April 4, 1950 J. LOWENTHAL ET AL 2,502,864

FRICTION LIGHTER

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FIG. 1.

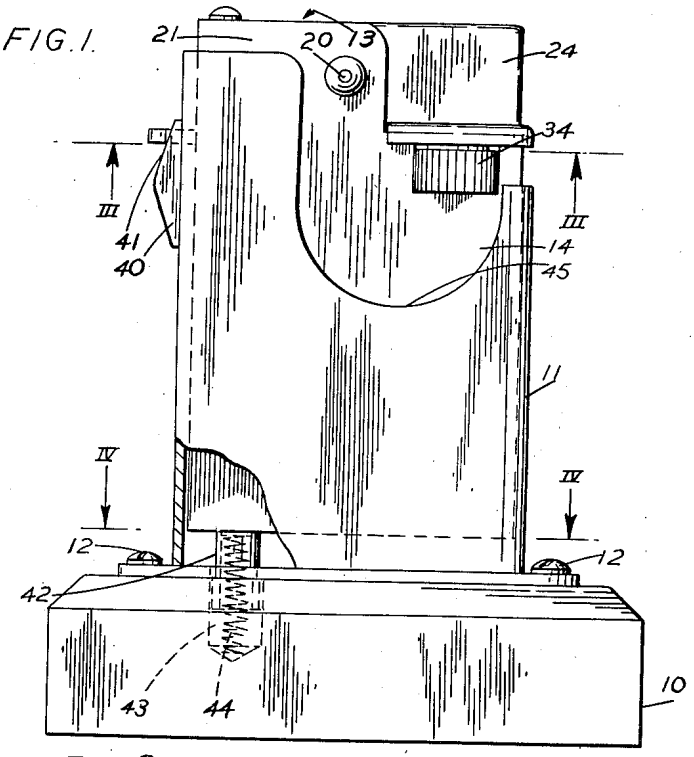

FIG. 2.

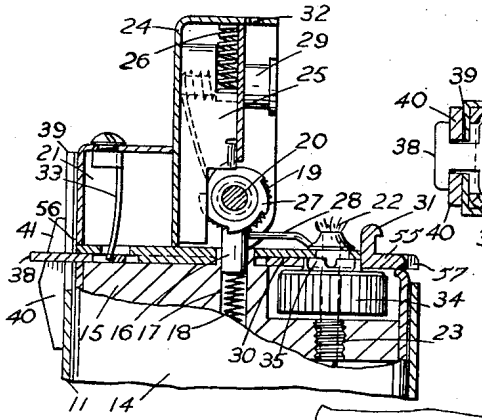

FIG. 3.

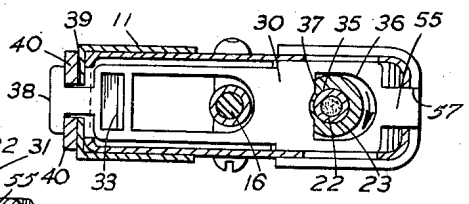

FIG. 4.

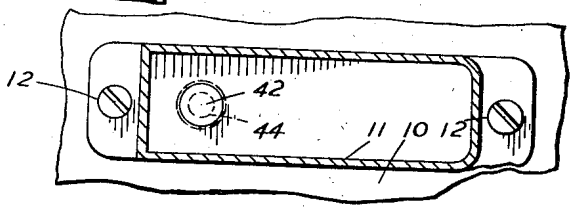

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FIG. 5.

