C. DE W. LUKENS.

VALVE.

APPLICATION FILED NOV. 16, 1909.

994,473. Patented June 6, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

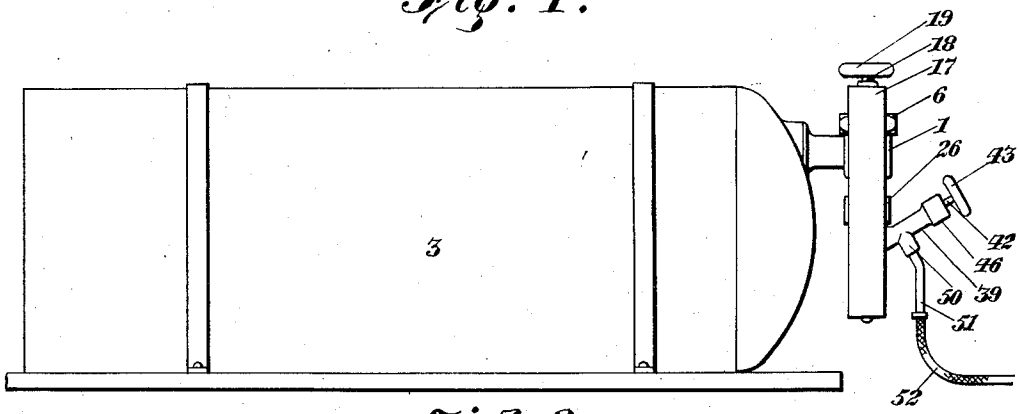
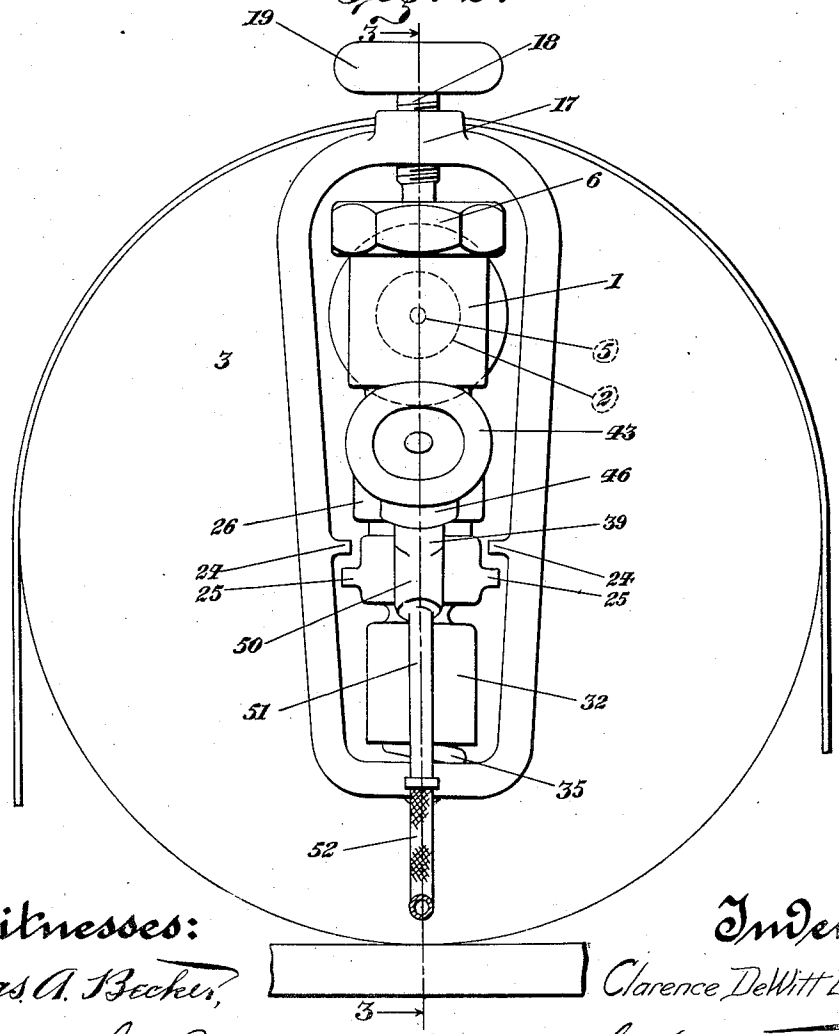


Fig. 2.



