

Sept. 27, 1955

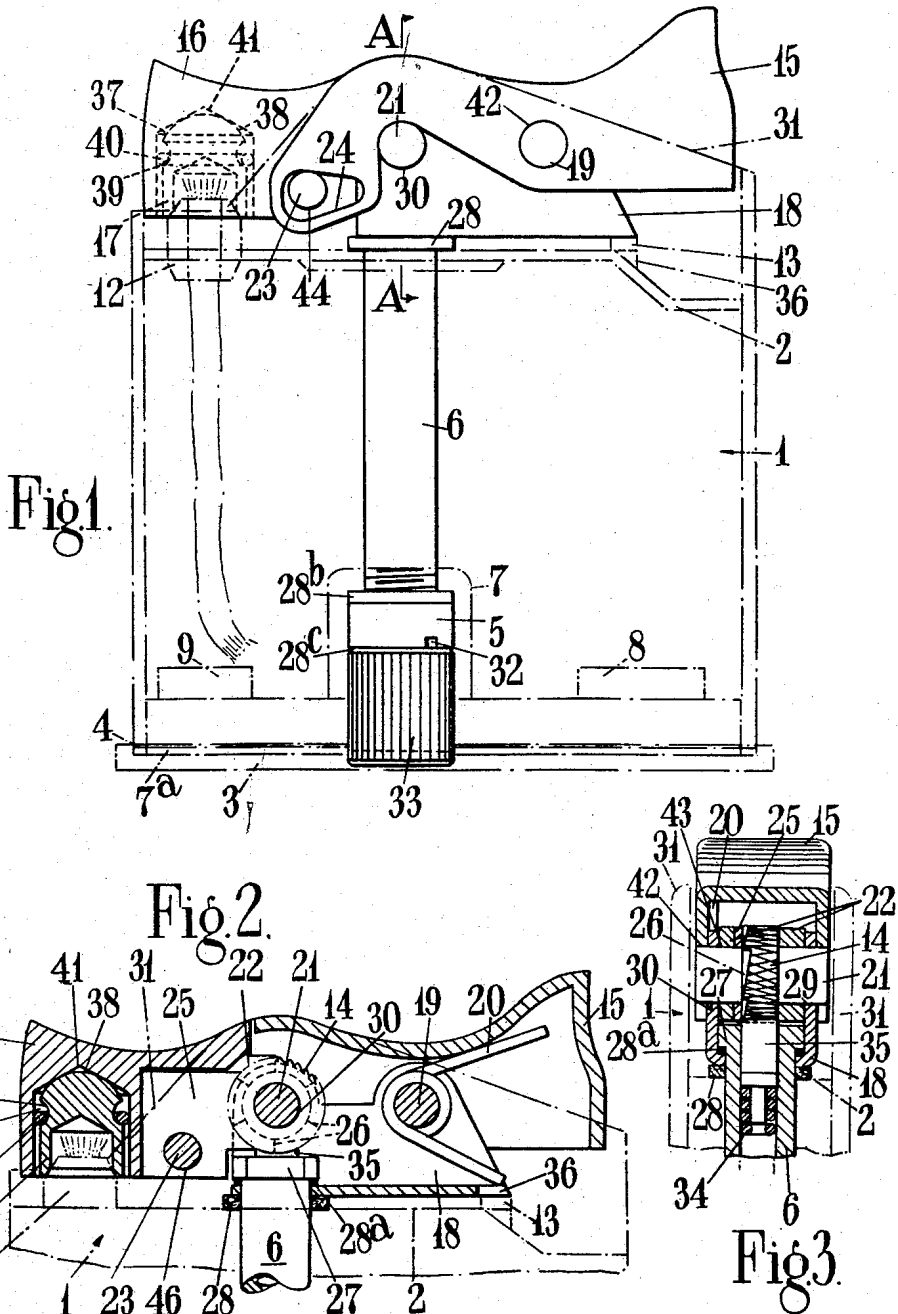
L. HUTCHINSON ET AL

2,718,770

LIGHTERS

Filed April 30, 1951

2 Sheets-Sheet 1



Inventors
L. Hutchinson
F. W. Binks
