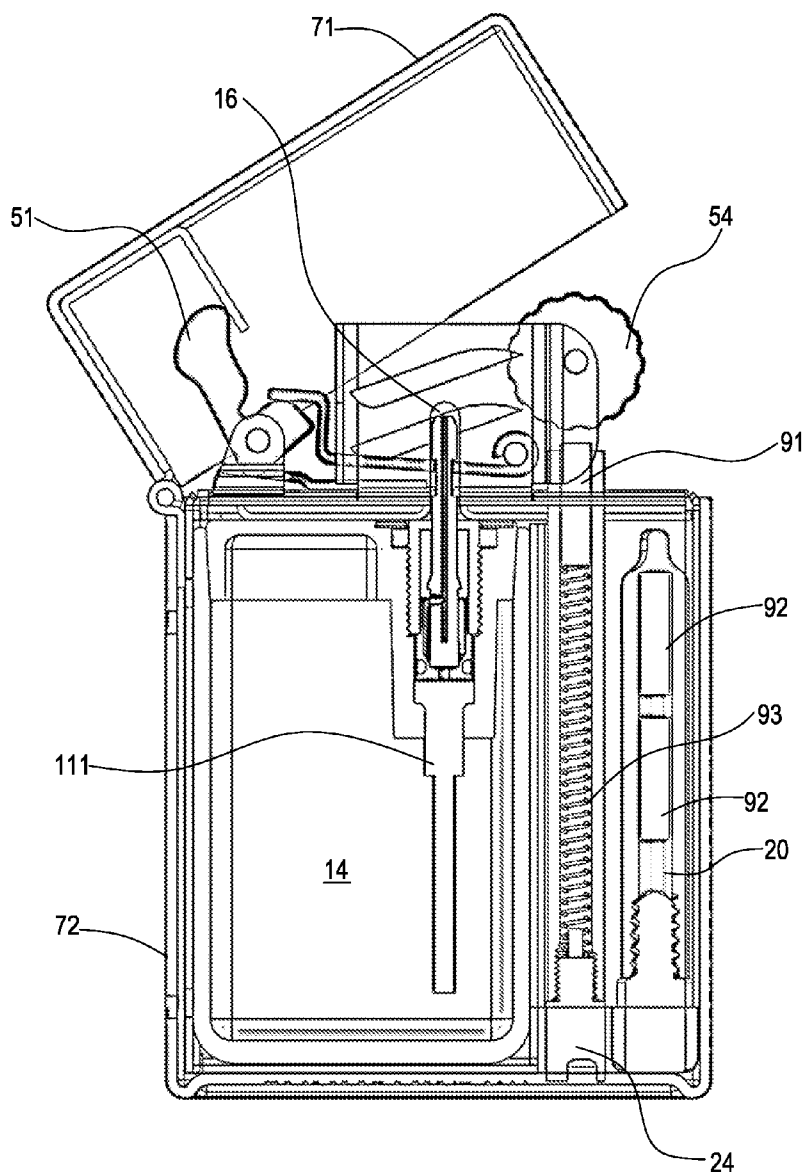




US 20120122044A1

(19) **United States**(12) **Patent Application Publication**
ROZENBERG(10) **Pub. No.: US 2012/0122044 A1**(43) **Pub. Date: May 17, 2012**(54) **GAS LIGHTER AND A DISPOSABLE GAS
RESERVOIR AND GAS FLOW CONTROL
MECHANISM****Publication Classification**(51) **Int. Cl.**
F23Q 2/16 (2006.01)
F23Q 2/38 (2006.01)(76) Inventor: **Avraham ROZENBERG**, Tel Aviv
(IL)(21) Appl. No.: **13/069,423**(22) Filed: **Mar. 23, 2011**(52) **U.S. Cl. 431/124; 431/143**(57) **ABSTRACT****Related U.S. Application Data**(60) Provisional application No. 61/412,827, filed on Nov.
12, 2010.A gas lighter that includes an external housing, a first com-
partment for receiving a disposable gas reservoir and a second
compartment for receiving a group of flints.

