PATENT SPECIFICATION

720,639

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COMPLETE SPECIFICATION

A Mechanically operated Lighter

We, ROWENTA METALLWARENFABRIK G.m.b.H., of 232, Waldstrasse, Offenbach/Main, Germany, a German Company, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

Conventional mechanically operated lighters comprise a fuel container to which an igniter head containing the igniting device is permanently connected. The closure screws for the fuel filling aperture and for the flint tube are arranged as a rule in the free end wall of the fuel container as countersunk screws, and they have to be provided therefore for their operation with slots adapted to receive the edge of a coin, a screw driver or the like. Although such auxiliary operating means are not always available, and it would be desirable therefore to rotate the said screws by hand, these screws have not been designed for hand operation as this would require that the screws protrude from the container surface and that they would be exposed to the danger of an inadvertent loosening. In addition, it is undesirable that pocket lighters should have protruding parts because they would subject the lining of the pockets to increased wear; moreover, also the surface protection or embellishment, provided e.g., by means of nickel plating or the like, wears off more easily from protruding parts than from a smooth surface.

The mechanically operated lighter according to the invention comprises an igniter head including the ignition device, and a separate fuel container, and the lighter is characterised in that for the connection of the igniter head with the fuel container, the igniter head has projecting parts and the fuel container corresponding recesses so arranged that the projecting parts, when inserted into the recesses, are held therein by friction, and that a fuel filling screw is arranged in that wall of the fuel container which faces the igniter head and is covered by the latter when the igniter head and the fuel container are connected together. Such a construction of the lighter makes its possible to design the filling screw and also the flint screw in such a manner, e.g., to provide them with a knurled head, that they can be operated by hand without any additional auxiliary means, the additional time for the replacement of the fuel or for the exchange of the flint required due to the removal of the igniter head, being so small that it is not worth taking into account. Another advantage is to be seen in that only the fuel container or only the igniter head need to be replaced should one of these members develop a fault or become damaged. Finally, by the omission of any screws at the outer surface of the lighter, the lighter walls will be smooth and pleasant in appearance, so that the lining of the pockets is not subjected to an undue wear and the surface plating lasts longer.

The last mentioned features can be still further improved, if, according to a modification of the arrangement according to the invention, also the pivot pins are arranged in the interior of the lighter, so that any protruding parts are completely avoided.

In order to hold together both members, i.e., the fuel container and the igniter head, during normal use, these members may be designed according to the invention in such a manner that parts of the igniter head are inserted into corresponding parts of the fuel container in such a manner that they are held in their position by friction and can be separated only by the application of a certain force. However, it is also possible to connect the said members by means of a lock mechanism, such as latch devices, tooth or friction ratchets, which are adapted to hold both members together under normal conditions and which have to be released if it is desired to separate the two members of

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the lighter in order to obtain access to the screws for the filling of fuel or for the exchange of the flint.

Some embodiments of the invention are represented by way of example in the accompanying drawings, wherein Fig. 1 represents a construction with a connection of the two members by friction, whilst Fig. 2 illustrates a construction using a latch for the connection of the fuel container and the igniter head. Figs. 3, 4 and 5 represent a construction according to which the pivot pin of the operating lever is arranged in the interior of the lighter without outwardly protruding parts, and Figs. 6 and 7 illustrate a corresponding arrangement of the pivot pin for the wick-cap lever, Fig. 5 being a cross-sectional view taken along the line A—B of Fig. 4, whilst Fig. 7 is a cross-sectional view along the line C—D of Fig. 6.

