

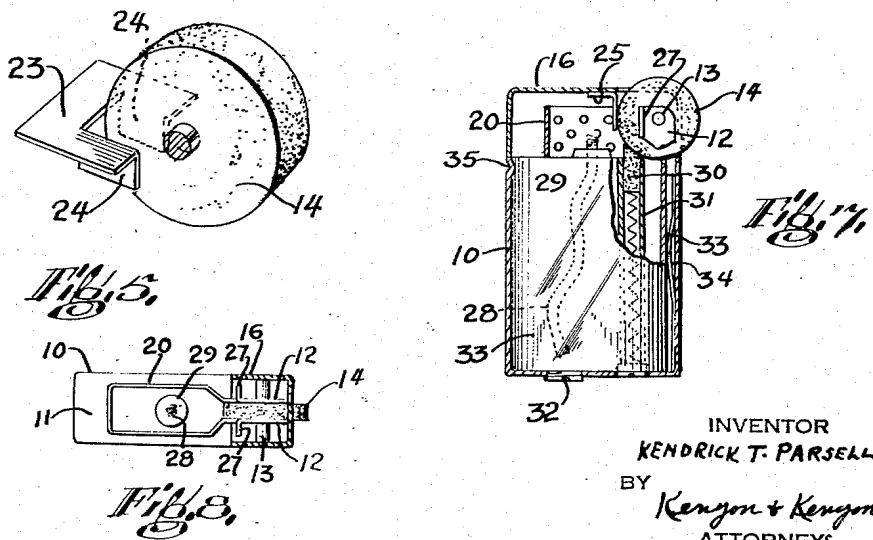
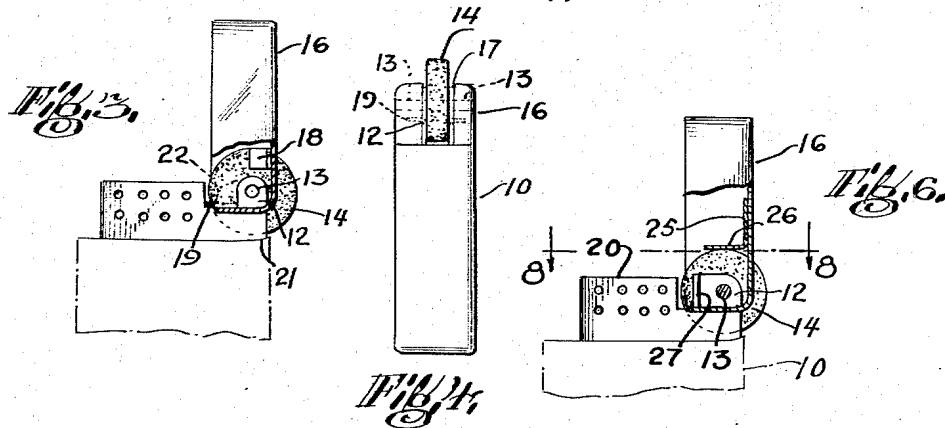
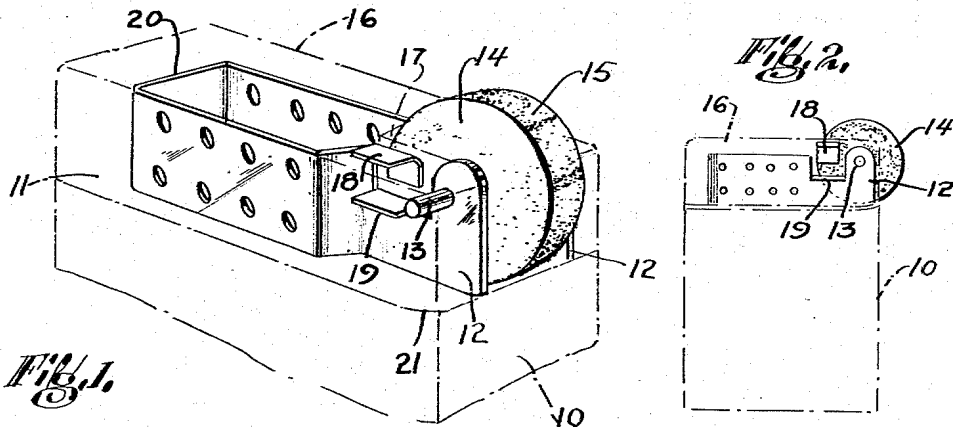
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LIGHTER

