June 25, 1957 F. H. BOWERS 2,796,629

HINGE MOUNTING FOR LIGHTER COVERS

Original Filed Nov. 27, 1951

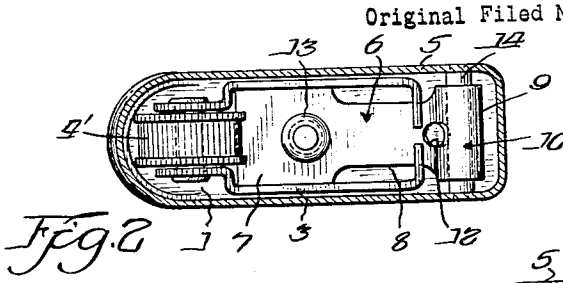


Fig. 2

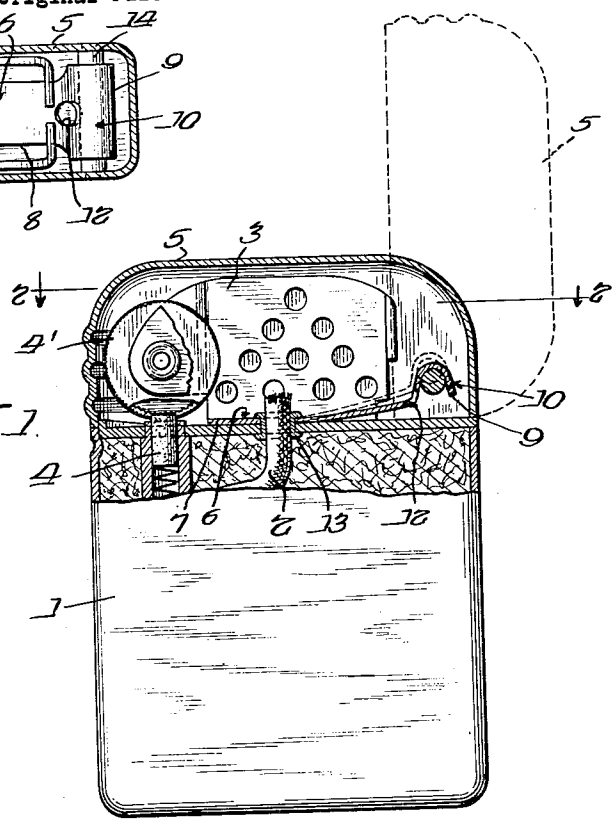


Fig. 1

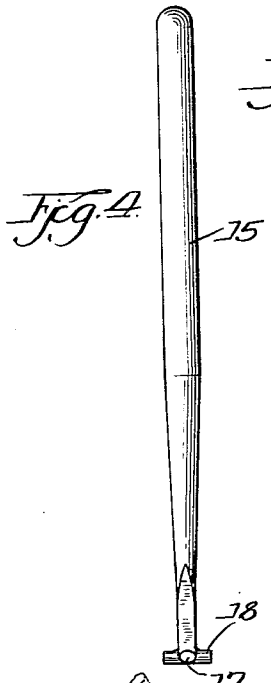


Fig. 4

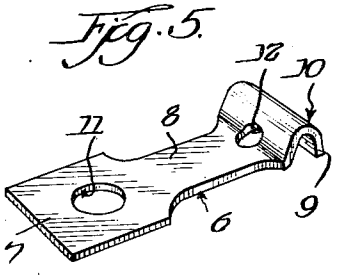


Fig. 5

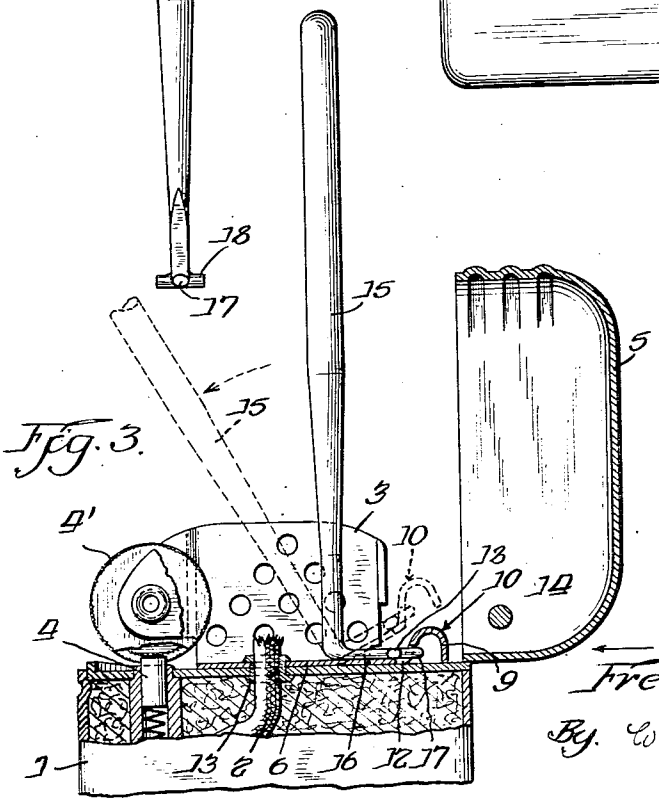


Fig. 3

Inventor:
Fredrick H. Bowers.
By. W. F. Kellogg
Atty.

United States Patent Office 2,796,629 Patented June 25, 1957

2,796,629

HINGE MOUNTING FOR LIGHTER COVERS

Fredrick H. Bowers, Kalamazoo, Mich., assignor to Brown & Bigelow, St. Paul, Minn., a corporation of Minnesota

Continuation of abandoned application Serial No. 258,424, November 27, 1951. This application August 30, 1954, Serial No. 452,903

2 Claims. (Cl. 16—150)

This invention relates to improvements in spring hinge mountings for the covers of receptacle cases and is a continuation of application Serial No. 258,424, filed November 27, 1951, now abandoned.

It is an object of the invention to provide a hinge mounting especially adaptable and advantageous for use in swingably mounting the cover of a pyrophoric lighter (cigar and/or cigarette lighter) on the case thereof, whereby the burner, flint wheel and other active parts thereon will be normally covered and shielded, and as and when desired, may be uncovered for lighting usage, by swinging said cover to its open position.

It is, moreover, an object of the invention to provide a hinge mounting device of the above character, possessed of inherent spring qualities and which is so arranged on and connected to the lighter case top side and to the lighter case cover that said cover will be securely though movably retained in its open position following swinging thereto, and will have its rate or speed of swinging movement to and from its open and/or closed positions with relation to the lighter case accelerated under the urge of the spring hinge.

