Nov. 3, 1953 S. BACHRACH 2,657,562

MECHANICAL LIGHTER

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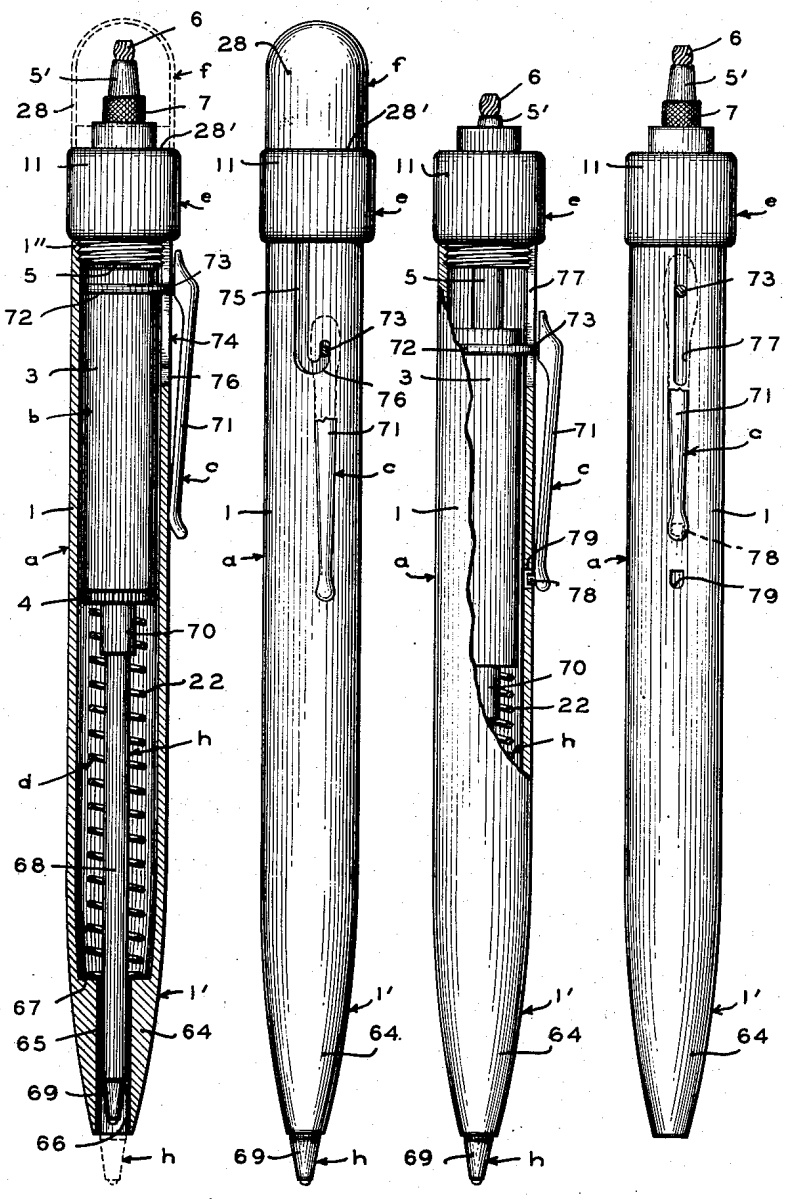
FIG. 1 FIG. 2 FIG. 3 FIG. 4



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MECHANICAL LIGHTER

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This invention relates to mechanical lighters, and more particularly to a mechanical lighter of the pocket type.

Many cigarette lighters have been proposed and used heretofore, but with very few exceptions, they are all based on the old system including a milled wheel the rough surface of which rubs against a flint; the mechanical or operating portion of such lighters varies, of course, in accordance with the size, shape or cost thereof. It should be noted, however, that although the only purpose of all this variety of mechanical systems (generally hand-actuated) is to move the small friction wheel, they are costly and complicated, and furthermore they are not always capable of withstanding intensive use.

The exceptions to this general rule are found in some types of lighters wherein the friction wheel system is omitted, the steel and flint members being arranged so as to be operated manually. While this latter system has given good results, such lighters have of course lost their mechanical character through the elimination of the mechanical movable parts by means of which sparks were produced from the flint for lighting the respective wick.