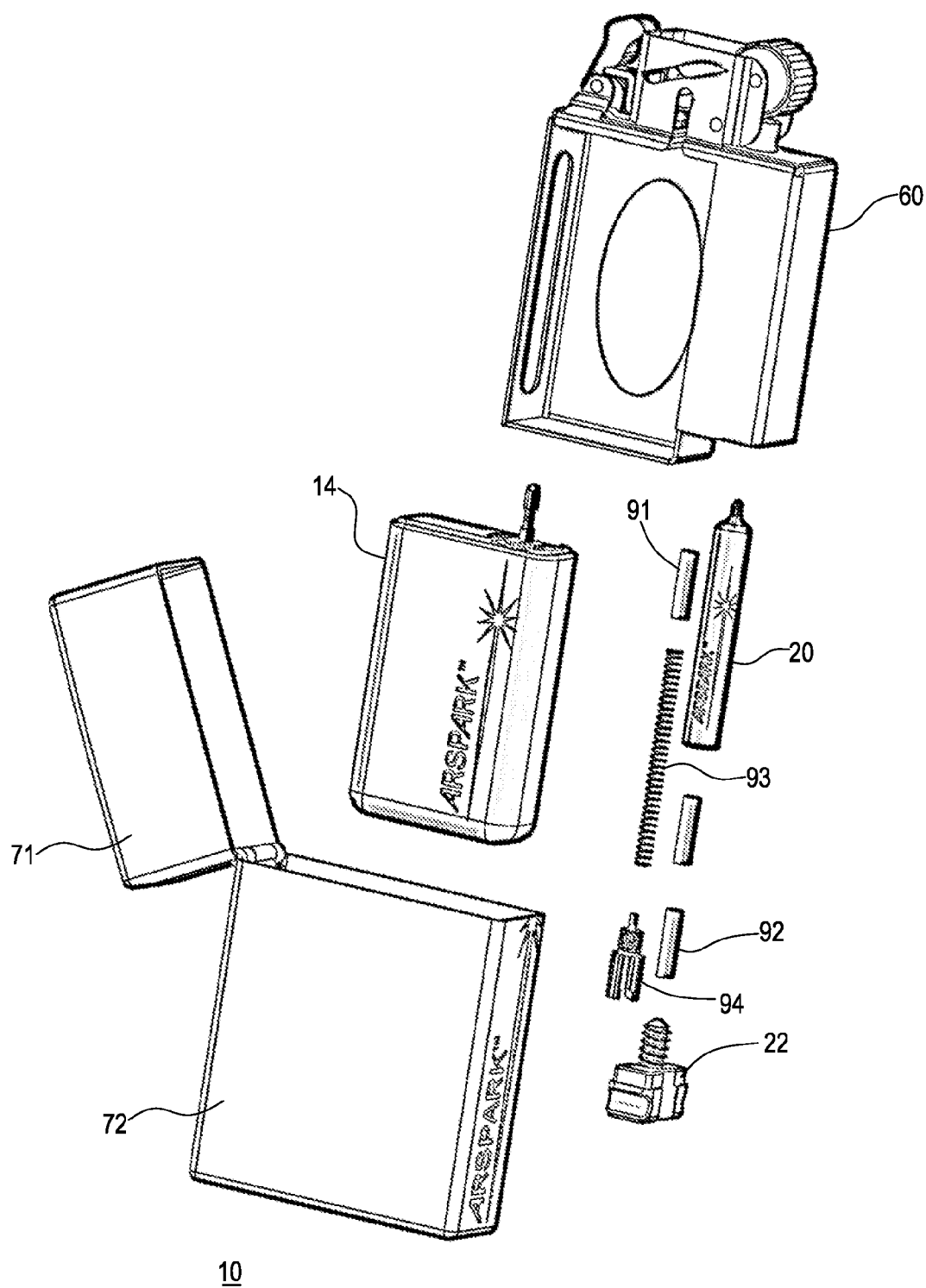


FIG. 1

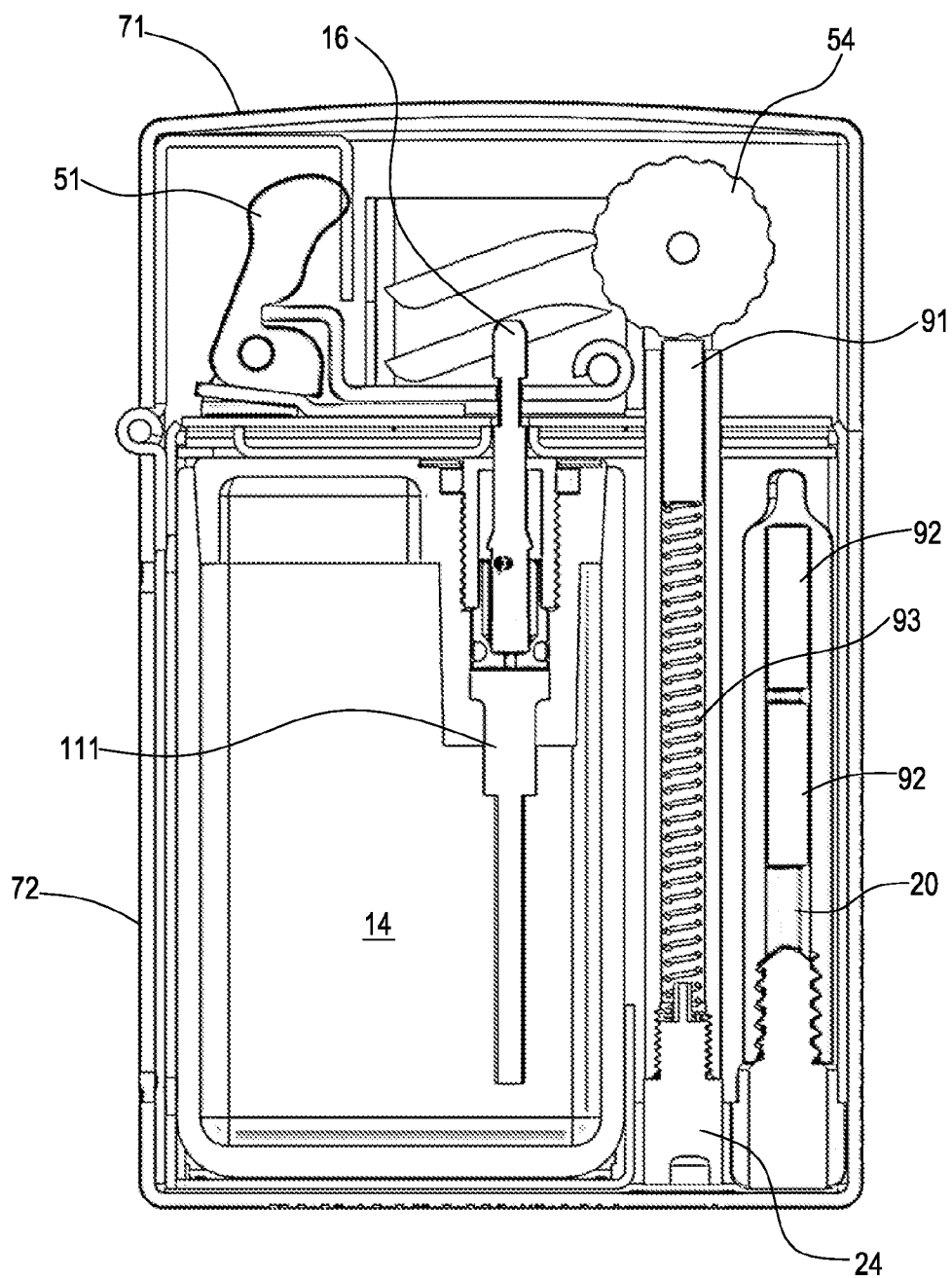


FIG. 2

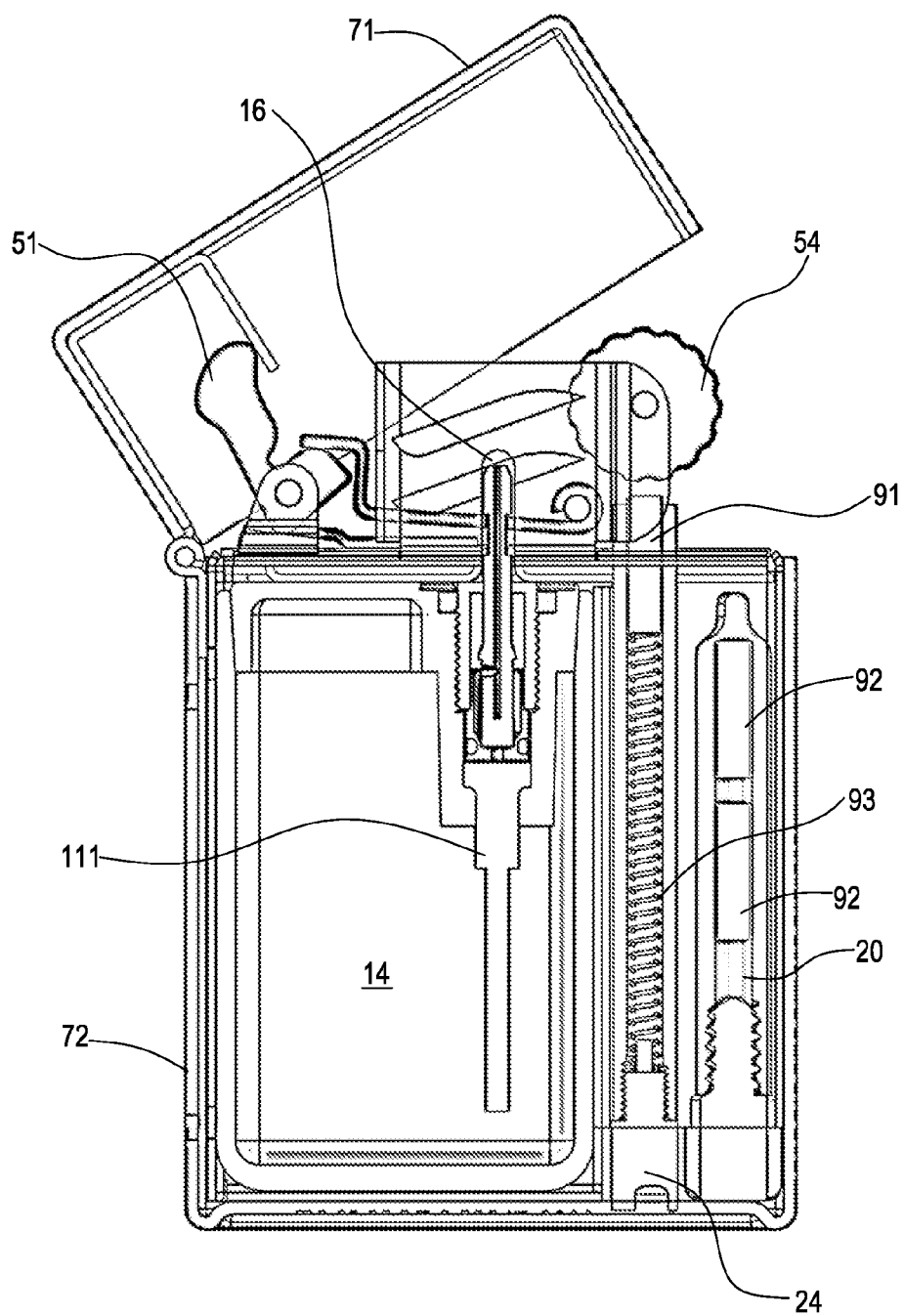


FIG. 3

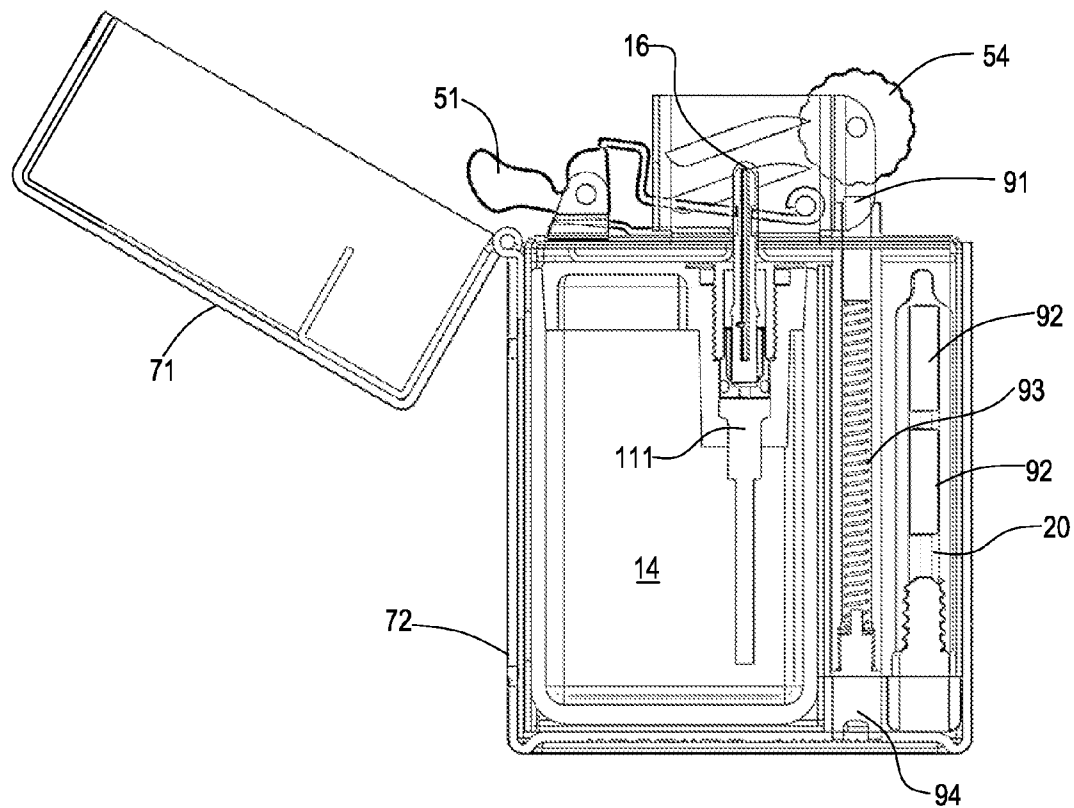


FIG. 4

GAS LIGHTER AND A DISPOSABLE GAS RESERVOIR AND GAS FLOW CONTROL MECHANISM

RELATED APPLICATIONS

[0001] This application claims the benefit of US provisional patent filing date Nov. 12, 2010, Ser. No. 61/41,2827, which is incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a gas lighter and especially to a gas lighter in which a housing and an ignition device are removable from a disposable gas reservoir and gas flow control mechanism.

BACKGROUND OF THE INVENTION

[0003] There are three main types of gas lighters, the first type includes relatively cheap disposable gas lighters, the second type includes gas lighters that can be reloaded and the third type includes gas lighters that have a dispensable gas reservoir. Gas lighters of the first type have relatively short life span. Gas lighters of the second type have a gas reservoir that has an inlet valve for receiving gas. The