Yet another object of the invention is to provide a spring hinge of such construction that the same, following its mounting on the lighter case top side, can be easily, quickly and surely connected to or engaged with the case cover whereby to improve or accelerate its rate, and hence, economy of assembly, and the cover will be substantially spring yieldably tetheringly pivoted to said case, and when desired or required, can be as easily, quickly and surely disconnected therefrom, and thus facilitate certain kinds of repairs or parts replacement.

The foregoing, as well as other objects, advantages and meritorious teachings of my invention, will be in part obvious and in part pointed out in the following detailed disclosure thereof, when taken in conjunction with the accompanying drawings, it being understood that the form of the invention presented herein is precise and what is now considered to be the best mode of embodying its principles, but that modifications and changes may be in specific embodiments without departing from its essential features.

In the drawings:

Figure 1 is a composite side elevational and longitudinal sectional view of and through a manually operable pyrophoric lighter employing my improved form of hinge mounting.

Figure 2 is a transverse section taken on the line 2—2 of Figure 1, looking in the direction in which the arrows point.

Figure 3 is a longitudinal section of the upper portion of the pyrophoric lighter, showing the cover thereof in position for hinge connection with the improved hinge, plus the assembling tool used in such operation (shown in elevation), with the hinge and the tool in dotted line positions wherein said hinge is in position to be engaged with and over the lighter cover pivot pin.

Figure 4 is an elevation of the assembling tool taken

at right angles to the position of such tool as shown in Figure 3, and

Figure 5 is a detail in perspective of the improved cover mounting hinge.