 By *Glasco Downing & Noble Attys.*

Sept. 27, 1955

L. HUTCHINSON ET AL

2,718,770

LIGHTERS

Filed April 30, 1951

2 Sheets-Sheet 2

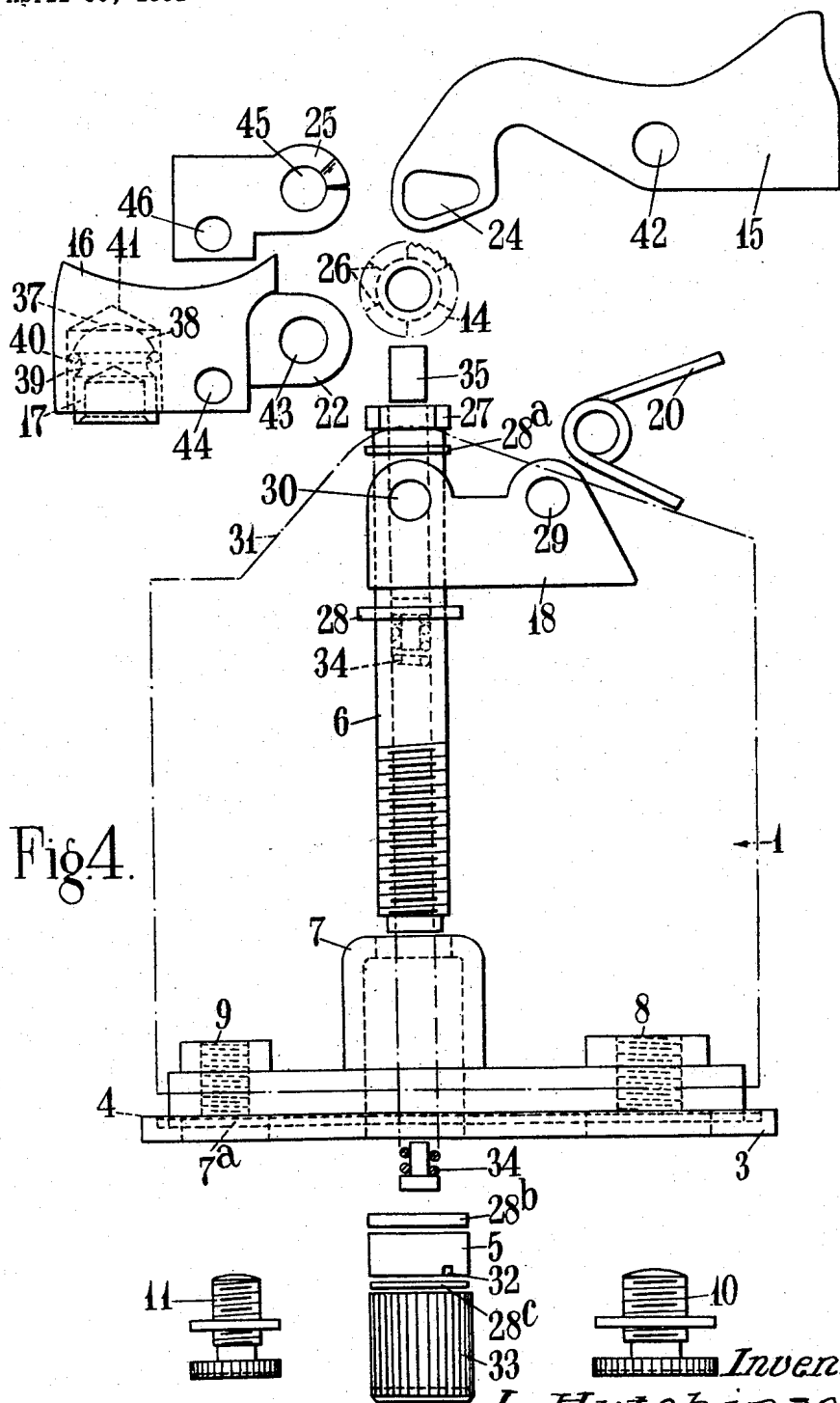


Fig. 4.

