

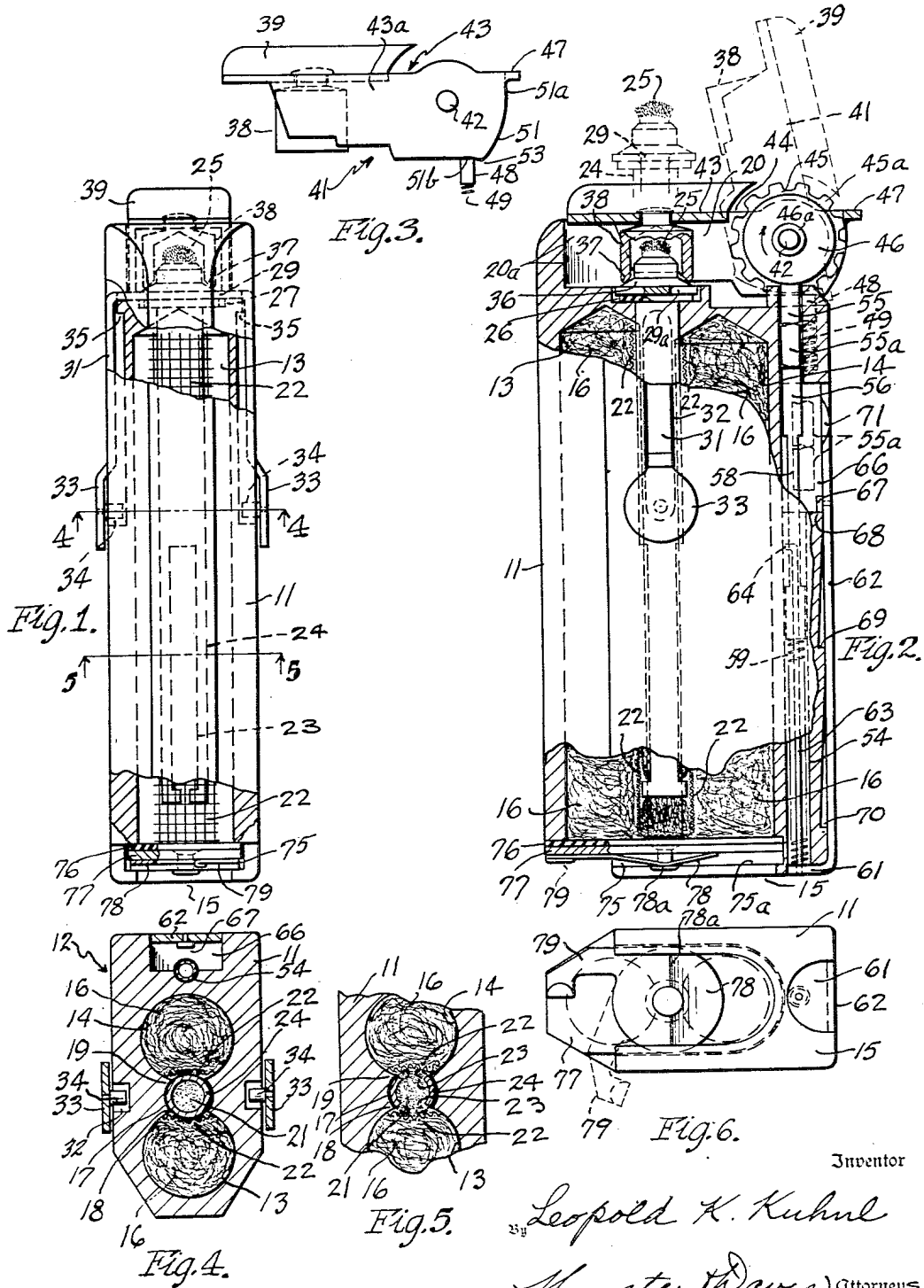
Jan. 4, 1955

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SMOKER'S LIGHTER

2,698,534

Filed April 7, 1950

2 Sheets-Sheet 1



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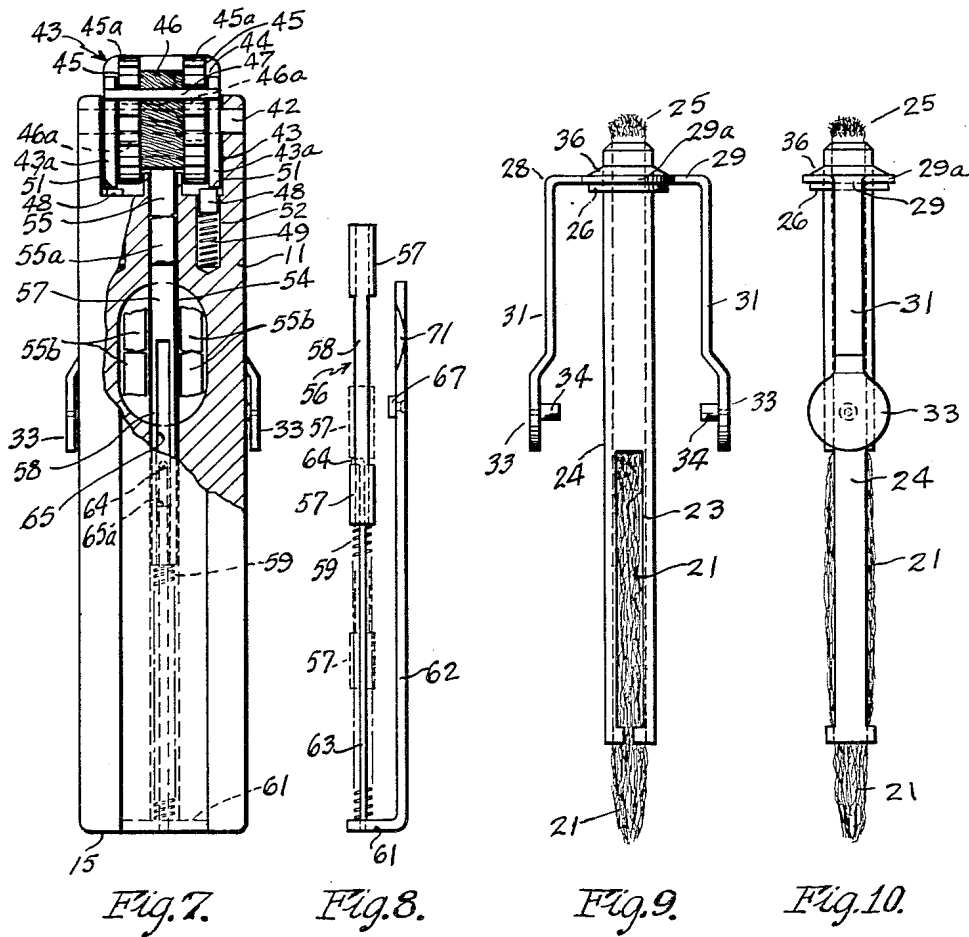
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**SMOKER'S LIGHTER**

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Application April 7, 1950, Serial No. 154,651

11 Claims. (Cl. 67-7.1)

This invention relates to smoker's lighters and an object is to provide a lighter having improved structural features which produce a more rugged lighter having a more general utility and a more dependable operation than has heretofore been the case.

A further object of the invention is to provide a lighter of this type constructed and arranged to have the general utility of an ordinary match.

As heretofore usually constructed, lighters of this type, although suitable for lighting cigars and cigarettes, have not been entirely satisfactory when employed for lighting pipes or for general lighting purposes, because the construction of the light has prevented the flame being positioned close enough to the pipe to light the tobacco. This has been especially true of lighters having windshields around the wick to prevent the flame being blown out.

A further object is to provide an improved lighter constructed and arranged to provide both a protecting windshield for the flame and a satisfactory, efficient pipe lighter.