reloading process is executed by engaging a gas supply source, such as a butane gas supply source, to the inlet valve of the reservoir. The reloading process is time consuming and can result in an uncontrollable release of butane gas. Furthermore, each gas lighter has a unique inlet valve so that only a specific butane supply source is operative to fill the lighter.

[0004] A prior art third type gas lighter is described at U.S. Pat. No. 6,168,774 of Butera, Jr. The lighter includes an upper assembly, a lower assembly capable of releasably interlocking with the upper assembly, said lower assembly defining a gas reservoir for storing gas; an ignition module, the ignition module releasably attached to the upper assembly, the ignition module capable of igniting the gas; a gas transfer mechanism interposed between the lower assembly and upper assembly, the gas transfer mechanism capable of transferring gas from the gas reservoir to a destination outside the upper assembly, for ignition by the ignition module, the gas transfer mechanism including a valve disposed on the lower assembly, the valve responsive to the connecting and disconnecting of the upper and lower assembly such that, when the upper and lower assemblies are connected, the valve opens so that gas is allowed to pass through the gas transfer mechanism from the gas reservoir to the upper assembly and when the upper and lower assemblies are disconnected, the valve closes; a mating member capable of interlocking the upper assembly and the lower assembly; a pressure plate attached to the mating member and having a larger cross-sectional area than the mating member; a passageway and a raceway connection insertion portion to a terminal portion, the insertion portion sized to receive the pressure plate and the mating member; the passageway sized to accommodate the pressure plate as it moves from the insertion portion to the terminal portion;

[0005] the raceway sized to accommodate the mating member as it moves from the insertion portion to the terminal portion; the terminal portion sized to receive the pressure plate and mating member such that the upper assembly and lower assembly are interlocked.

