June 14, 1960 G. W. OWEN 2,940,286

PYROPHORIC LIGHTER

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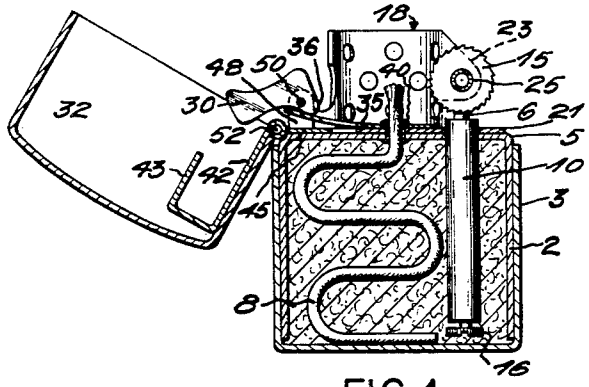


FIG. 1.

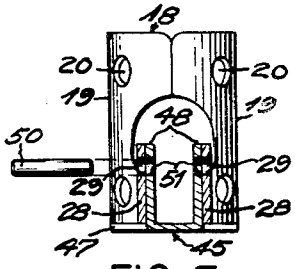


FIG. 3.

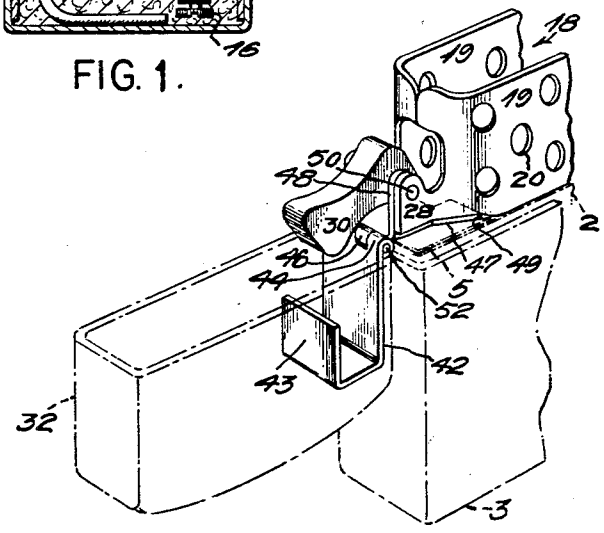


FIG. 2.

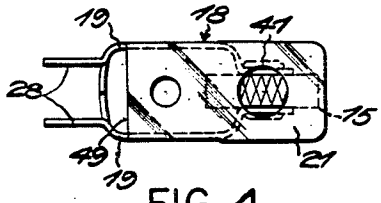


FIG. 4.

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FIG. 7.