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LIGHTER

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This invention relates to lighters and relates more particularly to lighters of the type used for lighting cigars and cigarettes. The invention is applicable both to pocket lighters and table lighters of the character referred to.

It is an object of this invention to provide an improved lighter of the character above referred to which is efficient in action and economical to manufacture.

Further objects of this invention are the provision of an improved lighter having ignition mechanism which can be very readily operated by the user.

A still further object of this invention is to provide a lighter wherein the burner portion of the lighter is provided with an over-all protective cover.

A still further object of this invention resides in the provision of a lighter having the foregoing advantages which can be embodied in a very compact construction.

Further advantages of this invention and features utilized therein relates to the provision of a cover for the top of a case for a fuel reservoir which is hingedly mounted on the case and has a slotted opening therein through which the wheel element of an ignition device protrudes when the cover is in closed position, the wheel element being provided with a circumferential frictional surface which is utilized as by frictional engagement with an igniter flint for igniting a burner which is comprised in the top of the case within the confines of the cover when the cover is in closed position. The construction referred to has the advantage of providing a cover which is compact while permitting an ignition wheel to be utilized which is larger than that used in conventional lighters. In this way the lighter construction may be very compact while providing a large size igniter wheel which can be very readily and effectively operated by the user of the lighter.

Further features and advantages of this invention reside in providing a cover of the character aforesaid which is hingedly mounted for rotation between closed and open position about an axis which is coaxial with the axis of rotation of the igniter wheel. By this construction the common means may be employed for mounting an axis pin which is used both for the ignition wheel and the cover.

Further features and advantages of this invention relate to the provision of means coaxing between the cover and the ignition wheel when mounted for rotation about a common axis so that actuation of the ignition wheel simultaneously causes the cover to be opened so that even though an over-all cover is provided for the top of the lighter all that is required to use the lighter is to actuate with the thumb or finger the ignition wheel, thereby simultaneously causing the cover to be opened. When the lighter has served its purpose it is automatically extinguished merely by returning the cover to closed position.

Further features and advantages of this invention relate to the provision of means in structures of the character aforesaid for limiting the extent to which the cover may be hingedly opened and maintaining it in a position

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suitable for continued actuation of the igniter wheel when the cover is in fully opened position.

Further objects, features and advantages of this invention will be apparent from the following description of certain typical embodiments of this invention which for purposes of illustration and exemplification have been shown in the accompanying drawings, wherein:

Fig. 1 is a perspective view of the top portion of a lighter embodying this invention, the cover being indicated by outline as transparent so as to more clearly show the parts within the cover;

Fig. 2 is a side elevational view on a smaller scale as compared with Fig. 1 of the complete lighter shown in Fig. 1, the cover being in closed position;

Fig. 3 is similar to Fig. 2 except that it shows only the upper portion of the lighter and except that the cover is shown in full lines and in open position with a portion thereof in section;

Fig. 4 is an end elevational view of the lighter as viewed from the left hand side of Fig. 2;

Fig. 5 is a detailed perspective view of a preferred form of friction spring which may be utilized in the embodiment of this invention shown in Figs. 1-4;

Fig. 6 is a side elevation of an alternative embodiment of this invention, the cover being shown in open position;

Fig. 7 is a partial sectional elevation of the lighter construction shown in Fig. 6 but on a somewhat smaller scale, some of the parts being broken away to show an illustrative flint-holding and wick-holding means which may be used in any of the lighter constructions shown in the drawings; and

Fig. 8 is a sectional view taken on the line 8-8 of Fig. 6.

