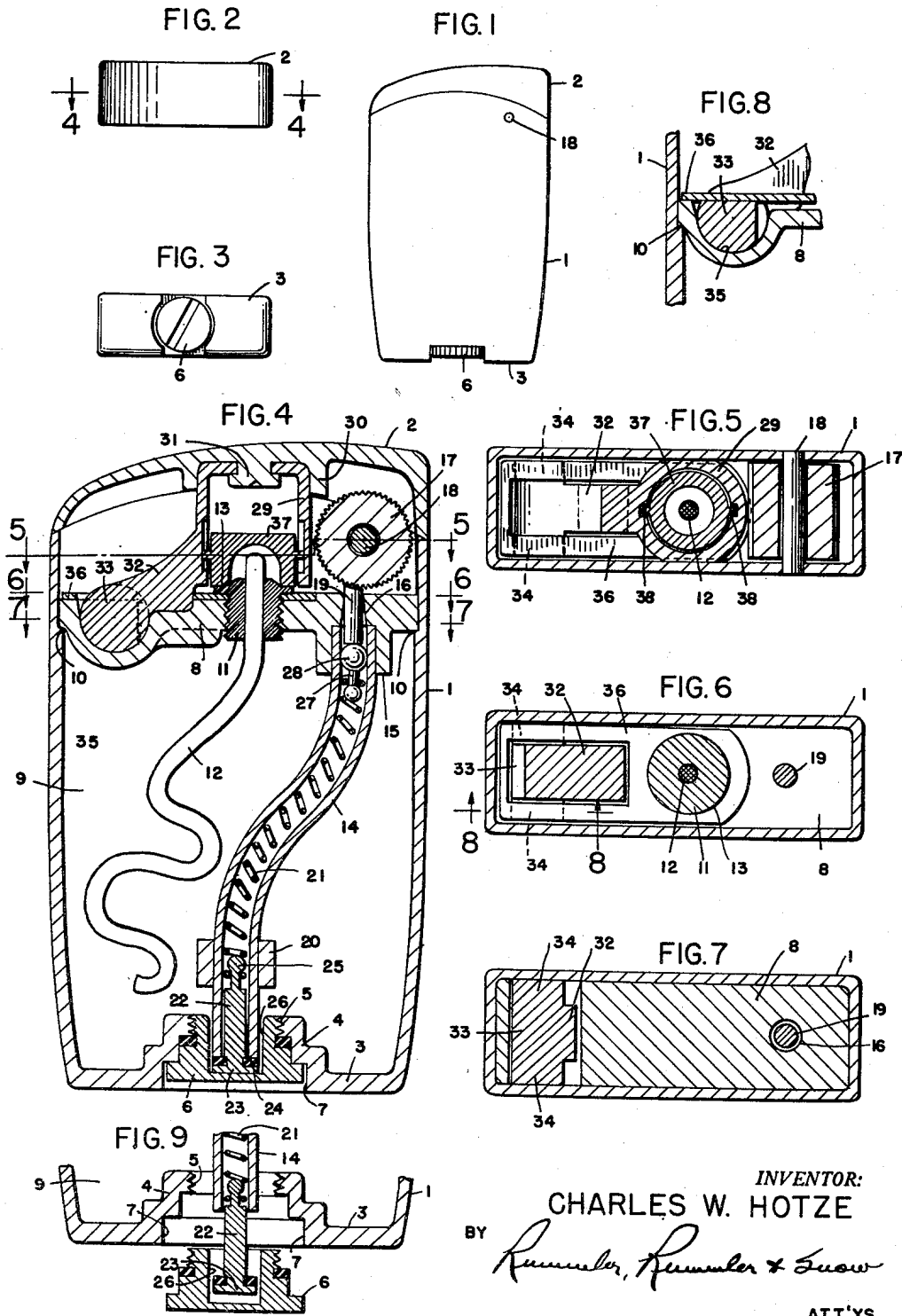


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LIGHTER CONSTRUCTION

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LIGHTER CONSTRUCTION

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This invention relates to cigar and cigarette lighters and particularly to such devices of the flint and wheel or sparking type utilizing a liquid fuel carried by a wick.