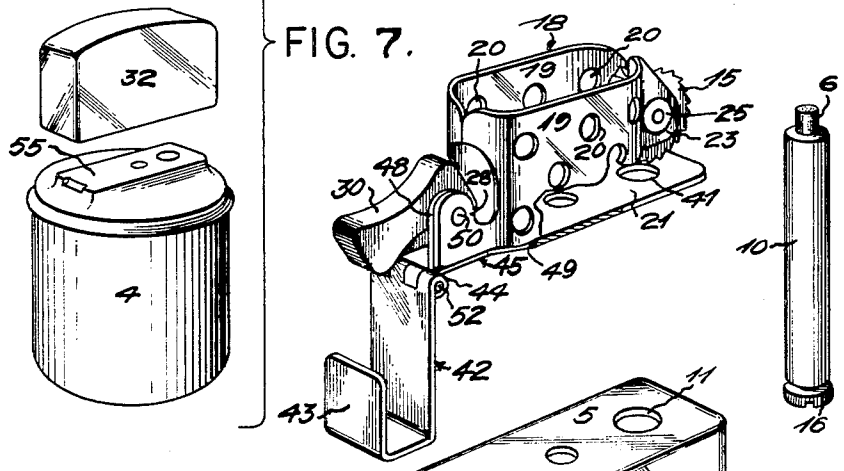


FIG. 5

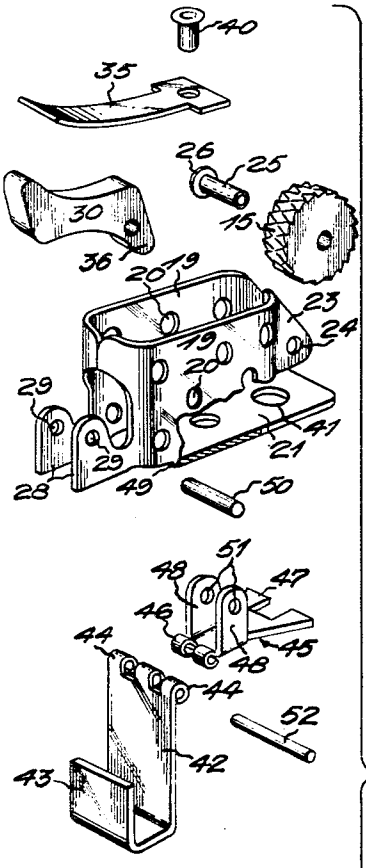


FIG. 6.

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PYROPHORIC LIGHTER

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6 Claims. (Cl. 67—7.1)

This invention relates to cigar or cigarette lighters and consists of improvements in the construction thereof.

One object of the improvement is to provide a construction in which the parts subject to wear or damage in use may be readily removed from the lighter for repair or replacement.

Another object of the invention is to provide readily releasable means for attaching the hinge-elements of the cover to the main casing of the lighter to provide for their removal for repair or replacement.

Another object is to provide a hinge-element for the cover of the lighter that may be rigidly mounted on its casing without attaching it thereto by riveting, soldering, brazing or other permanent fastening means.

Another object is to provide a hinge-element on the lighter in which the means for detachably fastening it thereto may comprise standard parts of the original construction thereof.

Another object is to provide a hinge-element supported on the main part of the lighter by engaging under the base of the windscreen and secured in place by the pin used for pivoting the spring-actuated latch-lever that releasably holds the cover in closed relationship on the lighter.

Further objects of the invention are disclosed in the following specification and illustrated by the accompanying drawings, in which:

Fig. 1 is a vertical, sectional view taken through the center of the lighter and showing the operating parts thereof;

Fig. 2 is an enlarged fragmentary perspective view showing the hinged mounting of the cover for the lighter with the main portions thereof illustrated by dot-and-dash lines;

Fig. 3 is an enlarged elevational view showing the end of the windscreen with the hinge-element and the parts for attaching it thereto illustrated in transverse section to indicate the manner in which they are connected together by a cross-pin;

Fig. 4 is a similarly enlarged bottom plan view of the base-plate of the windscreen by which it is mounted on the top of the fuel-chamber;

Fig. 5 is a perspective view of the main parts of the lighter shown as disassembled;

Fig. 6 is a perspective view of the operating parts of the lighter shown as disassembled and illustrating the wall of the windscreen as partly broken away to reveal its base; and

Fig. 7 is a composite perspective view showing a different construction of the fuel-chamber of the device adapted for use in the construction of table lighters.

The present improved cigar or cigarette lighter may be of conventional form comprising an inner reservoir or fuel-chamber with means mounted thereon for igniting the end of a wick protruding from the top by striking sparks from a pyrophoric element or flint.

The fuel-reservoir or chamber may be embodied in a hollow rectangular casing 2 as shown most clearly in

Fig. 5, and in accordance with a preferred form of construction it may be fitted to telescope within an outer housing or casing 3, sometimes constructed of precious metal such as gold or silver for ornamentation by engraving or the like. In other instances, however, the fuel-chamber may take different shapes such as the cylindrical container 4 illustrated in Fig. 7 to adapt it to fit within an ornamental enclosure having a base or supported from a standard or pedestal.

As is usual in pocket lighters of the type shown herein, the fuel-chamber or reservoir 2 may have flat sides and ends closed at the top by a plate 5. The bottom of the chamber 2 may be open thereacross for receiving the fuel which is usually held in suspension by a packing of cotton or other suitable absorbent material (Fig. 1). When assembled with the outer casing 3 the bottom of the latter closes the open bottom of the chamber 2, or in other instances a separate closure may be provided with means for opening it for filling the chamber with liquid fuel. A wick 8 is housed within the fuel-chamber 2 with one end protruding through an opening in its top wall 5. The pyrophoric element or flint 6 which is of cylindrical form is slidably mounted in a vertical tube 10 having its upper end projecting through an aperture 11 in the top of the chamber 2. A helical spring (not herein shown) held in the tube 10 acts to maintain the end of the flint 6 engaging against the serrated periphery of a disk or wheel 15 which is rotatably mounted above the chamber 2, with a screw 16 in the bottom of the tube 10 holding said spring under compression.