Referring to the embodiment of this invention shown in Figs. 1-4, the structure comprises a case 10 having the top 11. Upstanding from the top 11 are fixed support members 12 which provide support for the horizontally disposed pin 13. The support members 12 are spaced from each other and between them there is mounted for rotation about the axis of the pin 13 the igniter wheel 14 which presents the usual frictional circumferential surface 15.

The cover 16 for the top 11 of the case 10 is hingedly carried by the pin 13 for rotational movement between closed and opened position about the axis of the pin 13, with the result that the axis of rotation of the cover 16 is coaxial with the axis of rotation of the wheel 14. The cover 16 adjacent the hinged end thereof has the aperture 17 therein through which the wheel 14 protrudes. The wheel 14 and the cover 16 are ordinarily so carried by the pin 13 as to permit relative rotational movement between the wheel 14 and the cover 16. Preferably the ends of the pin 13 are fixed to the side walls of the cover 16 and the wheel 14 is mounted for rotational movement relative to the pin 13. The ends of the pin 13 can be fixed to the side walls of the cover 16 in any suitable way. For example, the ends of the pin 13 may be welded by electro-welding to the inner surfaces of the side wall of the cover 16 so that the external surface of the cover will be continuous. Alternatively, if it is desired to be able to disassemble the cover 16 and the wheel 14, the cover may be secured to the ends of the pin 13 by means of removable screws or other similar conventional means. Ordinarily, however, there is no necessity for renewing the wheel 14 and the assembly of the wheel, pin and cover may be made permanent during manufacture of the lighter.

According to the structure hereinabove described, a lighter having a hinged cover is provided wherein the hinge means also provides the means for rotationally carrying the wheel element of the igniter device. More-

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over, because of the construction employed a wheel element 14 may be used having large dimensions that permit very convenient and positive operation by the user even though the cover is relatively small and compact. In prior devices comprising a cover the practical limits for the size of the cover has required the use of a small wheel element of the igniter device which is difficult and irritating to operate. On the other hand, if attempt is made to dispense with an over-all cover the burner and igniting elements are left unprotected.

While it is possible to operate the device of this invention as described hereinabove by first opening the cover and then actuating the wheel 14, a further feature of this invention resides in the provision of friction drag means interposed between the cover 16 and the external surface of the wheel 14. In the embodiment shown in Figs. 1-4 this friction drag means consists of the spring steel member 18 that is secured to the under side of the cover by suitable means such as welding so as to be held in pressure frictional contact with the side wall of the wheel 14. When the member 18 is employed it is apparent that upon actuating the wheel 15 the cover will automatically and simultaneously swing open so that as the burner is ignited the cover swings open.

It is desirable to provide stop means for limiting the extent to which the cover may be swung open. For example, it is usually desirable to limit the extent to which the cover may be opened to approximately 90° of rotational movement from closed position. This is desirable so that if after the cover has been opened it should be desirable to rotate the wheel 14 while the cover remains stationary in open position the cover will be restrained so as to leave a substantially area of the circumferential surface of the wheel 14 exposed for manual actuation. In the embodiment shown in Figs. 1-4 the stop means is conveniently provided by the ears 19 which protrude outwardly from the support members 12 so as to intercept the inner surface of the end walls of the cover as clearly shown in Fig. 3.

It is usually desirable in a lighter of the character described to provide wind guard means. The construction of this invention lends itself very well to the employment of effective wind guard means which in the embodiment shown is provided by the upstanding wind guard wall 20 which is disposed about the burner. It is an advantageous feature of this invention that the support means for the pin 13 may be conveniently provided as the end portions of the wind guard wall 20. The ears 19 which provide the stop means may be conveniently provided by bending them out from the wind guard wall 20 adjacent the ends of the wall that provide the support members 12.