A further object is to provide a lighter the main body portion of which can be formed from a solid block of material to produce an extremely rugged article having a prolonged period of usefulness.

A further object is to provide an improved lighter construction in which a single movement of the thumb simultaneously uncovers and ignites the wick.

A further object is to provide a lighter having an improved arrangement for storing spare parts such, for example, as flints or the like.

A further object is to provide a lighter having an improved mechanism for feeding flints to the knurled wheel or file, so constructed that no parts other than the flints themselves engage the wheel surface, whereby wear of the wheel and the flint feeding device is reduced to a lower point than has heretofore been though possible and the life of the lighter greatly prolonged.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawings forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In these drawings:

Fig. 1 is a front elevation of a lighter constructed in accordance with one embodiment of the invention, with parts broken away to more clearly show the construction;

Fig. 2 is a side elevation of the lighter shown in Fig. 1, partly in section, to show certain features of construction;

Fig. 3 is a side view of the pivoted wick cover shown in Figs. 1 and 2;

Figs. 4 and 5 are sections on the lines 4-4 and 5-5 respectively, of Fig. 1;

Fig. 6 is a bottom plan of the lighter shown in Figs. 1 and 2;

Fig. 7 is a part elevation and part vertical section through the flint magazine;

Fig. 8 is an elevation of the flint feeding mechanism, and

Figs. 9 and 10 are front and side views, respectively, of one form of extensible wick holder forming a part of the present invention.

The particular embodiment of the present invention

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which is illustrated in the accompanying drawings includes a body member 11 or casing formed from a solid block of material 12, such, for example, as metal. As illustrated, two fuel storage chambers 13 and 14 are drilled longitudinally from the bottom end 15 of the block to provide two parallel laterally spaced bores or chambers which are shown as containing loose cotton 16 or other material of an absorbent nature for holding the lighter fuel in the storage chambers and prevent leaking. An intervening wick chamber 17 is formed between the fuel chambers 13, 14 and in communication with them by drilling a bore in the block 12 midway between the fuel chambers and parallel thereto. This bore is drilled wider than the thickness of the dividing wall between the two chambers 13 and 14, so that bore 17 is in communication with both chambers 13 and 14 for the common lengths of the chambers. That is, the wick 17 is formed of a diameter somewhat greater than the distance between the sides of the fuel chambers 13 and 14 so as to provide slots 18, 19 extending longitudinally along opposite sides of the wick chamber 17 and communicating with the respective fuel chambers so that a wick 21 in the wick chamber 17 absorbs fuel from the fuel soaked cotton in the fuel chambers 13, 14. A screen 22 extends across each slot, preferably for the full length thereof, to prevent the cotton 16 or the like entering the wick chamber 17 and interfering with the movement of the wick, as hereafter described. That is, to keep the wick and cotton separate, although in sufficiently close contact that lighting fluid will be readily transferred from the cotton in the fuel chambers 13 and 14 to the wick in the bore or chamber 17 in all positions of the wick and its holder.