The main objects of this invention are to provide an improved lighter construction; to provide an improved construction and arrangement of the operating parts in a lighter whereby greater ease and economy in manufacture and assembly are obtained; to provide an improved cover and snuffer cap construction for lighters; to provide a lighter having an improved snuffer cap capable of more effectively sealing the wick opening when the lighter cover is closed; to provide an improved hinge and mounting means for lighter covers; to provide an improved hinge spring arrangement for lighter covers; to provide a lighter construction having an improved arrangement of the flint tube and the closure therefor; and to provide a lighter having an improved and more easily operated flint pressure means.

A specific embodiment of this invention is shown in the accompanying drawings in which:

Figure 1 is a side view of the improved lighter.

Fig. 2 is a top plan view of the same.

Fig. 3 is a bottom plan view of the same.

Fig. 4 is an enlarged vertical sectional view, as taken on line 4—4 of Fig. 2, showing the internal arrangement and construction of the improved lighter.

Fig. 5 is a transverse sectional view, as taken on line 5—5 of Fig. 4, showing the arrangement of the improved wick opening sealing means in the snuffer cap.

Fig. 6 is a similar view taken on line 6—6 of Fig. 5 to show the improved cover and snuffer cap spring and attachment means.

Fig. 7 is a similar view taken on line 7—7 of Fig. 4 showing the snuffer cap hinge member and its seating arrangement.

Fig. 8 is a sectional detail view taken on line 8—8 of Fig. 6 to show the hinge pintle construction, and

Fig. 9 is a fragmentary vertical sectional view of the bottom portion of the lighter, showing the filler-opening closure cap removed and the manner in which the flint pressure spring projects for easy access and removal.

In the form shown in the drawing, the improved lighter comprises a hollow flat-sided body 1, open at its top end and provided with a close fitting closure or cover 2 hingedly mounted on the body. As shown the pivot axis for the cover hinge is located within the lighter body and therefore the top margins of the body are curved

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in the vertical plane, on a radius from a point located within the body, so that the coacting margins of the cover, which are similarly curved, will clear the end margin of the body as the cover is swung on its hinge axis.

The bottom end of the body is closed by an integral end wall 3, which has a central inwardly projecting boss 4, and a counterbored and topped filler opening 5 therein adapted to receive a threaded closure plug 6 which will seat in the counterbored portion 7 and be substantially flush with the bottom end surface.

As shown in Fig. 4, a transverse partition or platform 8 is provided in the upper portion of the body 1 to form an upper end wall and close off the interior of the body to form an enclosed fuel chamber 9, and this platform is utilized both as a means to support the wick tube and flint and as a mount for the hinge for the swinging cover 2. The platform 8 is also shaped to have a pressed fit into the body 1, and the body is formed to provide an internal, outwardly facing peripheral shoulder 10 upon which the platform margins seat, so that the platform will be securely held and will tightly seal the fuel chamber 9.

The wick support tube, or member 11 is an externally threaded insert set into a tapped central opening in the platform 8 and is provided with the usual axial bore through which the wick 12 extends in the usual manner. As shown the upper end of the wick support tube 11 is of frustro-conical shape and below this tapered portion the wick tube has an integral radial flange 13 which serves as the attaching or mounting means for the cover and snuffer cap assembly, as will hereinafter appear. The flint tube 14 has its upper end drive fitted and secured in a downwardly extending collar 15 which surrounds an upwardly tapered opening 16 into which the flint is fed and held; and the opening 16 is located on the transverse to the center-line of the platform 8 below a striking wheel 17. The wheel 17 is rotatably mounted in the body 1, above the platform, on a fixed axle or pin 18 which is normal to both the platform center-line and the opening 16. As shown the lower end of the opening 16 is of the same size as the inside diameter of the flint tube 14 and the purpose of the taper in the opening is to provide a firm support for the flint 19, at the upper end of the opening, while permitting easy uninterrupted entry of the flint into the opening from the tube 14. Also the axis of the striking wheel 17 is slightly offset laterally from the opening 16 to provide for a tangential throw of sparks from the flint, in a gen-

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erally upward direction, toward the projecting end of the wick 12.