[0006] The gas lighter of Butera Jr. has several disadvantages. First, it includes a relatively complex interlocking mechanism. Second, it includes a relatively complex gas

transfer mechanism. Third, the gas passes through the first and second disassembly, and can leak as a result of inaccuracies in the either one of the assemblies. Furthermore, gas transfer mechanism can be damaged during successive replacements of the lower assembly and during the interlocking procedure, during which pressure is applied on the lower assembly. Fourth, as the lower assembly is visible and must be interlocked in a precise manner to the upper assembly, it must be made from durable material, and usually must be of an esthetic value. These requirements usually increase the cost of the lower assembly.

[0007] There is a need to provide a gas lighter that overcomes the disadvantages of the prior art lighters.

SUMMARY

[0008] According to an embodiment of the invention a gas lighter may be provided. The gas lighter can include an external housing, a first compartment for receiving a disposable gas reservoir and a second compartment for receiving a group of flints. The group of flints can include zero or more flints and can be included within a cartridge but this is not necessarily so.

[0009] The gas lighter may include at least one component out of a gas flow control components and a gas ignition components. At least one other component can be connected to the disposable gas reservoir.

[0010] The gas lighter further may include a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter.

[0011] The second compartment may be shaped to receive a cartridge of flints.

[0012] The external housing may be arranged to surround the cartridge of flints when the cartridge of flints may be placed in the second compartment and when the second compartment may be positioned within the external housing.

[0013] The gas lighter may include an internal housing that comprises the first and second compartments. The external housing may be arranged to receive the internal housing.

[0014] The first compartment may be shaped to surround a majority of the disposable gas reservoir.

[0015] The first compartment may include an upper portion (such as an upper wall) arranged to contact an upper portion of the disposable gas reservoir; a lower portion (such as a bottom wall) arranged to contact a lower portion of the disposable gas reservoir; and at least one intermediate portion (such as sidewalls) arranged to contact an intermediate portion of the disposable gas reservoir.

[0016] The external housing may have a substantially horizontal opening for insertion of the internal housing. The first compartment may have a substantially vertical opening for an insertion of the disposable gas reservoir.

[0017] The external housing may have an external housing opening for insertion of the internal housing. The first compartment may have an opening for an insertion of the disposable gas reservoir. The opening of the first compartment may be oriented in relation to the external housing opening.

[0018] The external housing may have an external housing opening for insertion of the internal housing. The first compartment may have a first opening for an insertion of the disposable gas reservoir and a second opening for pushing the disposable gas reservoir from the first compartment.

[0019] The gas lighter may include a cartridge of flints for receiving a group of flints.

[0020] The cartridge of flints comprises a cartridge closing element. The cartridge closing element may be slightly wider than an opening of the second compartment so that the cartridge may be inserted to the third compartment by using force.

[0021] The gas lighter may include a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter.

[0022] The flint holding element may be coupled to a rotatably mounted holding element; wherein the cartridge of flints comprises a cartridge flint head that may be arranged to rotate the rotatably mounted holding element.

[0023] The gas lighter may include a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter. The first, second and third compartments are parallel to each other.

[0024] The external housing and the internal housing may be made of a durable material such as metal, Nickel, Aluminum, Chrome and the like.

[0025] According to an embodiment of the invention a gas lighter may be provided and may include an external housing, an internal housing, and at least one component out of a gas flow control components and a gas ignition component. The first compartment may be arranged to receive a disposable gas reservoir. The external housing may be arranged to receive the internal housing.

[0026] The first compartment may be shaped to surround a majority of the disposable gas reservoir.

[0027] The first compartment may include an upper portion arranged to contact an upper portion of the disposable gas reservoir, a lower portion arranged to contact a lower portion of the disposable gas reservoir; and at least one intermediate portion arranged to contact an intermediate portion of the disposable gas reservoir.

[0028] The external housing may have a substantially horizontal opening for insertion of the internal housing. The first compartment may have a substantially vertical opening for an insertion of the disposable gas reservoir.

[0029] The external housing may have an external housing opening for insertion of the internal housing; wherein the first compartment may have an opening for an insertion of the disposable gas reservoir, wherein the opening of the first compartment may be oriented in relation to the external housing opening.

[0030] The external housing may have an external housing opening for insertion of the internal housing; wherein the first compartment may have a first opening for an insertion of the disposable gas reservoir and a second opening for pushing the disposable gas reservoir from the first compartment.

[0031] The gas lighter may include a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter.

[0032] The gas lighter may include a second compartment for receiving a group of flints.