One feature of the invention is the arrangement by which the wick can be extended outwardly beyond its normal position to facilitate lighting a pipe, for example, or to provide an emergency candle, or for any other purpose. As illustrated, this is accomplished by providing a wick holder in the form of a tube 24 slidably mounted in the wick chamber 17 for movement from normal retracted position shown in full lines in Fig. 2 to the projected position shown in broken lines, and preferably somewhat farther. The wick 21 extends through the tube and has a protruding end 25 at the upper end of the tube for igniting purposes, and the opposite sides of the tube are each provided with a longitudinal slot 23 through which the wick is exposed and contacts the screens 22 to absorb fuel through them from the cotton in chambers 13 and 14. A channel 20 is milled or otherwise formed in the top of the casing 11 from the rear side edge to form walls 20a around the front and sides and provide a windshield around the end 25 of the wick 21. The channel 20 is thus open at the rear for a purpose to be described. The wick tube 24 is sufficiently loose in the wick chamber 17 to be freely slidable, and a gasket 26 adjacent the upper end of the tube 24 seats in a counterbore 27 at the upper end of the wick chamber 17 and under the flange 29a on this tube to seal the chamber against leakage at that end when the holder is retracted. The lower portion, approximately the lower half, of the wick holding the tube 24 is slotted as shown in Fig. 9 to provide the oppositely disposed slots 23 adjacent the communicating slots 18, 19 between the wick chamber 17 and the respective fuel chambers 13, 14, so as to permit the wick to absorb fuel from the storage chambers 13, 14. The operating means for slidably extending the tube 24 is illustrated as being formed by an inverted U-shaped frame 28, the web 29 of which includes the flange 29a secured to the wick tube 24, and the arms 31 of which extend downwardly and are slidably mounted in slots 32 on opposite sides of the casing 11. An enlarged finger piece 33 is formed on the end of each arm and overlies the adjacent slot 32. In order to prevent the finger pieces from rubbing and marring the surface of the casing at either side of the slots 32, a pin 34 extends inwardly from each finger piece 33 sufficiently far to engage the bottom of the adjacent slot 32 and hold the finger piece out of contact with the surface of the casing 11, see Figs. 1, 4 and 7. A shoulder 35 at the upper end of each slot 32 engages the pins 34 when the frame 28 and wick 21 are elevated and pre-

vents them being unintentionally raised entirely out of the casing. However, the holder and wick can be lifted entirely out of the casing for repairs or renewing the wick, merely by spreading the arms 31 far enough for the pins 34 to clear the shoulders 35, the arms being sufficiently resilient for this operation.

For sealing purposes a gasket 36 such, for example, as a Teflon gasket, surrounds the tube 24 above the web 29 of the frame 28 in position to be engaged by the beveled edge 37 of an inverted sealing cup 38 loosely pivoted and riveted to the top 39 of a cover 41 so that it may have sufficient lateral rocking movement for the edge 37 to seat properly on the gasket. The cover 41 is pivotally supported on a pivot pin 42 in the side walls of the end channel 20 adjacent the open end of the channel at the back of the casing 11. When the cover 41 is closed, as shown in Fig. 1, the beveled edge of the cup 38 seats on the beveled gasket 36 with a sealing engagement to prevent fuel leaking out through the wick, while the gasket 26 which is preferably of resilient material seals the opening around the outside of the wick tube and provides a safe seal against the leakage of any fuel from the wick chamber around the upper end of the wick tube 24.

The cover 41 includes a frame 43 having a slot or rectangular opening 44 over the pivot pin 42, see Figs. 2 and 7, through which a pair of laterally spaced thumb wheels 45 having toothed or corrugated peripheries 45a project, as shown in Fig. 2. The thumb wheels 45 are secured to a flint engaging wheel or file 46 so that the latter will be rotated when the thumb wheels 45 are actuated. The thumb wheels 45 are mounted tight on the hubs 46a on opposite sides of the file wheel 46. The end 47 of the cover frame 43 extends across the thumb wheel and connects the side chambers 43a of this cover frame, but is slightly spaced from the periphery of the wheels so that the cover can either be raised independently of the file wheel by pressing down on the frame end 47 only, or the two can be operated simultaneously by both pressing the frame end 47 and rotating the thumb wheels with a single movement of the thumb, as the edges of the wheels 45 project and are exposed above the top edges of the side members 43a and the thumb engages both the wheels 45 and bar 47 at the same time.