For protecting or shielding the flame from drafts a windscreen 18 is usually provided on top of the fuel-chamber 2 (Figs. 1–5). The windscreen 18 may be constructed with vertical side walls 19 turned inwardly at the ends and perforated with a plurality of apertures 20 for the air to circulate therethrough. The windscreen 18 may be generally of oblong shape in plan view and constructed integral with a base-plate or bottom wall 21 by a forming operation in dies, or in other instances it could be made separate therefrom and attached to said base-plate by soldering or otherwise. As shown more particularly in Figs. 3, 4 and 5, the side walls of the windscreen 18 are curved inwardly at its right-hand end and then bent outwardly in a pair of triangular-shaped ears 23. The ears 23 are pierced with holes 24 (Fig. 6) to receive a tubular pivot-pin 25 for rotatably mounting the striking wheel 15 with its serrated periphery projecting through an opening at the end of the windscreen 18 for engaging the end of the flint 6. The pin 25 has a head 26 at one end and its opposite end may be flanged or headed over to fasten it in the holes 24 in the ears 23.

At the opposite end of the windscreen 18 the side walls 19 are curved inwardly at the top and cut away toward the bottom to form a pair of ears 28 for rockably mounting a latch-lever 30 which is of usual construction for cooperation with a hollow cap or cover 32. A pin 50 held in holes 29 in the ears 28 serves as the pivot for the latch-lever 30. As is a conventional construction for lighters of the present type, the cover 32 is hinged at one end of the casing 2 to adapt it to be pivoted into open position as shown in Fig. 1, or swung down against the top of the casing to enclose and protect the operating parts mounted thereon. Referring particularly to this latter view, a leaf-spring 35 is secured at one end flat against the top of the base 21 of the windscreen 18 with its forward end curved upwardly for engagement with the rounded toe portion 36 at the pivoted end of the latch-lever 30.

The spring 35 is fastened against the top of the base-plate 21 of the windscreen 18 and the base-plate itself held down against the flat top of the fuel-chamber 2 by means of an eyelet 40 headed over at its ends to form

a hollow rivet. The eyelet or hollow rivet **40** thus provides means for holding the wick **8** which has its end inserted therethrough to project upwardly within the confines of the windscreen **18**. It will also be observed by reference to Fig. 1 that the upper end of the flint tube **10** projects through a hole **11** in the top of the chamber or casing **2** and a hole **41** in the base of the windscreen **18**, either having a drive fit therein or being soldered in the hole in the top of the chamber. Through this form of construction economy in the cost of manufacture is secured by the elimination of rivets, screws or other fastening means. However, if desired the base-plate **21** of the windscreen **18** may be soldered or brazed to the top wall of the chamber or reservoir **2**.

In accordance with a usual form of construction the cap or cover **32** is provided with a hinge-member **42** in the form of a flat metal strip fastened to the inside of its end wall and formed at one end with hinge-ears **44** (Figs. 2 and 6). The hinge-member **42** may be soldered to the end wall of the cover **32** or in other instances gripped frictionally therein as described in United States Letters Patent No. 2,774,234 of December 18, 1956. The member **42** has its opposite end bent at right-angles and then inwardly in parallel relation to its main length to form a square hook **43** for cooperation with the latch-lever **30**. When the cover **32** is closed the member **42** will engage the free end of the latch-lever **30** to pivot it clockwise and compress the spring **35** for causing it to snap the cover down against the top of the casing. In this way the latch-lever **30** engages its flat end with the top of the spring **35** and is held resiliently for releasably latching the cover in closed relationship. As the cover **32** is swung into open relationship the opposite inturned hooked end **43** of the member **42** engages under the latch-lever **30** to rock it counterclockwise and cause the spring **35** to swing the cover open with a snap action in the manner well known to those versed in the art.

Referring to the detailed view of the two hinge-elements at the bottom of Fig. 6, the member **42** is usually constructed with three hinge-ears **44** curled over at its end; whereas, the fixed hinge-element **45** may have only two hinge-ears **46**. A pin **52** is inserted through the ears **44** and **46** to connect the cover **32** to the casing **2** with a piano-type hinge. In lighters of the present type, the fixed hinge-element **45** is usually constructed integral with the inner casing of the lighter or it may be permanently fastened thereto by soldering, brazing or the like.