The flint tube 14 extends downwardly from the collar 15 and inwardly to the center of the body 1 where, near the bottom of the body, the tube passes through a bridge or support 20, extending transversely between the walls of the body, and terminates within the boss 4 on the body end wall 3. The bridge or support 20 is formed integrally in the body 1 and the tube opening or eye in the bridge is axially aligned with the filler opening 5. Also the eye in the bridge 20 is formed to closely fit the tube 14 so as to firmly support the same.

As shown in Figs. 4 and 9 the flint tube 14, in passing from the platform collar 15 through the bridge 20, is formed with double bends because of the laterally offset relation of the flint opening 16 and the central axis of the body 1 on which the filler opening is located. These bends are formed on the longest radii possible, within the length of the fuel chamber, and the internal diameter of the tube is sufficiently large that a flint of ordinary and more or less standard size will easily pass through the bends without jamming within the tube walls.

The flint 19 is held resiliently against the striking wheel 17 by a helical compression spring 21 which, in the usual manner, extends from end to end of the tube 14. In its free state, the spring 21 is considerably longer than the flint tube so that upon being compressed into the tube, it will continuously urge the flint toward the wheel 17.

As shown in Fig. 4, I have provided an improved arrangement for the flint pressure spring whereby better bearing contact is had with the flint and wherein the spring is more conveniently disposed for removal when flint renewal is necessary. First, I have provided a plunger 22 which is attached to the rear or outer end of the spring 21, and which is arranged to fit loosely in the bottom end of the tube 14. This plunger 22 is formed with a flanged head 23 at its lower end which supports a gasket 24 and serves as a closure for the flint tube, and at its upper end has an axial projection of reduced diameter which terminates in a ball 25. The ball 25 is larger than the inner diameter of the coiled spring 21 and serves to connect the plunger with the spring by being entered axially through one or more coils of the spring. As shown, the closure cap 6 of the filler opening 7, in the bottom end of the body 1, is provided with a recess 26 to receive the lower end of the flint tube 14 and this recess is of such depth as to receive the head of the plunger 22 and press it upwardly to cause the gasket 24 to bear on the end of the tube 14. Thus the cap 6 not only seals the filler opening but also causes the plunger to seal the flint tube so that fuel, contained within the body, will not leak into and through the flint tube.

When the cap 6 is removed, as shown in Fig. 9, the plunger 22 will be projected beyond the end of the body 1 by the spring 21 which expands upon being thus released, and the plunger may then be readily grasped to withdraw the spring for insertion of a new flint. The spring 21 will, however, only expand sufficiently to extend the plunger, because of the frictional resistance of the flint tube due to its double bend. Thus the spring is firmly retained in the tube and any danger of the spring being thrown out of the tube upon sudden expansion is completely obviated.

The second improvement in the flint spring ar-

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angement resides in the flint brace or pusher member 27 which is made in the shape of a dumbbell having ball-shaped ends one of which is of only slightly less diameter than the flint tube. The other ball end is of a size slightly larger than the inside diameter of the spring coils and is entered through the uppermost coil to attach the pusher to the spring. The larger ball end 28 of the pusher bears directly on the end of the flint and, because of its spherical shape, centers the flint in the opening 16, leading to the striking wheel, so that the pressure on the flint will always be along the axis of the opening 16. In this manner the flint is prevented from jamming in the opening 16 and will at all times feed freely to the striking wheel 17.