Inventors
L. Hutchinson
F. W. Binks
By *Harold Downing* *Attys.*

1

2,718,770

LIGHTERS

Leonard Hutchinson, Burgh Heath, and Frederick William Binks, London, England

Application April 30, 1951, Serial No. 223,805

Claims priority, application Great Britain May 4, 1950

3 Claims. (Cl. 67—7.1)

This invention relates to lighters and more particularly to automatic lighters of the kind in which the operation thereof causes a spark to be applied to a wick whereby a flame is produced.

The invention has for its main object to provide an improved form of automatic lighter which can be assembled more easily and cheaply than in the case of lighters heretofore known and which is substantially vapour-proof and odourless when in the closed position.

The invention accordingly consists in an automatic lighter in which the movable parts for effecting the rotation of the flint wheel are mounted on a supporting member which is detachably secured to the lighter body by a tubular member adapted to house the flint.

The invention also consists in an automatic lighter in which the snuffer cap which is adapted to close over the wick when the lighter is closed is suspended in such a way as to be capable of swinging in any direction whereby a substantially vapour-proof seal is effected when the snuffer is seated on the wick nipple.

According to the preferred arrangement, the movable parts of the lighter comprise a pair of levers which are pivotally secured to each other and to the aforesaid supporting member, such member being secured to the lighter body by the flint tube, one end of which engages with said supporting member and the other end of which is secured to the lighter body by securing means recessed within the base of the lighter body.

The invention will be more completely understood from the following detailed description which is given in conjunction with the accompanying drawings, in which:

Figure 1 is a side view of the main structural parts of a lighter constructed in accordance with the invention, the casing being shown in dotted lines;

Figure 2 is a sectional side view of the upper part of the lighter;

Figure 3 is a sectional view on the line A—A of Figure 1; and

Figure 4 is an exploded view of the lighter.

Referring now to these drawings, the lighter body is constructed in the form of a hollow prism 1 of substantially rectangular cross section rounded at the edges so that the prism has two parallel flat sides joined together by curved walls. The lighter body is closed at each end by top and bottom plates, the top plate 2 being sweated, secured or cast permanently in position, and the bottom plate 3 being located in position by means of a recess or channel 4 into which the bottom end of the lighter body 1 fits, and is secured to the said lighter body by means of a nut 5 which screws on to the bottom end of the said flint tube 6, the nut being housed in an apertured upstanding sleeve 7 formed on the bottom plate 3. Also a resilient gasket 7^a fits into the recess or channel 4 in the bottom plate 3 and acts as a seal between the said bottom plate 3 and the bottom end of the lighter body 1. This forms a leak proof hollow container which serves as a fuel reservoir which is filled with cotton-wool or other ab-

2

sorbent material. The abovementioned method of securing the bottom plate facilitates the speedy removal of the said bottom plate for re-packing the lighter body with fresh cotton-wool or other absorbent material and ensures an air-tight joint without any unsoldering and re-soldering being required. In addition to the aperture provided through the sleeve 7 for the flint tube 6, the bottom plate 3 has two further apertures 8 and 9 for receiving the fuel and the wick, such apertures being normally closed by a pair of screw threaded plugs 10 and 11, while the top plate 2 is provided with a wick nipple 12, an aperture for the flint tube 6, and a locating lug 13, the purpose of which will be hereinafter described.