The cover is yieldingly held in either open or closed position by one or more detent fingers 48 or the like which are pressed by a spring 49 into yielding contact with a cam surface 51 on one side of the frame 43. There are preferably two of these detents as shown in Fig. 7, one for each side member 43a. The springs 49 and fingers 48 are each housed in a bore 52 in the casing, see Fig. 7. The cam surface 51 is so shaped and so positioned with relation to the cover supporting pivot pin 42 that in closed position, as shown in Fig. 3, the spring 49 and pin 48 press the cover closed and hold the cup 38 on the gasket 37 with a sealing pressure. In opening the cover the pin 48 rides over a shoulder 53 on the eccentric cam surface 51 to the flat 51a and holds the cover in open position, as shown in broken lines in Fig. 2. As the cover is swung to the closed position of Fig. 3 the shoe or fingers 48 rides along the eccentric cam surface 51 further tensioning the spring 49 and as it passes over the bump 53 onto the flat 51b it has a sort of snap action on the cover to close it and press edge of cup 38 against gasket 36, and then pressure of the shoe 48 on flat 51b, being located to the right or rear of pivot pin 42 as shown in Fig. 3 will hold this cover tightly closed.

A flint supply channel 54 is bored in the casing 11 and extends from the bottom thereof to the top at a point adjacent the file wheel 46. A flint 55 when placed in the chamber 54 is pressed against the bottom of the file wheel by a spring pressed pusher 56 having circular or tubular ends 57 and an intermediate slotted body portion 58. The pusher is yieldingly pressed against the lower end of a second flint 55a under the file wheel engaging flint 55 by a helical spring 59 compressed between the lower end 57 of the pusher 56 and an arm 61 extending inwardly from the lower end of a flint magazine cover 62. The spring 59 is guided by a rod 63 secured at one end in the arm 61 and extending upwardly through the lower end of the pusher 56 to which it is loosely and slidably connected by having a bent end 64 on the rod slidably engaging in the slot 65 in the slotted body portion 58 of the pusher 56. The lower end 65a of slot 65 and bent end 64 are preferably so located

that the end of the slot engages the bent end and stops further movement of the flint feeding member 56 when the second flint 55a is about half used so that the end of feed plunger 56 never engages the file wheel 46. A flint magazine is formed by a slot 66 in the back of the casing communicating with the flint supply channel 54. The pusher 56 and rod 63 are slidably inserted in the flint supply channel 54 from the bottom, and the cover 62 is slidably inserted in the slot 66 from the bottom. An abutment member 67 formed by a pin or the like on the inner surface of the cover 62 is adapted to engage a shoulder 68 in the magazine slot 66, see Fig. 2, to hold the cover in proper position to close the magazine slot 66 and cause the flint pusher 56 to press the flint 55 against the face of the file wheel 46. Below the shoulder 68 the magazine slot is formed with a stop shoulder 69 to prevent the cover being unintentionally slid open past that point when it is desired merely to open the slot 66 far enough to renew a flint 55. As indicated in Fig. 2, the slot is wide enough to hold a number of spare flints 55b in storage. The upper head 57 of the pusher and the flints are of substantially the same diameter as guide channel 54 for them and therefore they prevent extra flints 55b from passing into this channel unless the pusher 56 is retracted or shifted downwardly to provide sufficient space above head 57 for a flint 55b to drop into the channel. This also prevents extra flints being jammed between head 57 and walls or storage space 66. Below the stop shoulder 69 the slot 54 can be used to store additional Teflon gaskets or similar parts, if desired. To open the flint storage space the upper end of the cover 62 is raised by inserting a fingernail or the like under a recess 71 in the cover and the spring cover is bent outwardly a sufficient distance for the abutment 67 to clear the shoulder 68 after which the cover and pusher can be slid outwardly until the abutment engages the stop shoulder 69. When the cover 62 is slid open far enough for the abutment 67 to engage the stop shoulder 69 access to the spare flint magazine is obtained, and such movement retracts the flint pusher 56 and its upper end 57 far enough to permit a fresh flint being placed in the channel 54 to be pressed against the file wheel 46. If the cover is again bent outwardly for the abutment 67 to clear the stop 69 the cover can be slid further open until the abutment 67 engages a stop shoulder 70 near the bottom of the casing 11, in which position the lower storage portion of the slot 54 is open. When the cover and pusher are again returned to closed position the flint is pressed into operative engagement with the file wheel by the spring 59 and pusher 56. The cover 62 and pusher can be entirely removed from the casing by lifting the abutment 67 past the lower shoulder 70, after which the cover and pusher can be entirely removed from the casing. The pusher 56 is of such length relatively to the flint channel, and the pusher spring is of such size, that the upper tubular end 57 of the pusher 56 will never be pressed against the file wheel, thus preventing dulling of the file wheel teeth when a flint is not in position. The arrangement is preferably such that more than a single flint can be placed in the supply channel 54 above the pusher tube 57, and feeding movement of pusher 56 will be arrested by lower end 65a of slot 65 engaging bent-over end 64 of rod 63 when about half of the flint immediately against the end of this pusher has been worn off, so that the pusher will never engage the surface of the file wheel. Therefore, before the last particle of flint is used up the fresh flint must be inserted. Hence the end of the pusher never contacts the wheel.