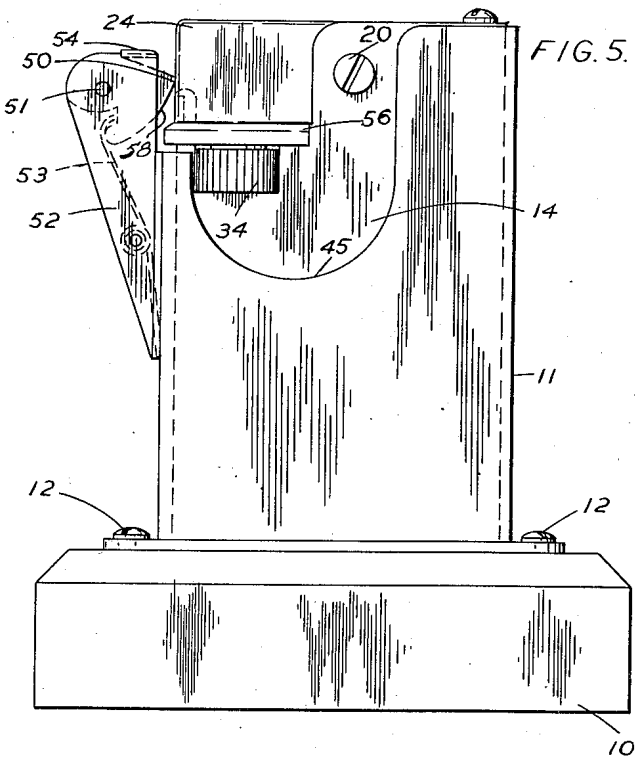
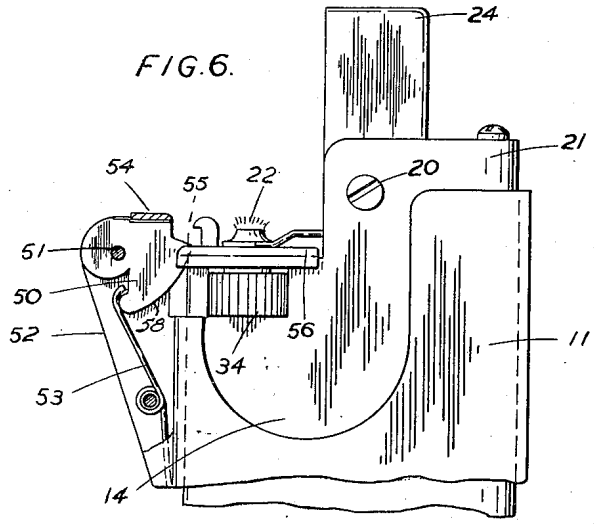


FIG. 6.



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UNITED STATES PATENT OFFICE

2,502,864

FRICTION LIGHTER

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8 Claims. (Cl. 67—4.1)

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This invention relates to friction lighters of the automatic type in which the spark-producing mechanism is operated to ignite the wick when retaining means, for the said mechanism, have been released, and more particularly to stands or holders for use in combination with such friction lighters whereby they may be used as table lighters, and to such combinations.

The chief object of the invention is to provide a stand or holder for a friction lighter of the type referred to whereby the lighter may be used as a table lighter without affecting its utility when removed from the stand or holder for use in the ordinary way. A further object is to provide an automatic friction lighter in which the retaining means for the spark-producing mechanism are adapted to co-operate with the stand or holder.

According to the invention, a stand or holder, adapted to receive and support a friction lighter of the type referred to, has an actuating member thereon arranged to engage with and actuate the retaining means for the spark-producing mechanism of the lighter, to release the said mechanism for operation. The holder may be adapted to slidably receive the lighter, and the actuating member may be arranged to engage with the retaining means upon relative movement between the lighter and the holder, either in the action of fitting the lighter to the holder, or removing it therefrom. Alternatively, the relative movement between the lighter and the holder may be provided by pressing the lighter further into the holder, after it has been fitted therein, against the action of a spring. The actuating member may be in the form of a trip lever, so that it will actuate the actuating member of the lighter upon movement of the latter in one direction only.

In order that the invention may be clearly understood and readily carried into effect, two constructions of the holder and automatic friction lighters for use therewith, will now be more fully described by way of examples with reference to the accompanying drawings, in which—

Figure 1 is a side elevation showing an automatic friction lighter in position in one embodiment of the stand or holder, a part being shown in section;

Figure 2 is a sectional elevation of the upper part of the lighter and holder shown in Figure 1, illustrating the method of operating the lighter;

Figure 3 is a sectional view on the line III—III of Figure 1 looking up from the base of the lighter;

Figure 4 is a sectional view on the line IV—IV of Figure 1 looking down from the top of the lighter;

Figure 5 is a side elevation showing another

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construction for the stand or holder, with an automatic lighter supported thereby; and

Figure 6 is a view of the upper part of Figure 5, part being shown in section, illustrating the method of operating the lighter.