As shown in Fig. 4, the platform 8 serves as the hinge support for the snuffer cap 29 which in turn serves to connect the cover 2 to the lighter assembly. The snuffer cap is centrally disposed within a collar 30 formed on the inside of the cover 2 and located to be directly above the wick tube 11 when the cover is closed, and is secured by staking over the end of a stud 31 which extends through a central opening in the top end of the snuffer cap.

The snuffer cap is a hollow open ended device, which surrounds and encloses the wick tube 11 when in closed position, and is provided with an integral laterally projecting hinge arm 32 which terminates in a cylindrically surfaced or rounded head 33 formed to provide a trunnion 34 on each side of the arm 32. This rounded head with its trunnions is disposed in an upwardly opening transversely extending channel or hinge seat 35, formed in the platform 8 on the side opposite the flint opening 16, and is held in position by means of the spaced extensions or legs of a flat U-shaped spring 36 which in turn is secured on the top side of the platform by the wick tube 11, which thus serves as a mounting screw.

The hinge seat 35 is preferably located below the top surface of the platform 8, as shown in Fig. 4, so that the legs of the hinge spring 36 can bear downwardly against the trunnions and yet lie flatly across the top of the platform and, as shown in Fig. 8, the trunnions 34 are provided with flat surfaces at right angles to each other which serve as detents on which the spring legs can rest to hold the hinge firmly in either open or closed positions. Thus the spring 36 serves not only as the means of attachment of the cover and snuffer cap assembly, through the hinge 32-33, but also as a means for holding the cover tightly closed or firmly in open position so that it will not loosely flop when the lighter is in use.

As shown, my improved snuffer cap is provided with additional means which provides a separate and independently acting seal for the upper end of the wick tube 11 to prevent the loss of fluid from the projecting wick when the lighter is not in use. This independent closure comprises an inverted cup-shaped member 37, disposed slidably within the snuffer cap 29, and having a depending margin or rim formed to seat squarely on the flange 13 of the wick tube 11 so as to surround the wick opening and the projecting wick. The member 37 is made of a "permanently" magnetized material and the wick tube 11 is made of a suitable magnetic material against which the member 37 will be attracted. Thus the independent closure 37 is self-seating and will securely hold itself on the wick tube 11 until it is forcibly pulled away, as by opening the cover 2.

The snuffer cap 29 in which the member 37 is mounted is, of course, made of a suitable non-magnetic material.

The closure 37 is mounted in the snuffer cap 29 by means of oppositely projecting radial pins 38 which slide in appropriately positioned axial grooves 39 formed in the snuffer cap side walls. This arrangement permits free movement of the closure 37 relative to the snuffer cap and independent seating of the magnetized closure 37 on the wick tube. Thus a direct and positive opening action on the cover 2, to lift the snuffer cap, is required before the closure 37 can be unseated. It will be understood, of course, that, if desired, the wick tube 11 may be magnetized and the closure 37 be of magnetic material to obtain the independent sealing effect.

The main advantages of this invention reside in the combination of the several improved structural features which provides a lighter that is more convenient in its use and operation and which permits a better and less costly assembly of the several elements of the device. In particular the arrangement of the platform or upper end member of the lighter with its improved hinge arrangement for the cover and snuffer cap assembly affords a simplification of the lighter construction that is not only less costly to manufacture but which also is more easily operated, of longer life and much less likely to get out of order.

Other advantages are to be found in the improved snuffer cap construction with its magnetized wick sealing insert which provides a positive independent closure of the wick tube, when the cover is closed, and which at the same time is readily opened by manipulation of the cover in one single operation.

Further advantages reside in the improved spring-seated hinge construction which eliminates the usual hinge pin; provides a single means for mounting the entire cover assembly onto the lighter structure; and provides a simple means for holding the cover securely in either opened or closed position, eliminating the usual looseness and wobble of the ordinary cover mountings.