Witnesses:

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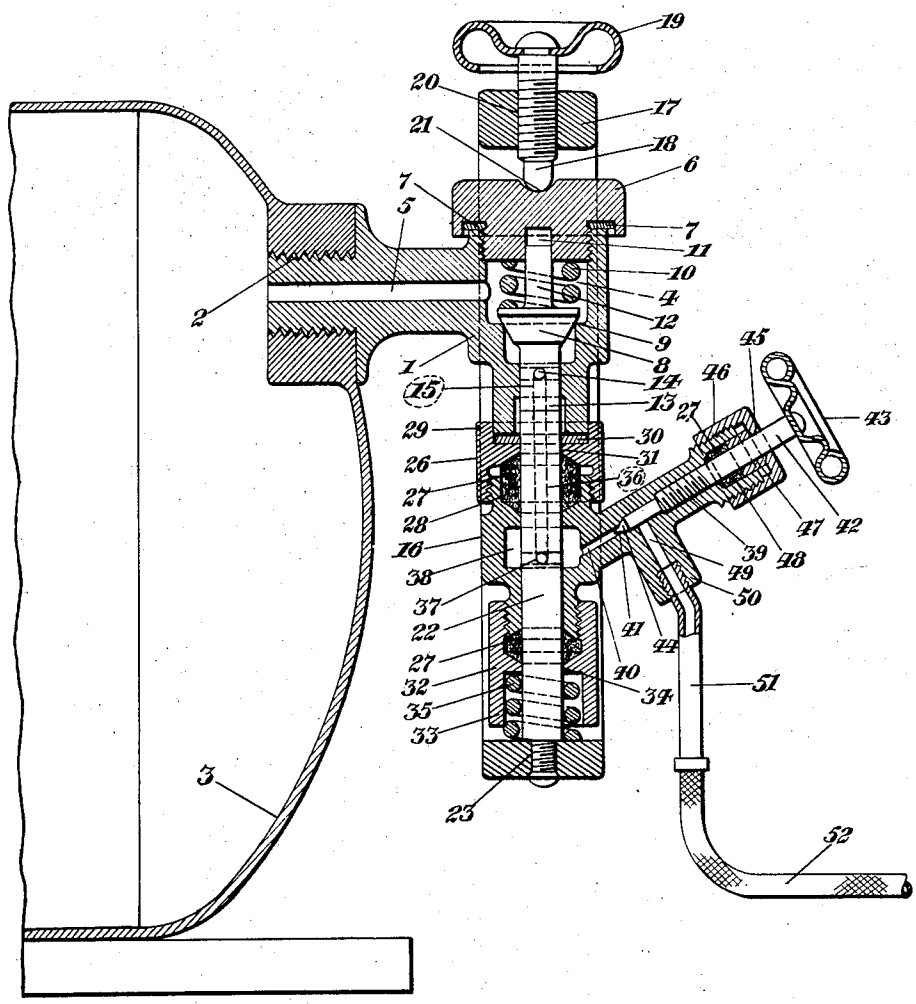
3 SHEETS—SHEET 2.

Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

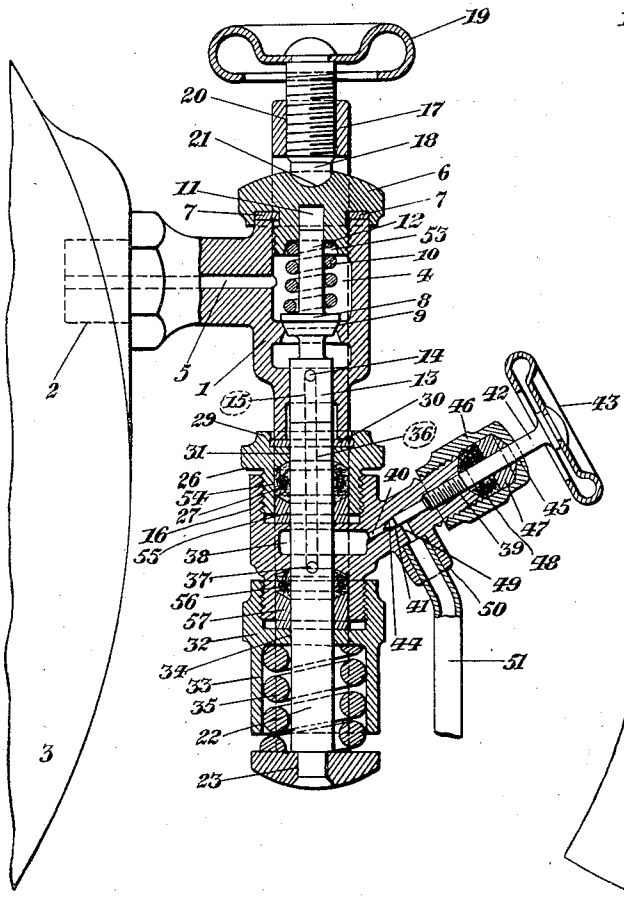
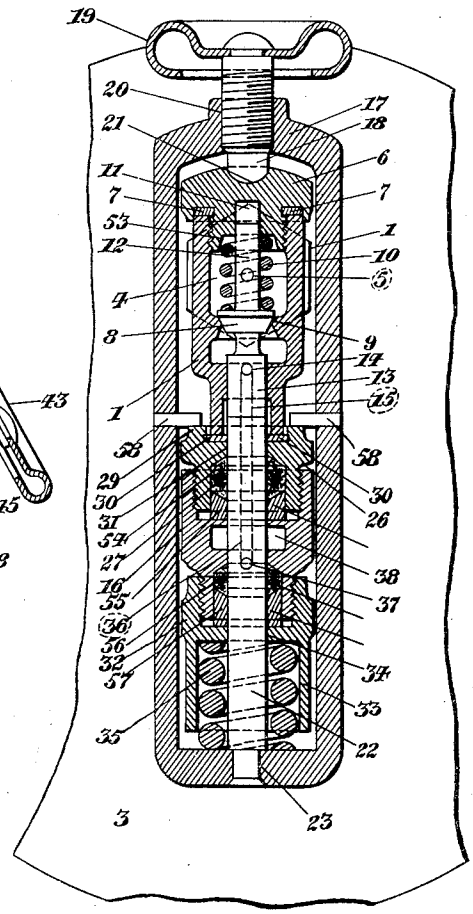