The fuel container *a* is formed by an enclosed casing. A short tube *n*, which is open at the top and closed at its opposite end, extends into the interior of the container through the upper wall *b*. This wall is also provided with an aperture through which the fuel can be introduced and which is adapted to be closed by a screw with a knurled head *c*. The wick has not been shown in the drawings as it has no bearing upon the invention; usually it would protrude through the wall *b* at the left hand side of the short tube *n*. The igniter head *d* is formed by two lateral walls *e* which are connected at their lower edges by a base plate *t* (Fig. 2). The knurled head *c* extends through an aperture in the base plate *t*. The pivot pin *f* for the finger piece *g* and the pivot pin *i* for the snuffer lever *j* are arranged between and supported by the said lateral walls *e*. The finger piece *g* and the snuffer lever *j* are in engagement with each other by means of a gearing *h* in such a manner that, if the finger piece *g* is depressed, the snuffer lever *j* is caused to swing upwards in a clockwise direction so that it imparts a rotary movement to a friction wheel (not shown) connected to the pivot pin *i*, which is in touch with the flint protruding from a flint tube *k*. The flint tube *k* is closed at its lower end by a knurled screw *m* and it is surrounded by a tubular radially acting slotted spring *l* which may have the shape of a banana plug. If the flint tube of the igniter head is pushed into the tube *n*, which has to some extent a smaller cross-sectional area than the spring *l*, then the latter will be compressed from all sides and keeps both members together by friction. If it is desired to add some fuel or if the flint has to be exchanged, then the igniter head has to be withdrawn from the fuel container by the application of some force in order to overcome the mentioned friction, whereupon access is obtained to the two knurled screws *c* and *m* which now can be operated by hand. Instead of the aforementioned friction spring *l*, any other suitable means can be employed, such as leaf springs, circular springs, sleeves of felt or other compressible material, and these means may be connected to the flint tube or to any other parts of the igniter head or fuel container which are inserted one into the other.

Fig. 2 illustrates another construction of an easily detachable connection of both members. On the upper wall *b* of the fuel container *a*, a latch *p* is rotatably mounted around a pivot pin *r*, the latch being urged to swing in a clockwise direction by the action of a spring *s*. The latch *p* extends through an opening *q* in the base plate *t* of the igniter head *d*, and by engaging with the base plate it holds firmly together the igniter head *d* and the fuel container *a*. A releasing cam *o* is fixed to the finger piece *g*.

When the finger piece is depressed, it swings around the pivot pin *f*, so that the releasing cam *o* turns the latch *p* in an anticlockwise direction, whereby the coupling between the fuel container and the igniter head is released. In this operational position however, both members are held together by the counter pressures exerted by the fingers which hold the fuel container and by the finger which presses downwards the finger piece. As soon as the finger piece is released, the latch *p* is returned by the pressure of the spring *s* into the position where it connects both members together. However, it is also possible to design the locking mechanism in such a manner, that it is not released each time the finger piece is depressed, but that a special release member is provided, e.g., a button accessible from outside, or a release member arranged within the igniter head and accessible, e.g., only after the wick-cap has been lifted.

Figs. 3, 4 and 5 illustrate a construction according to which the pivot pin *f* of the finger piece is supported by a special bearing frame *u* fixed to the base plate *t* which is covered by the lateral walls *e* so that the ends of the pin are not visible. A corresponding arrangement of the pivot pin *i* for the wick-cap is shown in the Figs. 6 and 7. The pivot pin *i* of the wick-cap *j* is supported by a U-shaped stirrup *v* which is riveted to the base plate *t* between the lateral walls *e*.

What we claim is:—

1. A mechanically operated lighter, comprising an igniter head including the ignition device, and a separate fuel container, characterised in that for the connection of the igniter head with the fuel container, the igniter head has projecting parts and the fuel container corresponding recesses so arranged that the projecting parts, when inserted into the recesses, are held therein by friction, and that a fuel filling screw is arranged in that wall of the fuel container

which faces the igniter head and is covered by the latter when the igniter head and the fuel container are connected together.

2. A mechanically operated lighter according to Claim 1, characterised in that the igniter head is provided with a projecting flint tube, and that the fuel container accommodates a tube which extends from the container wall facing the igniter head and is closed at its opposite end, the arrangement being such that the said tube within the fuel container is adapted to receive the projecting flint tube and to hold it in position by friction.