The moving parts of the lighter consist of a flint wheel 14, a spring-loaded, hand-operated lever 15, and a second lever 16 which carries a snuffer cap 17 and is operatively connected to the hand-operated lever 15 so that the movement of the latter brings about a swinging movement of the second lever 16 which lifts the snuffer cap 17 and rotates the flint wheel 14 so as to generate a shower of sparks. These two levers 15 and 16 are pivotally mounted in a detachable and supporting member 18 which is secured to the lighter body by the flint tube, this supporting member also providing a mounting for the flint wheel. This supporting member is constructed in the form of a bracket having a flat base and two upstanding sides. Two pairs of holes 29 and 30 are formed in these upstanding sides in which are disposed two trunnions, one of which 19 passes through holes 42 in the hand-operated lever 15 and carries the return spring 20, while the other trunnion 21 carries the flint wheel 14 and the second lever 16, the latter having a pair of arms 22 which embrace the flint wheel 14 and are provided with holes 43 within which the aforesaid trunnion 21 is arranged. The two levers 15 and 16 are linked together by a third trunnion 23 which is arranged to pass through slots 24 in the hand-operated lever 15 and through holes 44 in the lever 16, the latter trunnion 23 being disposed between the pivotal axis 21 of the second lever 16 and the snuffer cap 17, and the slots 24 in the hand-operated lever 15 being triangular in shape, so as to permit the trunnion 23 linking the two levers to move freely within these slots when the hand-operated lever 15 is actuated and thereby permit the second lever 16 to swing upwards. The flint wheel 14 is controlled by a pawl and ratchet mechanism consisting of a leaf spring 25 which is arranged to co-operate with a set of saw teeth 26 formed on one side face of the flint wheel 14, the trunnions 21 and 23 being arranged to pass through the holes 45 and 46 respectively in the pawl 25, so as to hold the latter in position. In addition to the holes 29 and 30 provided in the side parts of the supporting bracket 18 for the aforesaid trunnions, the base of the bracket 18 is provided with an aperture immediately below the flint wheel 14 for the flint tube 6, the upper end of the latter having a head 27 which engages with a resilient washer 28^a situated between the base of the supporting bracket 18 when the flint tube 6 is placed in position, a washer 28 being provided on the flint tube 6 immediately below the bracket 18 to prevent any leakage of fuel when the lighter is assembled.

The sides of the lighter body 1 are provided with triangular shaped extensions 31 which when the various parts of the lighter are assembled fit over the side parts of the aforesaid supporting bracket 18 and cover the ends of the trunnions 19, 21 and 23, thereby holding the latter in place and preventing their unauthorised removal after the lighter is assembled.

The lower end of the flint tube 6 is secured to the bottom plate 3 by means of the aforesaid sleeve part 7 around the flint bore aperture, the lower end of the flint tube 6 being screw-threaded and being held in po-

3

sition by a locking nut 5 which screws on to the lower end of the flint tube and rests against a resilient washer 28B and the upper end of the aforesaid sleeve 7. This locking nut 5 is housed within such sleeve and is thus recessed within the base of the lighter so that it cannot be removed without the use of a special tool adapted to fit into the sleeve 7 and engage with slots 32 in the outer end of the nut. Conveniently the lower end of the flint tube 6 is provided with a screw-threaded extension, and a screw-threaded plug 33 is provided for engaging with the extension within the lower part of the sleeve 7 so as to close the recess and a washer 28c completely obscures the locking nut 5 from view. Additional screw-threaded plugs 8 and 9 are also provided for closing the apertures in the base plate 3 for the fuel and wick respectively, and the flint tube 6 is provided with the usual spring 34 which is held in position against the base of the flint 35 by the aforesaid plug 33 when the latter is screwed into position.

In order to locate the upper part of the lighter in position on the lighter body the supporting bracket 18 is provided with a rectangular shaped slot 36 at one end, which is adapted to engage with the aforesaid upstanding lug 13 formed on the top plate 2 of the lighter body 1, the bracket 18 being held in engagement with this lug 13 when the locking nut 5 is screwed home on the end of the flint tube 6, thereby clamping the upper part of the lighter securely against the top plate 2 of the lighter body.

It will thus be seen that with this arrangement an automatic lighter is formed which can be very quickly and easily assembled since the various component parts which make up the lighter movement are detachably arranged on a single supporting member which is in turn secured to the lighter body by the flint tube. Moreover this construction also has the advantage that all the connecting parts are hidden from view and the lighter cannot be dismantled after assembly by any unauthorized person without the use of a special tool.