To provide uniform clearance between the cover 16 and the top 11 when the cover is closed it is preferable to employ a slightly upturned portion 21 in the top 11 and a complementarily curved portion 22 in the side walls of the cover so as to permit rotational movement of the cover about the axis provided by the pin 13 without binding and while at the same time providing uniform clearance all around the lower edge of the cover.

In Fig. 5 a form of friction drag means which is preferred to that which has been shown for purposes of illustration in Figs. 1-4. This friction drag means comprises the small plate 23 composed of spring steel or the like which is secured as by welding to the under side of the cover and which has the resilient friction providing parts 24 that are disposed in pressure frictional contact with the side surfaces of the wheel 14. A friction drag means of the type shown in Fig. 5 is preferred because the frictional pressure is equalized on both sides of the wheel 14 and any tendency to misalignment between the cover 16 and the wheel 14 is minimized.

In Figs. 6, 7 and 8 an alternative embodiment of this invention is shown which, however, is generally similar to the embodiment shown in Figs. 1-4 and the corresponding parts have been indicated by corresponding reference

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characters. In the embodiment shown in Figs. 6, 7 and 8 the friction drag means is provided by the single member 25 composed of spring steel or the like which is secured to the under surface of the cover 16 and which has the friction providing portion 26 that is maintained in pressure frictional contact with the circumferential frictional surface of the wheel 14.

In the embodiment shown in Figs. 6, 7 and 8 the means for limiting the extent to which the cover may be opened is provided by the ears 27 which are bent out from the support members 12 so as to be vertically disposed. As thus disposed, the ears 27 provide maximum strength in functioning as stop members. The construction shown in Figs. 6, 7 and 8 in the respects above mentioned is regarded as preferable both from the point of utility and economy of manufacture.

In a lighter made according to this invention any suitable means may be employed for providing a burner and for providing an igniting member which coacts with the igniting wheel for igniting the burner. Merely for purposes of illustration one type of means of the character aforesaid has been shown in Figs. 7 and 8.

In a lighter of the type in question a reservoir for fuel which is supplied to the burner is provided and the case may be of any shape which is desirable. The shape exemplified in the drawings is that which is usual in a pocket lighter. Other shapes may be employed for table lighters. The usual type of fuel is a liquid which is contained in the reservoir into which a wick 28 extends from the tip portion thereof in the burner 29 that is comprised in the top 11 of the case 10 within the wind guard wall 20.

The igniter element or flint 30 is slidable within the tube member 31 and is held in frictional contact with the circumferential frictional surface 15 of the wheel 14 so that upon rotating the wheel 14 in clockwise direction as viewed in Fig. 7 sparks will be projected toward the burner 29 which carries the tip of the wick that is wet with the combustible burner fluid and can be readily ignited. The igniter element or flint 30 can be renewed from time to time as is conventional in lighters of this type. Many types of lighters have a reservoir which may be filled from the outside as through a removable plug 32. However, it is preferred that the case 10 comprise an inner telescoping wall 33 which may be withdrawn from the outer case 10. When this construction is employed the top 11 is integral with the wall 33, and the functional parts of the lighter as well as the cover are carried by the wall 33. The lower end of the wall 33 is merely open and the interior is filled with an absorbent material such as cotton. When it is desired to refill the lighter with lighter fluid the inner wall 33 may be urged to the right, as viewed in Fig. 7, against the spring member 34 so as to release the catch 35 and permit the lighter parts to be separated from the outer case 10. When this separation has been effected the lighter fluid may be poured into the open end of the wall part 33, whereupon the wall 33 may be again moved telescopically into the outer case 10. Reference is made herein and in the claims to the case part of the lighter and the top thereof. It is to be understood that the case may be either of the single wall type or of the telescoping double wall type which has been shown for purpose of illustration in Figs. 7 and 8.