3. A mechanically operated lighter according to Claim 2, characterised in that the projecting flint tube is surrounded by a tubular radially acting slotted spring.

4. A mechanically operated lighter according to any of the Claims 1 to 3, characterised by the provision of a lock arranged within the lighter, which is constructed to hold together the fuel container and the igniter head and to be disengaged by the operation of a releasing member.

5. A mechanically operated lighter according to Claim 4, characterised in that the locking mechanism is operatively connected with the ignition device in such a manner that it is released when the ignition device is operated and that it returns into the locking position when the ignition device returns into its rest position.

6. A mechanically operated lighter according to any of the preceding claims, characterised in that the fuel filling screw is provided with a head, e.g., a knurled head, adapted to be rotated by hand.

7. A mechanically operated lighter according to any of the preceding claims, characterised in that the flint screw, which is arranged at the lower end of the flint tube, is provided with a head adapted to be rotated by hand.

8. A mechanically operated lighter according to any of the preceding claims, characterised in that the ignition device includes a pivotally mounted finger piece operatively connected with a pivotally mounted snuffer lever and friction wheel, and that the pivot pin of the finger piece and, if desired, also the pivot pin for the snuffer lever and the friction wheel are supported in brackets fixed to a base plate of the ignition device and covered by the lateral walls of the ignition device.

9. Mechanically operated lighters, substantially as described with reference to, and as illustrated in, the accompanying drawings.

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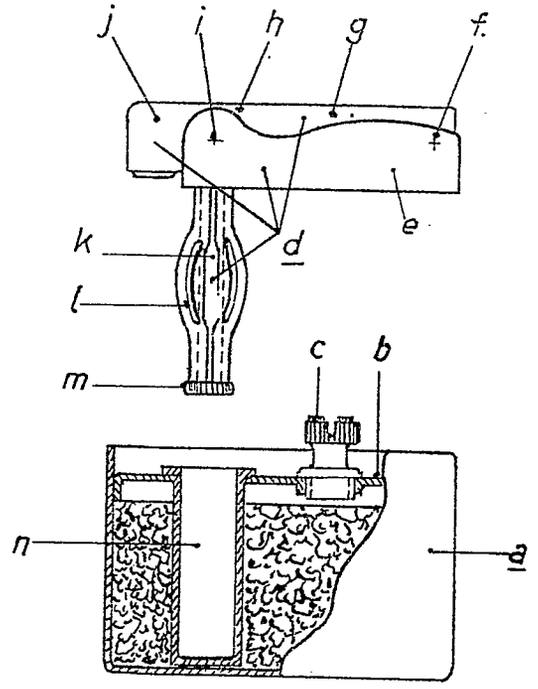