Fuel is supplied to the fuel storage chambers 13, 14 through the open ends of the chambers at the bottom of the casing 11. In order to seal the ends of the chambers 13, 14 the bottom of the casing has an undercut slot 75 communicating with the open ends of the fuel chambers 13, 14. Fuel can be supplied to the chambers 13, 14 through the lower ends thereof, which are normally sealed by a gasket 76 of synthetic rubber or other resilient sealing material covering the openings within the undercut slot 75 and held securely in place by a cover 77 slidable in the slot 75 and locked in closed position by any suitable means, such, for example, as the cam lock spring plate 78 which comprises a circular portion rotatably secured to the cover 76 and rotatable by means of an arm 79 to rotate the shaped edge of the cam plate either to engage the sides of the undercut

slot 75 to secure the cover closed, as shown in full lines in Fig. 6, or to release the cover, as shown in broken lines, to permit removal. The opposite side portions of this spring plate are inclined from a diagonal ridge 78a as shown in Fig. 2 forming cam surfaces which engage under the overhanging outer edges 75a of slot 75 as the spring plate is turned to bring this ridge into the slot as shown in Figs. 1, 2 and 6 and compress the plate to clamp the cover tightly against the gasket and provide a tight closure. When this plate is turned to the dotted position, the central ridge 78a is shifted from the overhanging edges of the slots 75, thus relieving the clamping action on the cover so that it may be removed.

In operation, assuming that the top cover 41 is closed, as shown in full lines in Figs. 1 and 2, if it is desired to secure a light the cover 41 is opened and the file wheel 46 rotated to ignite the projecting end 25 of the wick 24 by rotating the thumb wheels 45 to the right or clockwise as shown by the arrow in Fig. 2, and at the same time opening the cover 41 by simultaneously engaging the end 47 of the frame 43 with the thumb and thereby rotating the file wheel and opening the cover to the broken line position shown in Fig. 2, all in one movement. This ignites the wick 23, while the cover is held open by the detent fingers 48. If it is desired to light a pipe, the lighted wick can be extended by pushing the finger pieces 33 on each side of the casing upwardly until the pins 34 strike the shoulders 35 at the upper ends of the slots 32, to extend the wick holder 24 and project the wick, as indicated in broken lines in Fig. 2. In this position the flame can be easily applied to a pipe or other article in the manner of an ordinary match. When the wick is returned to retracted position the cover can be closed, the finger or pin 48 riding over the shoulder 53 on the cam 51, after which the pressure of the pin 48 holds the cover closed and seals the beveled edge of the inverted cap 38 against the beveled gasket 36.

Being formed from a solid block of material, the casing 11 is extremely rugged. The projectible wick and the different details of construction provide a lighter of universal use and exceptionally long life. The invention can be variously modified and adapted within the scope of the appended claims.