SHORT DESCRIPTION OF THE DRAWINGS

[0033] While the invention is pointed out with particularity in the appended claims, other features of the invention are disclosed by the following detailed description taken in con-

junction with the accompanying drawings, in which FIGS. 1-4 illustrate a gas lighter, according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

[0034] It should be noted that the particular terms and expressions employed and the particular structural and operational details disclosed in the detailed description and accompanying drawings are for illustrative purposes only and are not intended to in any way limit the scope of the invention as described in the appended claims.

[0035] The invention provides a gas lighter including a disposable gas reservoir that includes an external housing and an internal housing. The external housing may have a first portion in which the internal housing can be positioned. The disposable gas reservoir can be placed within the internal housing. The disposable gas reservoir is replaced by opening a cover portion of the external housing, extracting the internal housing from the external housing by elevation and then pushing the disposable gas reservoir from the internal housing.

[0036] The internal housing can have two compartments—one for holding the disposable gas reservoir and a second for holding a cartridge of flints. The cartridge of flints can have an opening element that can be rotated to close or open the cartridge. Once the internal housing is extracted from the external housing a person can open the cartridge, take a flint, replace a flint and close the cartridge.

[0037] The gas lighter includes a disposable gas reservoir that may have a gas valve and a gas flow control mechanism. The gas control mechanism can selectively allow the release of gas in the vicinity of a location in which the striker hits the flint and to produce sparks that ignite the released gas.

[0038] The external housing and, additionally or alternatively, the internal housing, can be made of a durable material, such as metal, and can be of an esthetic value. The disposable gas reservoir can be made of less durable but cheaper materials such as plastic.

[0039] FIGS. 1 and 2 illustrate various parts of a gas lighter 10 and the disposable gas reservoir 14, according to an embodiment of the invention.

[0040] In both FIGS. 1 and 2 the disposable gas reservoir 14 is positioned outside the external housing 70 and the internal housing 60. The internal housing 60 is located outside the external housing 70.

[0041] The external housing 70 may have two parts 71 and 72 respectively. The first part 71 is pivotally mounted to the second part 72 by pins. The internal housing is at least partially surrounded by the first part 71 and the second part 72 acts as a cover to the first part 71. The external housing 70 surrounds the internal housing 60.

[0042] The internal housing 60 can have openings 67 and 66 that facilitate the insertion and extraction of the disposable gas reservoir 14 and its gas valve 16. The internal housing 60 can include a spring 68 that is pressed against the disposable gas reservoir 14 once the latter is inserted in the internal housing.

[0043] The second compartment 62 of the internal housing 60 is shaped to hold a group of flints 92, the group of flints 92 can be included within a cartridge 20 that in turn fits into second compartment.

[0044] The cartridge 20 can have an opening element 22 that can be rotated to close or open the cartridge 20. Once the internal housing 60 is extracted from the external housing 70

a person can open the cartridge 20, take a flint, replace a flint and close the cartridge 20. The cartridge 20 is illustrated as having a cylindrical shape and as being inserted via an opening that is formed at the bottom of the second compartment 62.

[0045] The internal housing 60 may have a third compartment 63 (space) in which flint 91 and spring 93 are located. The spring 93 forces the flint 91 against the striker 54. The spring 93 may have a lower end that is forced against a removable element such as spring holding element 94 that may seal the opening. The spring holding element 94 can be rotatably coupled to the third compartment 63. It may have a groove, an opening or a projection that allows a rotation of the spring holding element 94. The head 23 of the cartridge 20 can fit to that groove, opening or projection and can be used to open or close the spring holding element 94. These components can act as a bolt and a screwdriver.

[0046] FIGS. 3-4 illustrates the third compartment 63 space as being parallel to the cartridge 20 but this is not necessarily so.

[0047] FIG. 3 is a cross sectional view of the gas lighter 10 and the disposable gas reservoir 14 when the disposable gas reservoir 14 is located within a first compartment 61 of the internal housing 60, when the internal housing 60 is positioned within the external housing 70 and when the external housing 70 is open—the first portion 61 of the external housing 70 is spaced apart from the second portion 72 of the external housing and its open cage 73 does not contact lever 51 that is in an upright (close) position. When the lever 51 is in a close position the gas valve 16 is closed.

[0048] FIG. 4 illustrates the lever 51 is in an open position—wherein when the lever is in an open position the gas valve 16 is open and gas flows from the disposable gas reservoir 14. After the gas is ignited (by rotating the spark 54 against the flint 91) it continues to burn until the gas flow stops.

[0049] There are multiple gas flow control components and gas ignition components. Some may be connected or included in the gas lighter 10 while other can be connected to the disposable gas reservoir 14. FIGS. 1-5 illustrate the disposable gas reservoir 14 as being connected to (including) a gas valve 16 that may have a valve head 16(1) that can be moved (for example—vertically moved) in order to open the disposable gas reservoir 14 or close the disposable gas reservoir 14. An example of such a valve mechanism is illustrated in PCT patent application PCT/IL02/00846 of Rosenberg which is incorporated herein by reference.