Referring in detail to the drawings, my invention is applicable to that type of pyrophoric lighter wherein the lighter case, housing, etc., 1 is provided with a flat upper side on which the flame initiating and producing members, such as a wick 2, wind guard 3, spring pressed flint 4, and flint wheel 4', are mounted in cooperatively grouped relation. Whereas, the flint wheel shown in the drawing illustrated lighter embodiment is of a manually operable character, it will be understood and appreciated that an automatically operable one may be substituted in lieu thereof, without departing from the ambit of the invention; moreover, that the drawing shown wind guard may be changed or modified, such as conditions or preference may indicate.

A cover 5 is provided the lighter case 1, being adapted to normally cover its upper side and said flame initiating and producing members. Said cover may be of any desirable or suitable shape and size; the form herein shown being substantially hood-like and its size or covering area being such that the same substantially corresponds to the horizontal cross-sectional shape and size of the lighter case 1, for obvious reasons.

As hereinbefore stated, the cover 5 is swingably connected to or mounted on the lighter case in proximity to one end of its upper side and is optionally movable to open or closed positions with relation thereto (see Figures 1 and 3), all as hereinafter more specifically described. To effect such mounting, my advantageous and novel form of hinge is employed. It consists of a single piece or strip of flat, sheet-like spring material, generally identified by the numeral 6, of elongated rectangular formation. The opposite end portions of this strip are wider than is its intermediate portion. The end portion 7 and the intermediate portion 8 are flat, while the opposite end portion 9 is shaped transversely of itself, by stamping or other appropriate and satisfactory operation, to form a transverse cross-sectionally substantially U-shaped bracket or lip 10. As well shown in Figure 2 of the drawings, the widths of the spring strip portions 7 and 9 approximately correspond, though it is not necessary that the end portion 9 shall be of such width. To the contrary, it may, if desired, be somewhat wider, though no wider than the case 1 upper side or the inside width of the cover 5.

The spring strip end portion 7 has an opening 11 formed in and preferably intermediately of the same, while its end portion 9 has an opening 12 formed therein adjacent or in proximity to its inner end and at the medial point of upward shaping or bending thereof into the downwardly opening bracket 10.

In order that the improved hinge shall be operatively mounted on and connected to the case 1 upper side, the spring-like body thereof (formed as above described) is placed flatly on and longitudinally of the same (see Figure 3). The opening 11 in the end portion 7 is registered with an opening in the case upper side. Thereupon, a sleeve rivet 13 is passed through the registered openings, clinched or upset, and the hinge thus end-secured to said case upper side. At this time, it will be noted that the downwardly opening bracket 10 is in full contact with or bearing on an adjacent surface of the case upper side, but is capable of being moved upwardly away therefrom because of the inherent spring property of the hinge strip or body 6.

The lighter wick 2 is now engaged through the said sleeve rivet 13 and satisfactorily extended therefrom, for an obvious purpose.

It is now in order that the lighter case cover 5 be swing-

ably connected to the case. Said cover has a pivot pin **14** or its equivalent transversely and fixedly engaged in its normally outward or rearward end in spaced relation to its rearward end wall and the open inner or lower side thereof. This placement or mounting of the pivot pin is such that the distances from it to said rearward end wall and an open inner side of the cover **5** are greater than the depth of the hinge free end bracket **10**, as well be noted upon reference to the drawing Figures 1 and 3. To effect this swingable connection, I advantageously employ an assembling tool **15** consisting of handle and shank portions and an angularly disposed arm **16** on its lower end, from which a finger **17** extends. Stops **18** may, if desired, be laterally extended in opposite directions from the arm **16** in proximity to but inwardly of the finger **17**. In using this assembling tool, it is placed on the now flat spring body **6** of the mounting hinge in the manner shown in Figure 3. The tool, with its arm **16** and finger **17**, is now moved so as to effect a limited but positive entrance and engagement of the finger into the opening **12** in the free or unsecured end of the spring body adjacent the downwardly opening bracket **10**. The cover **5**, endwise positioned, as also shown in Figure 3, is now arranged adjacent the inner or rearward end of the case upper side. Thereupon, the assembling tool is fulcrumed or rocked on its point of bearing on the intermediate and narrower portion **8** of the hinge body **6** to or approximately to the dotted line showing in Figure 3, causing said body to be flexed across its intermediate portion upwardly from the case upper side when the bracket **10** will have been spaced sufficiently therefrom to allow the cover **5** and its mounted pivot pin **14** to be moved inwardly and the pin aligned with said bracket. At this time, pressure on the handle of the assembling tool is decreased, allowing it, under the urge of the spring body **6**, to return to its initial or full line shown position and the bracket **10** to be straddlingly engaged with and over the pivot pin **14**. The cover **5** will now be swingably connected to the lighter case **1** via the pivot pin and hinge spring body **6**. The assembling tool is removed.