Having thus set forth the nature of my invention, I claim:

1. A lighter comprising a casing, a cylindrical fuel storage chamber in said casing, a parallel cylindrical wick-containing chamber located at one side of the fuel storage chamber and communicating with it along substantially the entire length thereof, a tubular wick holder slidable in said wick-containing chamber to project a wick held therein into extended position to provide a lighter of general utility and into retracted position for normal operation, and said tubular holder being provided with a longitudinal slot in a side wall thereof opposite the communication between the chambers for passage of fuel from the storage chamber to the wick, said communication between the chambers and the slot in the tubular holder being of lengths to overlap and maintain communication between the wick holder and the chamber in both the projected and retracted positions.

2. A lighter comprising a casing, a cylindrical fuel storage chamber, a wick-receiving chamber in said casing communicating with the fuel chamber substantially throughout their lengths, a screen separating the wick chamber from the fuel chamber, a wick-holding tube telescoping in said wick-receiving chamber provided with an open longitudinal slot in a side wall thereof for passage of fuel to the wick in the tube and movable relative to said casing to project a wick held therein into extended position to provide a lighter of general utility and into retracted position for normal operation, said slot being of a length to maintain the wick in communication with the fuel chamber in all positions of the tube, and means for moving said tube including a closed end slot in said casing, an arm connected to said tube and slidable in said slot, and a stop on said arm adapted to engage the end of said slot to limit the movement of said tube.

3. A lighter comprising a casing, spaced parallel cylindrical fuel storage chambers in said casing, an intervening parallel cylindrical wick-containing chamber located between said fuel storage chambers and communicating with each of them independently of the other along substantially the entire length thereof, a wick holder slidable in said wick-containing chamber to project a wick held

therein into extended position to provide a lighter of general utility and into retracted position for normal operation, said communication between the chambers being of a length to maintain communication between the wick holder and the chambers in both the retracted and projected positions.

4. A lighter comprising a casing, parallel spaced cylindrical fuel storage chambers, a wick-receiving chamber in said casing communicating with each of the fuel chambers independently of the other substantially throughout their length, a screen separating the wick chamber from each fuel chamber, a wick-holding tube telescoping in said wick-receiving chamber and movable relatively to said casing while maintaining the wick in communication with the fuel chambers to project a wick held therein into extended position to provide a lighter of general utility and into retracted position for normal operation, and means for moving said tube including a closed end slot in said casing, an arm connected to said tube and slidable in said slot, and a pin on said arm adapted to engage the end of said slot to limit the movement of said tube.

5. The combination in a lighter having a file wheel, of a flint holding and feeding mechanism comprising a casing having a guide passage for flints opening adjacent said wheel, and means for pressing a flint longitudinally of said passage into engagement with said wheel, said means being of less length than said passage whereby not to engage said wheel when the supply of flints in said passage is exhausted, said casing being provided with a longitudinal slot providing a storage chamber for extra flints adjacent and at one side of the passage and communicating with a portion of said passage through a lateral side thereof, said storage chamber retaining the flints at one side of the passage so as to pass laterally from said chamber into the passage, said slot and storage chamber opening through an outer wall of the casing to permit access thereto for insertion of flints, and a cover for said passage and storage chamber, and means mounting said flint pressing means on said cover so as to cover said passage when said pressure means is positioned therein.

6. A lighter comprising a casing, a file wheel at one end of the casing, flint holding and feeding mechanism including a longitudinal guide passage for flints in the casing opening adjacent said wheel, means for pressing a flint longitudinally of said passage into engagement with said wheel comprising a tubular plunger slidable in and substantially filling the passage, said plunger being provided with a longitudinal slot through a side wall and terminating a distance from its inner end forming a stop shoulder, said casing being provided with a longitudinal slot in and opening through an outer side wall and including a portion at one side of the passage forming a storage chamber for flints, said storage chamber communicating with the passage through one side thereof to permit extra flints to pass laterally from the chamber into the passage, said plunger normally closing the connection between the chamber and the passage to retain the flints in the chamber and retractable to permit a flint to pass from the chamber into the passage, a cover for the open side of the slot and storage chamber and slidable in said slot between open and closed positions, a rod secured to the cover on which the plunger is slidable and provided with stop means in the slot in the plunger cooperating with the stop shoulder at the inner end of this slot to limit movement of the plunger toward the file wheel, a spring on the rod tending to shift the plunger toward the wheel, and releasable means for holding the cover in closed position.