Fig. 1

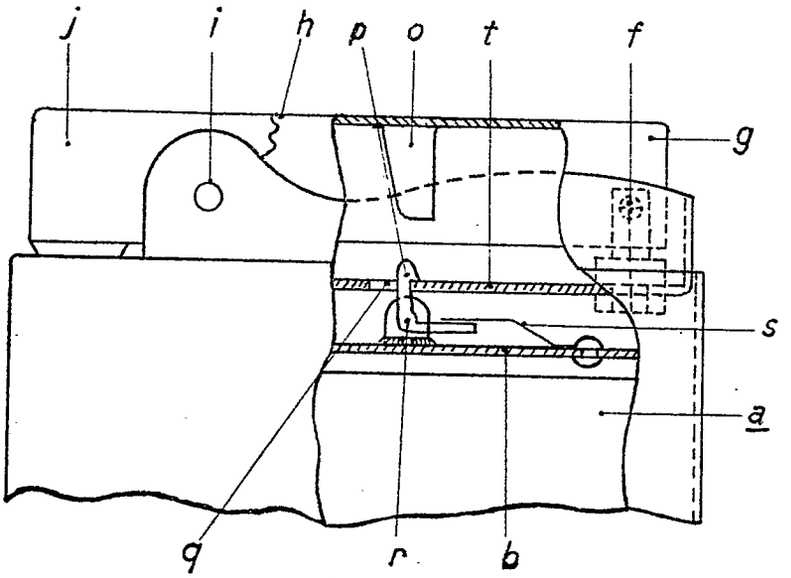

Fig. 2

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2 SHEETS

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SHEETS 1 & 2

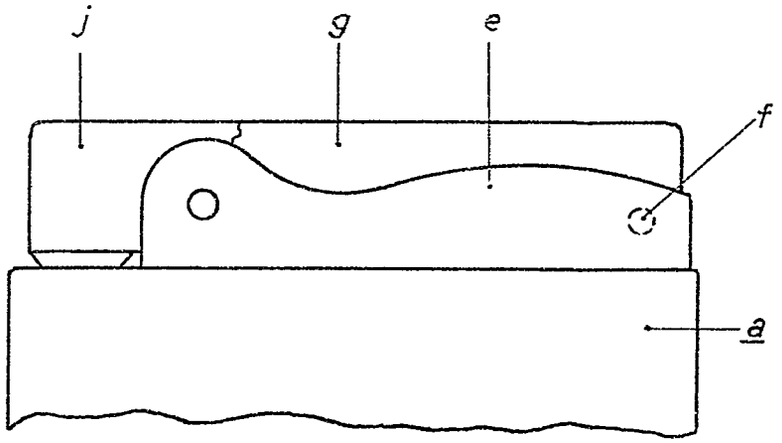

Fig.3

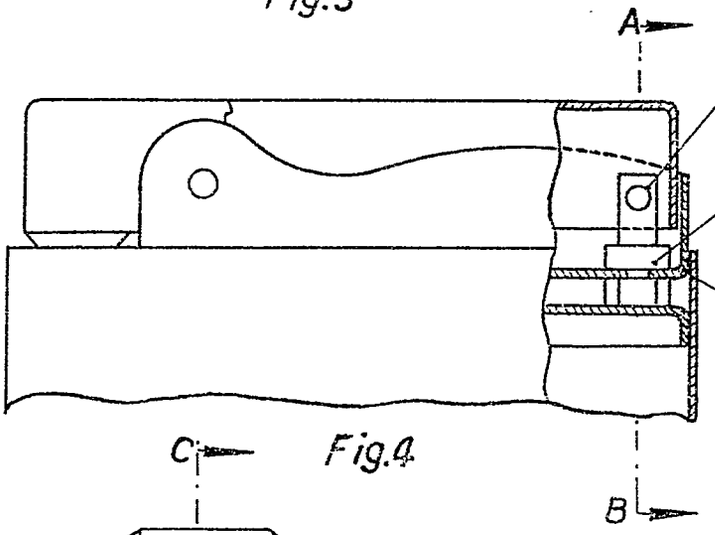

Fig.4

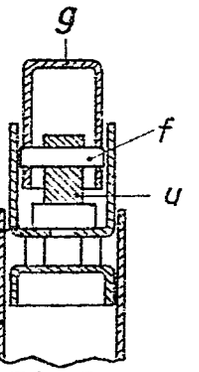

Fig.5

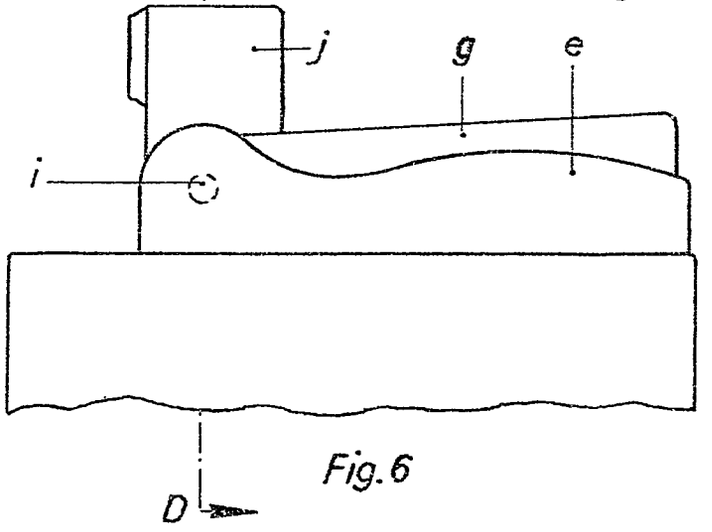

Fig.6

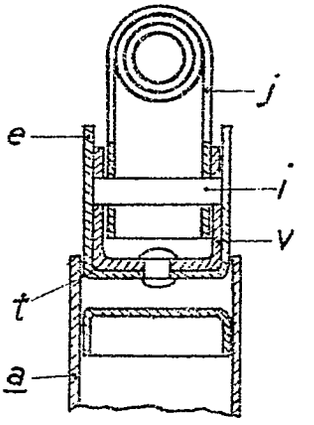