And still further advantages are to be found in the improved arrangement of the flint follower and pressure spring arrangement whereby a single central opening at the bottom of the lighter body may be employed and wherein the flint spring is retained in the flint tube during the fuel filling operation but at the same time is readily accessible for removal when desired; and in the flint tube arrangement wherein the lower end of the flint tube is housed in the end opening of the lighter and is yet projected sufficiently to permit easy filling of fuel without danger of the fuel fluid entering the wick tube itself.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. A device of the class described, comprising a hollow upstanding body having a transversely extending upper end wall disposed to close said body and provide a fuel chamber therein, said end wall having an opening leading to said fuel chamber, a wick tube mounted in said opening and having a peripheral flange overhanging the

upper margin of said opening, a cover formed to enclose the upper end of said body, a hinge arm extending downwardly from the inside of said cover to said end wall and having a cylindrical transversely disposed end bearing seated on said end wall, and a spring member mounted flatly on the top surface of said end wall and having a portion overlying said cylindrical end bearing and adapted to hold the same rotatably seated on the said end wall, said spring member extending across the opening to the fuel chamber and having an aperture adapted to receive said wick tube, and the flange of said wick tube being engaged on said spring member to clamp the same against said upper end wall.

2. A device of the class described, comprising a hollow body closed at one end and open at the other and having a partition disposed in the open end to define a fuel chamber within said body, said partition having a pair of spaced openings therein and the bottom end of said body having a centrally disposed filler opening, a flanged wick tube seated in one of said partition openings from the top side thereof, a flint tube leading downwardly from the other partition opening to said filler opening, a striking wheel rotatably mounted above said other partition opening on a transversely disposed axis and with its periphery directed toward said wick tube, a coiled flint pressure spring disposed in said flint tube and having a bearing member at its upper end adapted to bear on a flint and urge the same through said other opening against said striking wheel, a plug member attached to the lower end of said coiled spring and fitting into said flint tube, said plug having a flanged head adapted to fit against the bottom end of said flint tube, a closure for said filler opening adapted to bear on the flanged end of said plug and hold the same in said flint tube against the pressure of said coiled spring, a cover formed to fit over the top end of said body, an arm extending downwardly from said cover to said partition and having a transversely disposed cylindrical end bearing seated on said partition, and a flat spring disposed on the top side of said partition with one end overlying said cylindrical end bearing and the other end clamped between said partition and the flange of said wick tube, said arm being adapted to pivot on the axis of its said end bearing to swing said cover to open and closed positions relative to the top end of said body.

3. In a lighter comprising a hollow body having an end wall adjacent its upper end adapted to support the wick and flint elements of a lighting means, and a cover mounted at the upper end of the body and adapted to enclose the wick element, a hinge means for said cover comprising an arm extending from said cover to the top surface of said end wall and terminating in a laterally projecting cylindrically surfaced bearing seated on said end wall and formed to turn on an axis that is parallel with the top surface thereof, a spring member disposed on said end wall substantially parallel therewith and having a free end normally biased toward said end wall and extending across said bearing on the upper side thereof, and a wick tube mounted in said end wall and adapted to secure the other end of said spring member fixedly on said end wall.

4. In a lighter comprising a hollow body having an end wall adjacent its upper end adapted to support the wick and flint elements of a lighting means, and a cover mounted at the upper end of the body and adapted to enclose the wick element,

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a hinge means for said cover comprising an arm extending from said cover to the top surface of said end wall and terminating in a cylindrically surfaced bearing seated on said end wall intermediate the ends thereof and formed to turn on an axis that is parallel with the top surface thereof, said bearing projecting laterally from opposite sides of said arm, a spring member disposed on said end wall and having parallel laterally spaced legs extending over and bearing resiliently upon the respective projecting portions of said bearing, and a wick tube mounted on said end wall and adapted to secure said spring member fixedly on said end wall.