All of the structural and operative details of the known lighters have been taken into consideration in the mechanical lighter of this invention, for the purpose of overcoming the drawbacks and complications thereof and of providing a practical and structurally simple lighter capable not only of being manufactured on a large scale but also individually at a low cost.

The lighter of this invention consists of two main portions constituted by a supporting body the shape of which may vary in accordance with a given design, and a slider portion located within said body, said slider portion being formed by a fuel reservoir provided with a wick-carrying tube. The rubber and flint are arranged so that one is fixed to the supporting body and the other forms a part of the slider portion; thus, with said slider portion having a spring urging same towards the operative position thereof, it will be sufficient to cause same to overcome the tension of said spring by any means, so that on being released it will move with a certain force, whereby the rubber will engage the flint and ignite the wick.

The lighter of this invention comprises a supporting structure in which there is mounted a slider associated with actuating means and constituted by a fuel reservoir and a tube containing a wick projecting from the free end thereof, said slider being urged by a spring with a steel and flint. Either one of these elements forms a part of said slider, while the other is fixed to the supporting structure.

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Apart from the above, the invention contemplates other objects, among which is the provision of a mechanical lighter of the slider type, wherein the friction wheel and other parts subject to easy wear are omitted.

A further object of the invention is to reduce considerably the size of the lighters, without thereby affecting the mechanism thereof.

A further object of the invention is to simplify the operating mechanism of the lighter and also to eliminate the failures caused by the wearing of the flint or the rubber.

A further object is to provide a mechanical lighter wherein either the flint or the rubber is fixed relative to the slider.

A still further object is to provide a lighter of the aforesaid type capable of being held with one hand and operated by the simple movement of one of the fingers.

Other objects and advantages of the invention will become apparent in the course of the following description. In order that the invention may be more clearly understood and readily carried into practice, same has been illustrated, by way of example and in some of the preferred embodiments, in the accompanying drawings, wherein:

Figure 1 is a sectional view of the present invention wherein the slider is housed in a supporting structure which constitutes the barrel of a writing instrument having a writing tip which forms a part of the slider, the slider including hand actuating and locking means for coaction with the writing tip.

Figure 2 is a side elevational view of the form of the invention shown in Figure 1.

Figure 3 is a modified form of the invention, with parts broken away and in section, but showing a modified hand actuating and locking means.

Figure 4 is a side elevational view of the form of the invention shown in Figure 3.

The same reference characters are used to indicate like or corresponding parts or elements throughout the drawings.

With reference to the drawings, the mechanical lighter of this invention comprises a supporting structure *a* in which there is mounted a slider *b* associated with an actuating device *c* and urged towards the operative position by resilient means *d*. The slider *b* is also associated with an ignition system *e*, one of the elements of which is fixed

to the structure *a*, while the other element thereof forms a part of the slider *b*.

The supporting structure *a* comprises a tubular body 1, which may be made of any suitable material, and the slider *b* is housed within the cavity or bore of the body 1 and includes a fuel reservoir 3. Preferably, the reservoir 3 is tubular shaped and includes at one end a filling opening which is adapted to be sealed by a cover 4 which may be arranged in threaded engagement therewith.

The end of the reservoir 3 opposite the cover 4 has a tube 5 opening into the reservoir, and the tube 5 may be made of any suitable material and carries therein a wick 6 the end of which extends out of the tapered end 5' of the tube 5. The tube 5 is so arranged that during the strokes of the slider *b*, the tube will traverse the ignition system *e* and one of the elements of the ignition system is secured to the tube 5 while the other element thereof is secured to the body 1. These two elements include a steel and a flint, or in other words an abrading element 7 and a flint. The flint is mounted in a supporting body which includes the case 11, and the case 11 carries a flint-holding body which may be arranged in threaded engagement with the threaded portion 2 of the body 1. When the abrading element 7 is rubbed against the flint, a series of sparks will be produced which will contact the wick 6 to ignite same.

The slider *b* is operatively connected with the resilient means *d* and the resilient means *d* includes an expansion spring 22 which has one end bearing against the seat 67 in the body 1, while the other end of the spring is arranged in engagement with the cover 4 on the base of the reservoir 3. The spring 22 is urging the slider *b* towards its operative position as shown in the drawings, and therefore sufficient pressure must be overcome in the spring in order to displace the slider towards the inoperative position thereof in order to contract the spring 22.