Referring to the drawings, the lighter stand or holder illustrated in Figures 1 to 4, comprises a base 10, and a casing 11, secured to the base by screws 12. The casing 11 is open at its upper end and is formed so as to slidably receive a friction lighter indicated generally by the reference 13.

The automatic lighter illustrated in Figures 1 to 4 forms the subject matter of our co-pending British patent applications No. 17,114/46 and No. 17,115/46 which eventuated into Patents 612,903 and 612,904 respectively but with a small modification to the retaining means for the spark-producing mechanism for co-operation with an actuating member on the stand or holder, although the said modification does not interfere with the normal operation of the lighter. This automatic lighter comprises a body portion 14, which serves as a fuel reservoir and has a top plate 15 on which the spark-producing mechanism is mounted. A flint 16 housed in a bore 17, is urged by a spring 18 into contact with the serrated or otherwise roughened periphery of a flint wheel 19, rotatably mounted on a pivot pin 20 extending between the upper portions 21 of the side walls of the body, above the top plate 15. Rotation of the flint wheel will, therefore, cause sparks to be thrown from the flint on to the end of a wick 22 which protrudes from the body through a wick tube 23 mounted in the top plate 15, thereby igniting the wick.

A lid or cover 24 is also pivotally mounted on the pivot pin 20, and a sliding pawl 25 is urged by a spring 26 into engagement with a ratchet wheel 27 secured to the flint wheel 19. The lid or cover is urged about the pivot pin 20, by a spring 28, into its open position as shown in Figure 2, and the pawl 25 and ratchet wheel 27 are so arranged that the latter, and consequently the flint wheel 19, will be rotated during the opening movement of the lid or cover 24. The lid or cover also carries a snuffer cap 29 which encloses the projecting end of the wick 22 when the lid or cover is in the closed position shown in Figure 1.

Means are provided for retaining the lid or cover 24 in its closed position, the means illustrated comprising a plate 30 slidably mounted on the top plate 15, and carrying a hook member 31 adapted to engage in a hole or recess 32 in the lid or cover 24 when the latter is closed. A spring 33 is provided for urging the plate 30 in the direction to maintain the hook member 31 engaged in the hole 32. To release the lid or cover so that it will be opened by its spring,

it is necessary to slide the plate **30** against the action of its spring **33**, and for this purpose a serrated thumb wheel **34** is rotatably mounted on the wick tube **23**. The thumb wheel carries a cam **35** which projects into a hole **36** in the sliding plate **30** and co-acts with one edge **37** of the hole **36** so that when the thumb wheel is given a partial rotation by engagement with the thumb, or engagement between a finger and thumb, the plate **30** will be caused to slide against the action of its spring, thus disengaging the hook member **31** from the hole or recess **32**. That is the method for operating the lighter in the normal way independently of the stand or holder.

For operating the lighter as a table lighter when it is fitted to the stand or holder, the sliding plate **30** has a T-shaped extension **38**, at the opposite end to the hook member **31**, which extension **38** projects beyond the lighter body. The stand or holder has a vertical slot **39** formed in the end wall of the casing **11** to slidably receive the narrow portion of the T-shaped extension **38**, and a pair of projections **40** are provided on the outer surface of the said end wall, one at each side of the slot **39**. Each projection **40** has an inclined surface **41**, up which the arms of the T-shaped extension ride when the lighter is moved downwardly into the casing, and the co-action between the T-shaped extension and the inclined surfaces causes the sliding plate **30** to be moved against the action of its spring to operate the lighter. A plunger **42** is slidably mounted in a vertical hole **43** in the base **10**, and a spring **44** urges the plunger **42** upwardly. When the lighter is inserted in the casing **11**, the lower end thereof will engage with the plunger **42**, the relative positions of the projections **40** and the upper surface of the plunger being so arranged that when the lighter rests on the plunger the arms of the T-shaped extension **38** will not be operatively engaged with the inclined surfaces **41** until the lighter is pressed downwardly into the casing **11**, against the action of the spring pressed plunger.