In order that the lighter may be completely vapour-proof and therefore odourless the snuffer cap 17 is formed as a separate unit and is suspended within a recess 37 in the aforesaid lever 16 in such a way as to be capable of swinging in any direction so that when the lighter is closed the snuffer cap is always firmly and accurately seated on the wick nipple 12. In order to achieve this universal swinging action the snuffer cap is provided with a part spherical face 38 at its upper end, and an annular groove 39 near its upper end, and a circlip or other form of annular spring member 40 is disposed in the groove and is so tensioned as to engage with the walls of the recess 37 in which the snuffer cap is housed so that the snuffer cap is in fact suspended from and retained by the circlip 40 as shown in Figure 4, so as to be capable of swinging in any direction, a small clearance space being allowed between the walls of the snuffer cap 17 and the surrounding walls of the recess 37 so as to permit this swinging movement, and the circlip 40 being arranged to form a loose fit within the annular groove 39 so as to allow the universal movement of the snuffer cap when it moves into contact with the wick nipple. The recess 37 in which the snuffer cap 17 is housed has an angular face 41 at its upper end, and when the snuffer cap rests on the wick nipple the part spherical face 38 on the upper end of the snuffer cap seats on the said angular face 41 in the recess.

We claim:

1. Automatic lighter comprising a body part containing a fuel reservoir, a base plate having an upstanding sleeve member formed on the inner side of the base plate, said base plate being detachably arranged in the lower end of said body part so as to form a closure for

4

said fuel reservoir, a tubular member for housing a flint and control spring detachably mounted in said body part and projecting into said upstanding sleeve member, a supporting member carrying a flint wheel mounted on the upper part of said tubular member, a first lever carrying a snuffer cap pivotally mounted on said supporting member, and a hand-operated lever also pivotally mounted on said supporting member and operatively connected with said first lever, one end of said tubular member having a head part engaging with said supporting member, and the other end of said tubular member engaging with a securing nut recessed within the upstanding sleeve member on said base plate, a screw-threaded plug for retaining said flint control spring also engaging the end of said tubular member so as to form a closure for said sleeve member, said tubular member, said supporting member, said flint wheel, said first lever and said hand operated lever forming an integral assembly removable as a unit from said fuel reservoir upon removal of said plug and releasing of said securing nut.

2. Automatic lighter comprising a body part containing a fuel reservoir, supporting means for a flint and wick, a first lever mounted for pivotal movement, a hand-operated member also mounted for pivotal movement and operatively connected with said first lever, and a snuffer cap mounted within a recess in said first lever for engaging with said wick, said snuffer cap being suspended in position by a resilient annular member disposed within an annular groove in the snuffer cap and engaging with the walls of said recess, said resilient annular member forming a loose fit within the groove in the snuffer cap, and the walls of such snuffer cap being spaced apart from the walls of the recess by a small clearance space so as to permit the snuffer cap to swing freely, the recess in which the snuffer cap is housed and the snuffer cap having cooperating seating faces when the snuffer cap rests on the wick nipple to permit a universal movement of the snuffer cap.

3. An automatic lighter comprising a fuel reservoir having a detachable base plate, a single securing means therefor comprising a threaded nut recessed in an upstanding sleeve member formed on the inner side of the base plate, a flint tube for housing a flint and control spring threaded at one end for engaging the nut and having its other end secured to a lighter assembly comprising a flint wheel, snuffer cap and operating levers for the cap and the flint wheel, a screw-threaded plug for retaining said flint control spring also engaging the end of said flint tube so as to form a closure for said sleeve member, the flint tube, its aforesaid associated sparking elements and the lighter assembly being removable as a unit from the fuel reservoir upon unscrewing the plug and nut from the flint tube and thereby also releasing the base plate.

References Cited in the file of this patent

UNITED STATES PATENTS

1,844,481	Rogers	Feb. 9, 1932
1,889,342	Aronson	Nov. 29, 1932
2,019,436	Gibson	Oct. 29, 1935
2,234,298	Bolle	Mar. 11, 1941
2,505,167	Aronson	Apr. 25, 1950
2,508,882	Cibrian	May 23, 1950
2,552,718	Hutchinson et al.	May 15, 1951
2,617,286	Prusack	Nov. 11, 1952

FOREIGN PATENTS

232,709	Switzerland	June 15, 1944
257,195	Switzerland	Sept. 30, 1948
262,050	Switzerland	June 15, 1949
264,500	Switzerland	Oct. 15, 1949