[0050] The gas flow control components and gas ignition components may include lever 51, lever axle 38, lever axle holder 33, open cage 73, gas valve 16, valve head 16(1), valve spring 16(3), gas valve sealing elements 16(3) and 16(4), striker axle 34, gas valve elevating element axle 35, gas valve elevating element axle holder 36, wind control element 39, gas valve elevating element 52, base spring 53, striker 54, striker axle holder 64, flint 91, spring 93 and spring holding element 94. These components can be replaced by other equivalent components without departing from the spirit of the invention.

[0051] The lever 51 can rotate about a lever axle 38, wherein the lever 51 can be rotated counterclockwise by open cage 73 of the external housing from a closed position to an open position; Wherein the lever 51 can be rotated clockwise by base spring 53.

[0052] The gas valve elevating element 52 can rotate about the gas valve elevating element axle 35 that is located near

spark 54. The gas valve elevating element 52 is rotated as a result of the rotation of lever 51. The rotation of the gas valve elevating element 52 affects the location of the valve head 16(1). When lever 51 is in a close position the gas valve elevating element 52 is in its lowest position and it closes the valve head 16(1).

[0053] When lever 51 is in an open position the gas valve elevating element 52 is in its highest position and it opens the valve head 16(1).

[0054] The gas valve elevating element 52 may have an aperture that contacts a narrow portion of the valve head 16(1). This narrow portion is located between two wider portions of the valve head 16(1). When the gas valve elevating element 52 is elevated it contacts the higher wider portion of the valve head and the valve head is elevated. The valve head 16(1) is lowered by a lowering the gas valve elevating element 52. This can be performed by a contact between the gas valve elevating element 52 and the lower wider portion of the valve head 16(1), and additionally or alternatively, by a valve spring 16(2) that forces the valve head 16(1) downwards.

[0055] The gas valve 16(1) can include multiple components (such as 16(4) and 16(5)) that can be moved in relation to each other so that at one position they allow gas to flow through the gas valve 16 and open or close the passage of gas through the gas valve 16 based on a height difference between components 16(4) and 16(5).

[0056] The lever axle holder 33 is illustrated as including two vertical elements extending from the upper wall of the internal housing 60 and include two apertures through which the lever axle 38 can be placed.

[0057] The wind control element 39 can affect the wind in the vicinity of the flame that is generated as a result of igniting gas that flows from the gas valve 16. The wind element can partially shield the flame from the wind. FIGS. 1-5 illustrate a wind control element 39 that is shaped as an open cage—it may have three side walls but does not have a top wall. The wind control element 39 is connected to the upper wall of the internal housing 60 and includes various apertures for allowing the wind to access the flame. The wind control element 39 further includes two apertures formed in two sidewalls and act as a striker axle holder 64 that may hold a striker axle 34.

[0058] The wind control element 39 further includes two additional apertures formed in two sidewalls and act as a gas valve elevating element axle holder 36 that may hold the gas valve elevating element axle 35.

[0059] The disposable gas reservoir 14 is a hollow rectangular, but can be of other shapes, as long that it fits in the internal housing 60, and especially as long as it can be positioned within the first compartment 61 of the internal housing 60.

[0060] The disposable gas reservoir 14 can have a bottom wall, an upper wall and sidewalls and a gas valve 16 that extends through the upper wall. A majority of (most of the area of) the area of the disposable gas reservoir 14 can be surrounded by the first compartment 61.

[0061] The disposable gas reservoir 14 can have multiple sidewalls, an upper wall and a lower wall and these walls can be connected by the respective walls of the first compartment 61.

[0062] Many gas regulators are known in the art and will not be set forth in greater detail.

[0063] The following numbers relate to the following items:

- [0064] i. Gas lighter **10**
- [0065] ii. Gas valve **11**.
- [0066] iii. Disposable gas reservoir **14**.
- [0067] iv. Gas valve **16**. It includes a valve head **16(1)**, valve spring **16(2)**, and two sealing components **16(4)** and **16(5)**.
- [0068] v. Lower spring **19**.
- [0069] vi. Cartridge **20** of flints.
- [0070] vii. Opening element **22** of cartridge **20**.
- [0071] viii. Head **23** of cartridge **20**.
- [0072] ix. Lever axle holder **33**.
- [0073] x. Striker axle **34**.
- [0074] xi. Gas valve elevating element axle **35**.
- [0075] xii. Gas valve elevating element axle holder **36**.
- [0076] xiii. Lever axle **38**.
- [0077] xiv. Wind control element **39**.
- [0078] xv. Lever **51**.
- [0079] xvi. Gas valve elevating element **52**.
- [0080] xvii. Base spring **53**.
- [0081] xviii. Striker **54**.
- [0082] xix. Internal housing **60**.
- [0083] xx. First compartment **61**.
- [0084] xxi. Second compartment **62**.
- [0085] xxii. Third compartment **63**.
- [0086] xxiii. Striker axle holder **64**.
- [0087] xxiv. Gas valve aperture **68**.
- [0088] xxv. Back wall **67**.
- [0089] xxvi. First compartment opening **68**.
- [0090] xxvii. Back wall aperture **69**.
- [0091] xxviii. External housing **70**.
- [0092] xxix. First part **71** of external housing **70**.
- [0093] xxx. Second part **72** of external housing **70**.
- [0094] xxxi. Open cage **73**.
- [0095] xxxii. Opening **74** of external housing.
- [0096] xxxiii. Flint **91**.
- [0097] xxxiv. Spare flints **92**.
- [0098] xxxv. Spring **93**.
- [0099] xxxvi. Spring holding element **94**.