When the lighter has been operated, it may be used while remaining in the stand or holder, or it may be removed therefrom for use. To facilitate removal of the lighter from the stand or holder, the upper portion of the casing **11** has a portion cut away as indicated at **45**. After use, it is only necessary to return the lid or cover **24** to its closed position, as shown in Figure 1, to extinguish the flame, whereupon the lighter is again ready for operation.

In the embodiment of the invention described with reference to Figures 1 to 4 of the drawings, it will have been noted that the only modification to the automatic lighter was the provision of the T-shaped extension **38**. While this modification does not affect the utility of the lighter independently of the stand or holder, it does have the disadvantage that the member **38** projects outside the lighter body. The embodiment illustrated in Figures 5 and 6 is designed to overcome this disadvantage.

Referring now to Figures 5 and 6, the stand or holder, as in the previously described embodiment, comprises a base **10**, on which a casing **11** is secured by screws **12**. The casing is open at its upper end to slidably receive a friction lighter, the one illustrated being constructed in a similar manner to that described with reference to Figures 1 to 4, to which reference may be made for details not shown in Figures 5 and 6, and corresponding reference characters indicate corresponding parts thereof.

In this embodiment, the T-shaped extension **38**, and the projections **40** are not provided. For the purpose of operating the lighter, a trip lever **50** is pivotally mounted on a pivot pin **51** extending between a pair of brackets **52** on one end wall of the casing **11**. The trip lever is urged, by a spring **53** about the pivot pin **51**, into contact with a stop **54** which bridges the brackets **52**.

As best shown in Figure 3 the sliding plate **30** is reduced in width at the end where it carries the hook member **31**. This reduced portion or tongue **55** projects as shown in Figure 2 into a slot **57** in a cover plate **56** between which latter and the top plate **15**, the plate **30** is slidably mounted. The hook member **31** also projects through the said slot. The outer end of the tongue **55** is flush with the adjacent end of the cover plate **56** when the sliding plate **30** is moved by its spring to the left, in Figures 5 and 6 (right in Figures 2 and 3), for engagement of the hook member **31** in the hole or recess **32** in the lid or cover **24** as shown by dotted lines in Figure 5. In width, the trip lever **50** is the same as, or narrower than, the width of the tongue **55**, and, when the lighter is in position in the stand or holder, the trip lever **50** and the tongue **55** are in alignment with one another. Also, when in contact with the stop **54**, the trip lever projects into the path of the tongue **55** as the lighter is being inserted in or removed from the stand or holder.

In use, when the lighter is inserted into the casing **11**, the tongue **55** will engage with the trip lever **50** and rock the latter against the action of its spring **53**. The tongue **55** will ride over the trip lever **50**, after which the trip lever will return to its original position in contact with the stop **54**, as shown in Figure 5. If now the lighter is withdrawn from the casing **11**, a cam surface **58** on the trip lever will engage with the tongue **55**, and the latter will be moved to the right as shown in Figure 6, as it rides over the cam surface **58** of the trip lever which in this direction of movement is rigidly supported by the stop **54**. The movement thus given to the tongue and sliding plate **30** causes disengagement of the hook member **31** from the hole or recess in the lid or cover, which is thereupon free to be opened by its spring **28**, and during this opening movement the flint wheel is rotated and sparks thrown on to the wick **22** as described with reference to the first embodiment.

It will be seen, therefore, that after the lighter has been inserted in the stand or holder, it will automatically be operated to ignite the wick when it is withdrawn for use from the stand or holder. Further, the lighter may be used in the ordinary way as a pocket lighter, independently of the stand or holder, and in this connection, there are no undesirable projections such as that present in the previously described embodiment.

We claim:

1. A stand or holder for a friction lighter of the type adapted to be automatically ignited when retaining means for the ignition mechanism is released by an operating member, comprising a casing having an open end into which the said friction lighter can be slidably inserted, spring means in said casing and a cam member fixed on a side wall of said casing, said spring means being arranged to be stressed when said friction lighter is displaced longitudinally in one direction within said casing, and said cam member being disposed in the path traversed by said operating member

as the lighter is displaced longitudinally within said casing, whereby said operating member will be actuated to release said retaining means.