The slider *b* includes an actuating device *c* which embodies a clip 71. In order to cover and protect the wick 6, there is provided a cover *f* which includes a cap 28 that may be made of any suitable material and which is adapted to be seated with a snug or tight fit on an annular shoulder 28' that is arranged on the upper portion of case 11. In use, after the cover *f* has been removed, the clip 71 is moved downwards in order to compress the spring 22 then when the clip 71 is released, the action of the spring 22 will rapidly cause movement of the slider *b*, and this sudden displacement will cause the abrading element 7 to rub against the flint to thus produce sparks which will ignite the wick 6. The parts will again remain in neutral or normal position so that the wick 6 extends out of the supporting structure *a* as shown in Figures 1 and 4. The end 5' of the tube 5 may be formed integral with the slider *b*.

In Figures 1–4, the lighter forms a part of a device including a writing instrument the operative tip of which is of the retractile type.

Referring first to the embodiment shown in Figures 1 and 2, it will be seen that the body 1 of the supporting structure *a* is longer so that the lower end 1', instead of being closed, projects into a tapered portion 64 having a central passage 65 the lower end of which terminates in a mouth 66, whereas the upper end thereof, due to the difference in diameter with respect to the inner surface of body 1, forms a seat 67 for spring 22

which in this case is longer and surrounds a writing element *h*. This writing element *h* may be constituted by a tubular ink reservoir 68 provided with an active tip 69 of the ball, nib or any other type, slidably located in said central passage 65.

The end of reservoir 68 opposite said active tip 69 is arranged in a tubular amount 70 fixed to the cover 4 of fuel reservoir 3 forming part of slider *b*. Thus, the writing element *h* also forms a part of said slider *b* and is slidable therewith.

The ignition system *e* is located at the upper end 1'' of the body 1 and is traversed by the tube 5 which carries the wick 6 and abrading element 7, as described above. The means for actuating the slider *b* comprises a clip 71, which is associated with a washer 72 fixed to fuel reservoir 3 by means of a pin 73 displaceable in a slot 74.

Said slot 74 has a straight vertical section 75, the lower end of which extends into a smaller portion 76 curved into U-shape and the end of which is parallel to the straight section 75. By this arrangement, said slot 74 provides a guide for the operation of the lighter and also a means for locking the writing instrument in operative position. In effect, since in this case the slider *b* is normally in operative position, it will be necessary to retract same temporarily so that upon being released it will cause the ignition of the wick 6; in this case the clip 71 is moved to the end of the straight section 75 of slot 74 so as to retract the slider *b* and simultaneously the contraction of spring 22. Then, by quickly releasing said clip 71, this will release the slider which, pressed by said spring 22, on passing through the ignition system *e* will present its lighted wick 6.

When it is desired to use only the writing instrument *h*, the projecting portion of the lighter (wick 6, and 5' and rubber 7) may be covered by means of a cap *f* such as that shown in Fig. 1. The clip 71 will then be moved so that the pin 73 thereof will be held in the end of the slot portion 76, due to the action of spring 22 which will be partly contracted as clearly shown in Fig. 2; the active tip 69 of the writing instrument *h* will thus extend out of said body 1 through the mouth 66 thereof.

Whenever it is desired to bring the writing instrument *h* back into inoperative position, the clip 71 should be moved back to the position indicated in Fig. 1.

The embodiment shown in Figures 3 and 4 is almost similar to that shown in Figures 1 and 2, the only difference residing in the actuating means *c*.

In this embodiment, the clip 71 also includes a pin 73 guided in a straight slot 77, the free end of said clip 71 being provided with a locking tooth 78 capable of engaging a hole 79 formed in the body 1.

The operation of this device is very simple. In order to use the lighter, it will be sufficient to move the clip 71 downwards practically for the entire length of said slot 77, and then release it so as to cause the ignition of wick 6 as already explained above. When it is desired to use the writing instrument *h*, the clip 71 should be displaced until the locking tooth 78 thereof engages said hole 79 (Figure 3).