[0100] Thus, there may have been described herein an embodiment including at least one preferred embodiment of a gas lighter. It will be apparent to those skilled in the art that the disclosed subject matter may be modified in numerous ways and may assume many embodiments other than the preferred form specifically set out and described above. Accordingly, the above disclosed subject matter is to be considered illustrative and not restrictive, and to the maximum extent allowed by law, it is intended by the appended claims to cover all such modifications and other embodiments which fall within the true spirit and scope of the present invention. The scope of the invention is to be determined by the broadest permissible interpretation of the following claims and their equivalents rather than the foregoing detailed description.

We claim:

1. A gas lighter, comprising an external housing, a first compartment for receiving a disposable gas reservoir and a second compartment for receiving a group of flints.

2. The gas lighter according to claim 1, wherein the gas lighter comprises at least one component out of a gas flow control components and a gas ignition component.

3. The gas lighter according to claim 1, further comprising a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter.

4. The gas lighter according to claim 1, wherein the second compartment is shaped to receive a cartridge of flints.

5. The gas lighter according to claim 4, wherein the external housing is arranged to surround the cartridge of flints when the cartridge of flints is placed in the second compartment and when the second compartment is positioned within the external housing.

6. The gas lighter according to claim 1, comprising an internal housing that comprises the first and second compartments; wherein the external housing is arranged to receive the internal housing.

7. The gas lighter according to claim 6, wherein the first compartment is shaped to surround a majority of the disposable gas reservoir.

8. The gas lighter according to claim 7, wherein the first compartment comprises:

an upper portion arranged to contact an upper portion of the disposable gas reservoir;

a lower portion arranged to contact a lower portion of the disposable gas reservoir;

and at least one intermediate portion arranged to contact an intermediate portion of the disposable gas reservoir.

9. The gas lighter according to claim 1, wherein the external housing has a substantially horizontal opening for insertion of the internal housing; wherein the first compartment has a substantially vertical opening for an insertion of the disposable gas reservoir.

10. The gas lighter according to claim 1, wherein the external housing has an external housing opening for insertion of the internal housing; wherein the first compartment has an opening for an insertion of the disposable gas reservoir, wherein the opening of the first compartment is oriented in relation to the external housing opening.

11. The gas lighter according to claim 1, wherein the external housing has an external housing opening for insertion of the internal housing; wherein the first compartment has a first opening for an insertion of the disposable gas reservoir and a second opening for pushing the disposable gas reservoir from the first compartment.

12. The gas lighter according to claim 1, comprising a cartridge of flints for receiving a group of flints.

13. The gas lighter according to claim 12, wherein the cartridge of flints comprises a cartridge closing element; wherein the cartridge closing element is slightly wider than an opening of the second compartment.

14. The gas lighter according to claim 12, further comprising a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter.

15. The gas lighter according to claim 14, wherein the flint holding element is coupled to a rotatably mounted holding element; wherein the cartridge of flints comprises a cartridge flint head that is arranged to rotate the rotatably mounted holding element.

16. The gas lighter according to claim 1, further comprising a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter; wherein the first, second and third compartments are parallel to each other.

17. The gas lighter according to claim 1, wherein the external housing and the internal housing are made of a durable material.

18. A gas lighter, comprising an external housing, an internal housing, and at least one component out of a gas flow control components and a gas ignition component; wherein

the first compartment is arranged to receive a disposable gas reservoir; and wherein the external housing is arranged to receive the internal housing.

19. The gas lighter according to claim **18**, wherein the first compartment is shaped to surround a majority of the disposable gas reservoir.

20. The gas lighter according to claim **19**, wherein the first compartment comprises: an upper portion arranged to contact an upper portion of the disposable gas reservoir; a lower portion arranged to contact a lower portion of the disposable gas reservoir; and at least one intermediate portion arranged to contact an intermediate portion of the disposable gas reservoir.

21. The gas lighter according to claim **18**, wherein the external housing has a substantially horizontal opening for insertion of the internal housing; wherein the first compartment has a substantially vertical opening for an insertion of the disposable gas reservoir.

22. The gas lighter according to claim **18**, wherein the external housing has an external housing opening for insertion of the internal housing; wherein the first compartment has an opening for an insertion of the disposable gas reservoir, wherein the opening of the first compartment is oriented in relation to the external housing opening.

23. The gas lighter according to claim **18**, wherein the external housing has an external housing opening for insertion of the internal housing; wherein the first compartment has a first opening for an insertion of the disposable gas reservoir and a second opening for pushing the disposable gas reservoir from the first compartment.

24. The gas lighter according to claim **18**, further comprising a third compartment for receiving a flint holding element for pressing a flint against a striker of the gas lighter.

25. The gas lighter according to claim **18**, further comprising a second compartment for receiving a group of flints.

* * * * *