2. A stand or holder, for a friction lighter of the type adapted to be automatically ignited when retaining means for the ignition mechanism is released, comprising a casing having an open end into which the said friction lighter can be slidably inserted, a trip lever pivotally mounted on said casing, and spring means urging said trip lever in one direction about its pivot to abutment against stop means so that said trip lever projects into the path followed by said retaining means as said lighter is being moved within said casing, whereby said trip lever will engage and actuate said retaining means to release said ignition mechanism on movement of said lighter within said casing in one direction, and upon movement of said lighter in the other direction, said retaining means will ride over and displace said trip lever against the action of said spring means without itself being actuated.

3. The combination of a friction lighter, of the type adapted to be automatically ignited when retaining means for the lighter ignition mechanism is released by an operating member operatively connected to said retaining means, with a stand or holder therefor, said lighter being slidable longitudinally within said holder, said stand or holder having cam means for engagement with said operating member, said retaining means comprising a plate slidably mounted on the body of said friction lighter and catch means on said plate co-operating with complementary means on the lighter cover, said plate having a portion extending beyond the outer surface of said body for engagement with said cam means on said holder as said lighter is displaced longitudinally relatively to said holder whereby said plate is displaced and said catch means is disengaged from said complementary means, said ignition mechanism is released for operation, and said cover is released for opening by said ignition mechanism.

4. The combination of a friction lighter, of the type adapted to be automatically ignited when retaining means for the lighter ignition mechanism is released by an operating member operatively connected to said retaining means, with a stand or holder therefor, said lighter being slidable longitudinally within said holder, said stand or holder having cam means for engagement with said operating member, said cam means and said operating member being adapted to co-operate with one another when said friction lighter is displaced longitudinally relatively to said holder whereby said retaining means is actuated to release said ignition mechanism for operation, said holder being provided with resilient support means for said friction lighter, and said displacement of said friction lighter causing said co-operation of said cam means and said operating member being effected by pressure applied to said friction lighter in a direction to stress said resilient support means.

5. The combination of a friction lighter of the type adapted to be automatically ignited when retaining means for the lighter ignition mechanism is released by an operating member operatively connected to the retaining means, with a stand or holder therefor, said lighter being slidable longitudinally within said holder, said stand or holder having cam means for engagement with said operating member, said cam means and said operating member being adapted to co-operate with one another when said friction lighter is displaced longitudinally relatively to said holder whereby said retaining means is actuated to release said ignition mechanism for operation, the said friction lighter being detachable from said holder and the said longitudinal displacement of said lighter relatively to said holder comprising sliding said lighter into said holder.

6. The combination of a friction lighter of the type adapted to be automatically ignited when retaining means for the lighter ignition mechanism is released by an operating member operatively connected to the retaining means, with a stand or holder therefor, said lighter being slidable longitudinally within said holder, said stand or holder having cam means for engagement with said operating member, said cam means and said operating member being adapted to co-operate with one another when said friction lighter is displaced longitudinally relatively to said holder whereby said retaining means is actuated to release said ignition mechanism for operation, the said friction lighter being detachable from said holder and the said longitudinal displacement of said lighter relatively to said holder comprising slidably withdrawing said lighter from said holder.

7. A stand or holder for a friction lighter of the type adapted to be automatically ignited when retaining means for the ignition mechanism is released by an operating member, comprising a casing having an open end into which said friction lighter can be slidably inserted, and cam means comprising a member fixed on a side wall of said casing, said member having a cam surface inclined relative to said side wall and disposed in the path traversed by said operating member as the lighter is displaced longitudinally within said casing, whereby said operating member will be actuated to release said retaining means.

8. In combination, a complete friction lighter unit comprising a fuel reservoir, wick and spring-biased ignition mechanism; means to retain said spring-biased ignition mechanism in cocked position, an operating member adapted to release said retaining means, and a stand or holder adapted to slidably receive said complete lighter unit, said holder comprising a casing and a protuberance mounted on a side wall of said casing having a cam surface inclined relative to said side wall and positioned in the path traversed by said operating member and adapted to engage it when said friction lighter is displaced rectilinearly relative to said holder, thereby causing the release of the retaining means whereby to ignite the wick.

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CECIL WILFRED MOORE.

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