7. A lighter comprising a casing, a file wheel at one end of the casing, flint holding and feeding mechanism including a longitudinal guide passage for flints in the casing opening adjacent said wheel, means for pressing a flint longitudinally of said passage into engagement with said wheel comprising a tubular plunger slidable in and substantially filling the passage, said plunger being provided with a longitudinal slot through a side wall and terminating a distance from its inner end forming a stop shoulder, a rod mounted on the casing in the passage, said plunger being slidable on the rod, a stop on the rod extending into the slot in the plunger to cooperate with the stop shoulder at the inner end of this slot to limit movement of the plunger toward the file wheel, and a spring on the rod tending to shift the plunger toward the wheel.

8. A lighter comprising a casing formed from a solid block of material having spaced cylindrical passages form-

ing fuel storage chambers connected by an intervening cylindrical passage forming a wick-receiving chamber of sufficient diameter to intersect said storage chambers and communicate therewith, said casing having a transverse undercut slot in the bottom thereof, a cover for said chambers slidable in said slot, and locking means on said cover engageable with the undercut sides of said slot to secure said cover in place comprising a circular spring plate pivoted to the cover of a diameter to engage at its edges in the undercut sides and comprising side portions inclined in opposite directions from a central rib so that when turned to position the rib under the undercut sides the plate is compressed to clamp the cover in closed position.

9. The combination in a lighter having a file wheel, of a flint holding and feeding mechanism comprising a casing having a guide passage for flints opening adjacent said wheel, and means for pressing a flint longitudinally of said passage into engagement with said wheel, said means comprising a slidable plunger substantially filling the passage and pressing against the flint in the passage, said casing being provided with a storage chamber for extra flints comprising a longitudinal slot adjacent and parallel with the passage at one side thereof communicating with said passage and opening through an outer side wall of the casing for insertion of flints, said chamber retaining the extra flints at one side of the passage while held out of the passage by said plunger when the plunger is in normal flint feeding position and movable into the passage when the plunger is retracted, a slidable cover for the open side of the storage chamber, and means mounting the plunger on the cover.

10. A lighter comprising a casing, a file wheel at one end of the casing, flint holding and feeding means including a longitudinal guide passage for flints opening adjacent said wheel, and means for pressing a flint longitudinally of said passage into engagement with said wheel comprising a plunger slidable in and substantially filling the passage, said casing being provided with a longitudinal slot opening through a side wall thereof providing a storage space for extra flints, said storage space being located adjacent and at one side of the passage and communicating with a portion of said passage through a side thereof

for passage of flints from said space into the passage, a movable cover for said slot, and means connecting the cover with the plunger to retract and advance the plunger by opening and closing of the cover.

11. A lighter comprising a casing, a file wheel at one end of the casing, flint holding and feeding means including a longitudinal guide passage for flints opening adjacent said wheel, and means for pressing a flint longitudinally of said passage into engagement with said wheel comprising a plunger slidable in and substantially filling the passage, said casing being provided with a longitudinal slot opening through a side wall thereof providing a storage space for extra flints, said storage space being located adjacent and at one side of the passage and communicating with a portion of said passage through a side thereof for passage of flints from said space into the passage, a longitudinally slidable cover for said slot, and means connecting the cover with the plunger to retract the plunger on opening movement of the cover to permit a spare flint to pass from the storage space into the passage in the path of the plunger and to advance the plunger and feed said spare flint into operative position on closing movement of the cover.

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