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