Due to the comparatively narrower formation of the intermediate portion **8** of the spring body **6**, flexing of the same thereacross, with the described fulcruming of the body engaged assembling tool, will be more easily accomplished. Yet, the inherent spring of the flexed body will be sufficient to maintain a downwardly or inwardly directed pressure from the bracket **10** to the cover pivot pin **14** and prevent any possibility of accidental or other undesired disengagement therebetween. Furthermore, because of the spring pressure constantly exerted by the flexed hinge spring body **6** on the pivot pin of the cover **5**, swinging movement of said cover from its closed to open position, or vice versa, will, obviously, be facilitated and accelerated, and also, the cover will be effectually though movably retained in and at the extremities of its two positions, i. e., opened or closed with relation to the upper side of the lighter case **1**.

The end portion **7** of the hinge spring body **6** is of a width such as will permit its snug reception between the opposite side walls of the wind guard **3** (see Figure 2) and the bearing engagement of its opposite sides with and upon adjacent portions of said wind guard walls. In consequence, when secured to the lighter case upper side by the sleeve rivet **13**, the hinge spring body will be braced and positively anchored against lateral or twisting movement with relation thereto, and hence, will insure a strong and enduring hinge or swingable mounting of the cover **5** on the lighter case **1** and maintain its constant alignment with said case during and following pivotal or swinging movement thereof.

It is of importance to here note that the opening **12** in the bracket **10** end of the hinge spring body **6** is arranged in or extends into a horizontal plane above or beyond that of the portions **7** and **8** of said body. Therefore, it will be seen that the spring body lying flatly on or adjacent the case upper side, the finger **17** of the assembling tool **15** can be more easily and quickly engaged therein; also, that when an upward pull is imparted to the free and unsecured end of the hinge spring body, a somewhat lesser resistance to the upward or outward swinging of this bracket **10** will result, and so, will facilitate pivotal engagement thereof over and with the cover pivot pin **14**.

Rapid and easy disconnection of the hinge spring body from the lighter case cover **5** can, of course, be effected by use of the assembling tool **15** in a manner substantially the reverse of its above described use. By such use of the tool, repairs, replacement, etc., of a lighter and parts thereof will be facilitated. The cover **5** may be adapted to the free end bracket **10** without the tool **15** if desired.

I claim:

1. A spring hinge for the swingable cover of a pyrophoric lighter, comprising a flat and straight body, and a substantially cross-sectionally U-shaped bracket formed on one end of said body opening onto its normally lower side in substantially co-planar relation thereto, said bracket having a receiving opening in an intermediate portion of one side thereof disposed in a horizontal plane above and offset from that of the body.

2. A spring hinge for the swingable cover of a pyrophoric lighter, comprising a flat and straight body, and a substantially U-shaped bracket formed on one end of said body opening onto its normally lower side in substantially co-planar relation thereto and extending entirely across said end, said bracket having a tool end receiving opening in an intermediate portion of one side thereof disposed in a horizontal plane above and offset from that of the body, the other end of said body formed with a substantially square portion having a hole formed centrally therethrough.

References Cited in the file of this patent

UNITED STATES PATENTS

2,075,883	Britsch	Apr. 6, 1937
2,275,022	Thomas	Mar. 3, 1942
2,480,317	Bowers	Aug. 30, 1949
2,615,710	Lyman	Oct. 28, 1952

FOREIGN PATENTS

835,812	France	Oct. 3, 1938