5. In a lighter comprising a body having a transverse upper end wall and a pivotally connected cover adapted to enclose said end wall, a hinge means for said cover comprising an arm extending laterally downward from the central inside portion of said cover to the surface of said end wall adjacent one end thereof, said arm terminating in an integral cylindrically surfaced end bearing disposed on an axis parallel with the plane of said end wall and normal to the plane of said arm, said bearing having a portion projecting axially from said arm, a recessed bearing seat formed in the upper surface of said end wall coaxially with said end bearing and adapted to rotatably seat the same, and a cantilevered spring having one end secured on the upper surface of said end wall and having its free portion overlying the projecting portion of said end bearing to retain said bearing in said seat.

6. In a lighter comprising a body having a transverse upper end wall and a pivotally connected cover adapted to enclose said end wall, a hinge means for said cover comprising a single arm extending downwardly from the top central inside portion of said cover to the surface of said end wall adjacent one end thereof, said arm terminating in a cylindrically surfaced end bearing disposed on an axis parallel with the plane of said end wall and normal to the plane of said arm, said bearing having a portion projecting axially from each side of said arm, a recessed bearing seat formed in the upper surface of said end wall coaxially with said end bearing and adapted to rotatably seat the same, and a flat spring extending across the upper surface of said end wall and having a pair of laterally spaced cantilevered fingers respectively overlying the projecting portions of said end bearing, said spring being secured to said end wall laterally of said bearing seat.

7. A lighter comprising a hollow body having an upper end wall, said end wall having a wick opening and a wick projecting upwardly therefrom, a snuffer cap adapted to enclose said wick and wick opening and having a laterally projecting arm terminating in a cylindrically surfaced bearing seated on said end wall, said bearing being rotatable on an axis disposed parallel with said end wall and having a portion projecting axially from said arm, and said arm and snuffer

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cap being swingable upwardly on said bearing, a spring secured on said end wall and having a free finger portion extending over and engaging the axially projecting portion of said bearing to hold said bearing on its seat, and a cover member adapted to fit the end of said lighter body and enclose said end wall, said cover being attached to said snuffer cap and swingable therewith to uncover said end wall.

8. A lighter construction comprising a hollow body having a transverse upper end wall, said end wall having an opening therethrough, a magnetic metal wick support member mounted in said opening and having a central passage for a wick leading from below said end wall, said wick support member having a peripheral flange adjacent its upper end, a snuffer cap disposed over said wick support member and adapted to enclose the same, an inverted cup-like magnetic metal sealing member slidably mounted within said snuffer cap for relative movement along the axis thereof and having its open-end rim formed to seat marginally on the upper end of said wick support member, one of said members being magnetized, means to retain said sealing member within said snuffer cap, an arm extending laterally from said snuffer cap and terminating in a cylindrical end bearing rotatably seated on said end wall, said bearing having an axis parallel with the plane of said end wall and normal to said arm, a cantilevered spring having one end secured to said end wall beneath the flange of said wick support member and its free end extending across the upper side of the end bearing of said arm whereby said arm is held pivotally attached to said end wall, and a cover fixedly mounted on said snuffer cap and wholly supported thereby, said cover being adapted to enclose the upper end portion of said body.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
939,628	Puffer	Nov. 9, 1909
1,937,080	Bilde et al.	Nov. 28, 1933
1,980,868	Maltner	Nov. 13, 1934
2,019,436	Gibson	Oct. 29, 1935
2,203,980	Hickman	June 11, 1940
2,385,364	Larson	Sept. 25, 1945
2,404,558	Yellin	July 23, 1946
2,430,323	Ayotte	Nov. 4, 1947
2,438,727	Troubh	Mar. 30, 1948
2,453,021	Konelsky	Nov. 2, 1948
2,472,282	Burchett	June 7, 1949

FOREIGN PATENTS

Number	Country	Date
19,005	Austria	Jan. 25, 1905
268,269	Italy	Oct. 9, 1948