It has been a common experience with lighters of the present type that repeated opening of the cover causes wear and strain on the hinges, particularly the fixed hinge-element and this part of the hinge is frequently fractured or broken away from its mounting. In such case the whole of the element to which the hinge is attached must be discarded or a new hinge part applied to the lighter. Such repair or replacement of the parts generally requires return of the lighter to the manufacturer with loss of its use and considerable expense for shipping and making the repair. Therefore, as an important improvement in the art, the present invention provides a detachable hinge-element on the lighter itself which when damaged can be easily removed and replaced by a new element by the user himself without return of the lighter to the factory.

Referring to Figs. 2, 3 and 6, the hinge-element **45** may be constructed of sheet-metal and formed with a flat base-portion **47** having a pair of lugs or ears **48** bent upwardly from the sides of its narrower forward end. Portions of the metal at the front of the lugs **48** are curled around in the hinge-ears **46**, previously mentioned, while the rearward length of its base-portion **47** is widened in wedge-shaped contour with its edges conforming to the sides of the ears **28** at the forward end of the windscreen **18** where they merge into the side walls **19** of the screen. The base-portion **47** of the element **45** is of a thickness to adapt it to slide rearwardly in a slot or opening between the bottom edges of the ears **28** on the windscreen **18** and the flat top of the casing **2** to cause its rearward edge to abut the forward edge **49** of the base-plate **21** (Figs. 2, 4 and 6). As will be observed by reference to the bottom plan view of the windscreen **18** (Fig. 4) the base **21** is recessed rearwardly to provide the relatively narrow slot or reentrant opening beneath the ears **28**.

The vertical lugs **48** on the element **45** are of the same shape and dimensions as the ears **28** at the forward end of the windscreen **18**, being perforated with holes **51** adapted to register with the holes **29** in the ears **28** (Fig. 3) to receive a pin **50** inserted therethrough for pivotally mounting the latch-lever **30**. The pin **50** thus has another purpose, namely to secure the element **45** fixedly in place at the top of the casing **2** with its hinge-ears **46** registering with the ears **44** on the hinge-member **42** of the cover **32**. The smaller pin **52**, previously referred to, is inserted through the ears **44** on the member **42** and the ears **46** on the element **45** to hinge the cover to the casing **2** of the lighter. By this novel and ingenious form of construction the hinge-element **45** is securely fastened in place in the slot beneath the ears **28** on the windscreen **18** with its base portion **47** seated flat against the top of the casing and prevented from play or rocking motion thereon. Preferably, the top of the casing **2** is indented at its forward end to form a depression **53** (Fig. 6) providing clearance for the several hinge-ears **44** and **46**. In this way the cover is hinged closely to the side of the casing **2** with the axis of its hinge in line with the end wall of the outer casing **3** to effect a smooth neat joinder of the parts. In other words, when closed the cover will mate exactly with the sides of the outer casing **3** to provide a smooth unbroken finish on all sides of the lighter.

It will be understood from the above explanation that should the hinge between the casing and the cover **32** be damaged by rupture or breaking away of the hinge-ears **46**, the hinge-joint may be readily repaired by replacement of the element **45** with a new part. That is to say, it is only necessary to remove the pin **50** by forcing or driving it out of its bearings in the holes **29** and **51**, and also removing the hinge-pin **52**, whereupon the hinge-element **45** may be withdrawn from under the edges of the ears **28**. The damaged part may then be discarded and a new hinge-element **45** inserted in its place by reversing the operation and replacing the pins **50** and **52**.

As before stated, Fig. 7 illustrates a cylindrical fuel-container or reservoir **4** for use with table lighters, it being noted that a rectangular boss **55** formed on its top wall provides for applying a windscreen **18** and hinge-element **45** thereto in the same manner as described in connection with the pocket lighter shown in the other views.

It will be observed from the foregoing specification that the present invention provides an ingenious and simple form of construction for mounting the parts of a hinge-joint for lighters to allow replacement of the elements when wear or accidental rupture renders them damaged. Moreover, the improved construction and method of mounting the parts of the device make for economy in the cost of manufacture of the lighter by the elimination of screws, studs and soldered connections. Consequently, the lighter may be manufactured at reduced cost to render it merchantable at a relatively low price. At the same time the complete article presents a neat and finished appearance without obtrusive mechanical parts visible to mar its ornamental appearance.