Fig.7

720,639 COMPLETE SPECIFICATION

2 SHEETS

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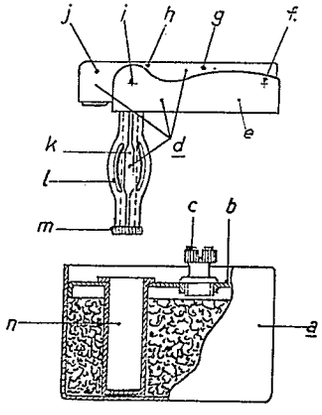

Fig. 1

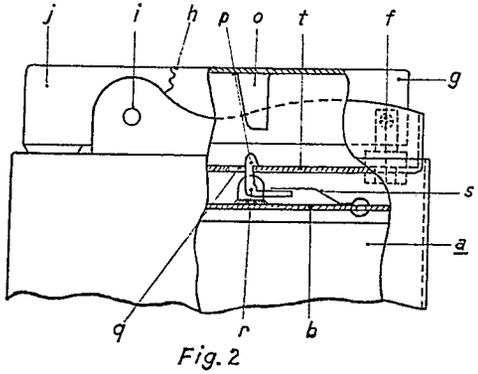

Fig. 2

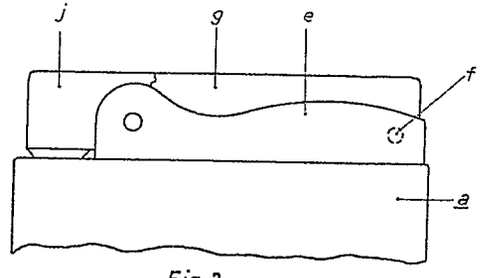

Fig. 3

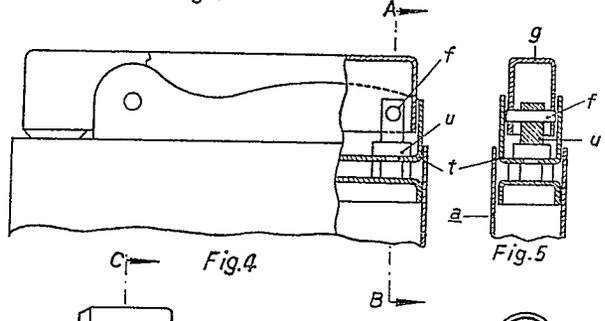

Fig. 4

Fig. 5

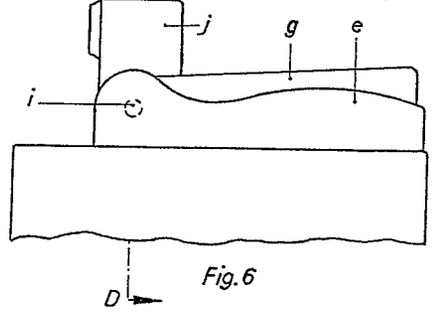

Fig. 6

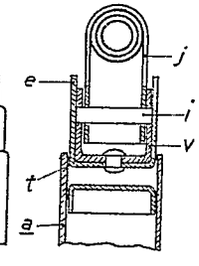

Fig. 7