The retracted position of instrument *h* is obtained by a slight outward movement of clip 71, whereupon the locking tooth 78 will be released from said hole 79.

It is evident that in carrying out this invention, several changes, modifications and/or alter-

ations will occur to those skilled in the art, without departing from the scope of the invention as clearly set forth in the appended claims.

I claim:

1. In a mechanical lighter, a hollow supporting body having one end terminating in a tapered portion, said tapered portion being provided with a central passageway terminating in a mouth, a seat arranged interiorly of said tapered portion and spaced from said mouth, a spring positioned in said body and having one end abutting a shoulder, an elongated element extending longitudinally through said spring, a slider reciprocally arranged in said body and defining a fuel holding reservoir, a cover connected to an end of said slider, a tubular mount extending from said cover and projecting into said coil spring, an ignition system including a wick and a rubbing element arranged in the upper end of said body, and manually operable means for actuating said slider, said means comprising a clip arranged exteriorly of said body, there being a slot arranged in said body, a washer circumposed on said slider and secured thereto, and a pin extending through said slot and having one end secured to said slider and the other end secured to said clip.

2. In a mechanical lighter, a hollow supporting body having one end terminating in a tapered portion, said tapered portion being provided with a central passageway terminating in a mouth, a seat arranged interiorly of said tapered portion and spaced from said mouth, a spring positioned in said body and having one end abutting a shoulder, an elongated element extending longitudinally through said spring, a slider reciprocally arranged in said body and defining a fuel holding reservoir, a cover connected to an end of said slider, a tubular mount extending from said cover and projecting into said coil spring, an ignition system including a wick and a rubbing element arranged in the upper end of said body, and manually operable means for actuating said slider, said means comprising a clip arranged exteriorly of said body, there being a slot arranged in said body, a washer circumposed on said slider and secured thereto, and a pin extending through said slot and having one end secured to said slider and the other end secured to said clip, said slot including a straight section terminating in a U-shaped portion, the end of the U-shaped portion of said slot being arranged in spaced parallel relation with said straight section.

3. In a mechanical lighter, a hollow supporting body having one end terminating in a tapered portion, said tapered portion being provided with a central passageway terminating in a mouth, a seat arranged interiorly of said tapered portion and spaced from said mouth, a spring positioned in said body and having one end abutting a shoulder, an elongated element extending longitudinally through said spring, a slider reciprocally arranged in said body and defining a fuel holding reservoir, a cover connected to an end of said slider, a tubular mount extending from said cover and projecting into said coil spring, an ignition system including a wick and a rubbing element arranged in the upper end of said body, and manually operable means for actuating said slider, said means comprising a clip arranged exteriorly of said body, there being a slot arranged in said body, a washer circumposed on said slider and secured thereto, and a pin extending through said slot and having one end secured to said slider and the other end secured to said clip, said slot including a straight section terminating in a U-shaped portion, the end of the U-shaped portion of said slot being arranged in spaced parallel relation with said straight section, the end of the U-shaped portion of the slot being of less length than the straight section of said slot.

4. In a mechanical lighter, a hollow supporting body having one end terminating in a tapered portion, said tapered portion being provided with a central passageway terminating in a mouth, a seat arranged interiorly of said tapered portion and spaced from said mouth, a spring positioned in said body and having one end abutting a shoulder, an elongated element extending longitudinally through said spring, a slider reciprocally arranged in said body and defining a fuel holding reservoir, a cover connected to an end of said slider, a tubular mount extending from said cover and projecting into said coil spring, an ignition system including a wick and a rubbing element arranged in the upper end of said body, and manually operable means for actuating said slider, said means comprising a clip arranged exteriorly of said body, there being a slot arranged in said body, a washer circumposed on said slider and secured thereto, and a pin extending through said slot and having one end secured to said slider and the other end secured to said clip, said slot including a straight section terminating in a U-shaped portion, the end of the U-shaped portion of said slot being arranged in spaced parallel relation with said straight section, the end of the U-shaped portion of the slot being of less length than the straight section of said slot, said slot providing a guide for said pin, the last-named end of the slot providing a seat for the pin when the clip is to be locked in place.

5. The mechanical lighter as defined in claim 1 and further including a cap for selectively covering said wick.

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