While the device is herein illustrated and described as embodied in a preferred form of construction, it is to be understood that variations may be made in the structure and arrangement of its parts without departing from the scope of the appended claims. Therefore, without limiting myself in this respect, I claim:

1. In a lighter of the type indicated comprising a hollow casing having a substantially flat top, a windscreen on the

top of said casing formed with vertical walls having integral ears projecting therefrom in spaced parallel relationship, a cover having a hinge-member thereon, a hinge-element for connecting said hinge-member on the cover to said casing, said hinge-element having a portion engageable between the lower portion of the ears on said windscreen and the top of the casing, ears on said hinge-element disposed in abutting relation to the ears on the windscreen, and a pin inserted through holes in the ears on the windscreen and the abutting ears of the hinge-element to fixedly mount the hinge-element on said casing in position for connection to said hinge-member on the cover.

2. In a lighter for cigarettes and cigars, a casing having a substantially flat top, a member surmounting the top of the casing and formed with a pair of integral vertical ears spaced above the top of the casing to provide a horizontal slot therebetween, a hinge-element having a bottom portion slidably received in the slot beneath said ears, said hinge-element constructed with vertical ears disposed in abutting relation to the first-named ears, releasable means connecting the pairs of abutting ears for fastening the hinge-element rigidly in place on the casing while adapting it to be removed therefrom for repair or replacement, a cover for the casing, and means on the cover for pivotally connecting it to said hinge-element on the casing.

3. A cigar or cigarette lighter comprising a hollow casing for fuel constructed with a substantially flat top, a walled member surmounting said casing with its bottom wall fastened to the flat top thereof and formed with opposed ears projecting upwardly therefrom in parallel spaced relationship, said ears having their bottom edges spaced above the flat top of said casing to provide a slot therebetween, a hinge-element having a flat bottom wall inserted in said slot beneath the ears of said walled member and formed with upstanding spaced ears abutting the ears on said walled member, a pin inserted through alining holes in said ears on the walled member and the ears on the hinge-element to fasten the latter to the casing while adapting it to be removed therefrom for repair or replacement, a cover for the top of the casing, and means on said cover for pivotally connecting it to the hinge-element on the casing.

4. A lighter for cigarettes and cigars comprising a hollow casing for fuel having a substantially flat top, a walled windscreen fixedly secured to the top of said casing, said windscreen constructed with a pair of integral upstanding ears projecting from its wall with their

bottom edges spaced above the top of the casing to provide a slot therebetween, a hinge-element having a bottom portion inserted in said slot and formed with upstanding ears in abutting engagement with the aforesaid ears on the windscreen, a removable pin projecting through alining holes in the ears on the windscreen and the ears on the hinge-element to releasably attach the latter to the casing, a cover for the casing, and interengaging means on said cover and hinge-element for pivotally connecting the cover to the casing.

5. A lighter for cigarettes and cigars comprising a casing having a substantially flat top, a structure surmounting said casing and constructed with a pair of opposed integral ears with portions thereof spaced above the top of said casing to provide a relatively narrow horizontal slot therebetween, a hinge-element having a bottom portion inserted in said slot to mount it on said casing and formed with a pair of upstanding ears disposed in abutting engagement with said first-named ears, a removable pin projecting through alining holes in the abutting ears aforesaid for attaching said hinge-element fixedly in place on said casing, a cover for the top of said casing, and interengaging means on said cover and hinge-element for pivotally connecting the cover to the casing.

6. A lighter for cigarettes and cigars comprising a casing having a substantially flat surface on its top, a member surmounting said casing with portions thereof spaced above its flat surface to form a slot therebetween, said member having integral portions arranged in spaced parallel relationship and pierced with alining holes, a hinge-element having a portion thereof inserted into the slot between said member and the flat surface on the casing with other portions thereof engaging against the pierced portions of said member and pierced with holes alining with the aforesaid holes therein, a removable pin inserted through said alining holes for securing said hinge-element in place on said casing, a cover for the top of said casing, and cooperating means on said cover and said hinge-element for pivotally connecting the cover to said casing.

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