In the embodiments of this invention hereinabove described the frictional drag between the drag element secured to the cover and the external surface of the ignition wheel while sufficient to cause opening of the cover when the ignition wheel is rotated, is preferably caused to be substantially less than the frictional drag between the igniter or flint element 30 and the circumferential frictional surface 15 of the wheel 14. Accordingly while rotation of the wheel 14 causes the cover to rotate with it within the limits of its rotational movement, rotation of the cover about the axis of the pin 13 does not cause the wheel 14 to rotate with it with the result that when the

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cover is moved to close it the wheel 14 remains stationary and there is no relative movement between the wheel surface 15 and the igniter member 30. Moreover, after the cover has been closed the combined frictional engagement between the element 30 and the wheel 14 and between the wheel 14 and the cover that is provided by the frictional drag element serves to keep the cover closed until it becomes desirable to use the lighter again. However, if it is desired to do so, some additional means such as a conventional readily releasable latching means (not shown) may be employed to hold the cover shut when the lighter is not in use.

While it normally is preferable to employ a separately fabricated frictional drag element made of spring metal or the like, it also is possible when the cover is made of some metal or other material having substantial resilient flexibility to have it integral with the cover as the result of cutting the metal to provide the aperture 17 and bending enough of it in such form as to enable its utilization as the frictional drag means, e. g., in any of the forms 18, 23 or 25 shown in the drawings.

While this invention has been described in connection with certain structural embodiments thereof, it is to be understood that this has been done for purposes of illustration and that the features and objectives of this invention as hereinabove described may be provided in other structural embodiments.

I claim:

1. In a lighter of the character described the combination comprising a case having a top, a burner mounted in said top, a pair of spaced support members fixed to said top and extending upwardly therefrom in spaced relation, a substantially horizontally disposed pin held by and between said support members, a wheel member presenting a circumferential frictional surface mounted on said pin between said support members for rotation about the axis of said pin, a cover for the top of said case hingedly carried adjacent one end thereof by said pin adjacent the ends of said pin for rotational movement between closed and open positions about the axis of said pin, said cover when in closed position overlying and enclosing the outer surfaces of said support members and having at the hinged end thereof an aperture in the top and end wall thereof in proximate spaced relation to the periphery of said wheel and through which said wheel protrudes substantially from said top and said end wall and which during the opening of said cover clears the outer surfaces of said support members in proximate spaced relation thereto, an igniter element comprised in said top in frictional engagement with said surface of

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said wheel, said wheel and said igniter element being disposed for igniting said burner upon rotating said wheel, and an upstanding wind guard wall disposed about said burner, said wall having end portions which, respectively, comprise said support members and having ear means bent outwardly therefrom for coacting with the inner surface of said cover having said aperture therein when said cover has been opened approximately through 90°.

2. In a lighter of the character described comprising a case having a top, a burner mounted in said top, an ignition device which is adjacent said burner and which comprises a wheel presenting a frictional circumferential surface, support members secured to said top in upstanding relation thereto one on each side of said wheel, an axle pin extending between and held by said support members spaced substantially from said top, said wheel being mounted on said axle pin between said support members, a cover for said top which is hingedly mounted with respect to said top for free rotational movement with said wheel between closed and open position about an axis coaxial with the axis of rotation of said wheel, said cover having side walls disposed in overlying relation with respect to the outer surfaces of said support members and completely enclosing same and said burner when in closed position and having an aperture in the top and end wall thereof in proximate spaced relation to the external surface of said wheel, said wheel protruding substantially from said top and from said end wall and said aperture during the opening and closing of said cover clearing said support members in proximate spaced relation therewith, frictional drag means attached to said cover having a part thereof in frictional engagement with external surface of said wheel for causing said cover to open simultaneously with rotation of said wheel to ignite said burner, and stop means mounted in fixed relation to said support members adapted to coact with said cover adjacent said aperture for limiting the movement of said cover to approximately 90° from closed position.

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