Fig. 5.



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UNITED STATES PATENT OFFICE.

CLARENCE DE WITT LUKENS, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO FIREBALL GAS TANK & ILLUMINATING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

VALVE.

994,473. Specification of Letters Patent. Patented June 6, 1911.

Application filed November 16, 1909. Serial No. 528,304.

To all whom it may concern:

Be it known that I, CLARENCE DE WITT LUKENS, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to valves, especially to that class of valves which are adapted to control the discharge of gas or liquid from a receptacle, and has for its object to provide a valve which is particularly intended to be used in connection with a tank in which acetylene or other illuminating gas is generated or stored for the purpose of supplying the lamps of an automobile, railway coach, locomotive, etc.

In the drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation; Fig. 2 is an end elevation; Fig. 3 is a sectional view on the line 3—3, Fig. 2; and Figs. 4 and 5 are sectional views through an alternate form of valve.

The main valve-body 1 is screwed into a screw-threaded opening 2 in the gas tank 3 in which the gas is stored or generated. The valve-chamber 4 of the valve-body 1 communicates with the interior of said tank through the opening 5. The plug 6 is screwed into said valve-chamber 4 and contains a washer 7 which is pressed against the end of the valve-body 1, thus forming an air-tight joint and preventing the gas from leaking at that point from said valve chamber.

The valve 8 is reciprocatively mounted in the valve chamber 4 and is normally held against seat 9 by the spring 10. An aperture 11 which is formed in the plug 6, receives a projection 12 on the valve 8 and not only holds said valve in position, but, also, guides the same in its movement toward and away from the valve seat 9. The valve stem 13, as shown in Fig. 3, is provided with a pair of apertures 14, arranged at right angles to each other, which pair of apertures communicate with a passage 15. When valve 8 engages seat 9, said pair of apertures 14 occupy a position below the bottom of said valve chamber 4 and gas is thereby prevented from entering said pair of apertures from said valve chamber, but, when valve 8 is moved from engagement with seat 9 in the manner hereinafter described, said pair of apertures 14, are moved to a position above the bottom of valve chamber 4, whereby gas is allowed to enter each of said pair of apertures from said valve chamber.

The controlling valve-body 16 is held in connection with the main valve-body 1 by the yoke 17. Said yoke encircles both said valve-bodies and is held in position by the clamp-screw 18 which is provided with a hand wheel 19 or other suitable means for turning same. Said clamp-screw extends through a screw-threaded aperture 20 in said yoke and seats in a depression 21 in the nut 6. The valve-body 16 is slidably mounted on the rod 22, which is rigidly secured to the yoke 17, preferably by riveting an end of said rod in a screw-threaded aperture 23 in said yoke. Projections 24 are formed on said yoke, and each of said projections is disposed in the path of movement of a lug 25 on valve-body 16 and limits the movement of said valve-body on the rod 22.

The cap 26 is screw-threaded to fit on a screw-threaded end of valve-body 16 and retains the packing 27 in the stuffing-box 28 in said valve-body. Said cap is provided with a sleeve 29 which receives the lower end of valve-body 1 and forms a sliding connection between the valve-body 1 and the valve-body 16. A washer 30, which is preferably leather, is placed in said sleeve and is pressed between cap 26 and the lower end of valve-body 1 in the manner hereinafter described. The rod 22 protrudes through aperture 31 and cap 26 and engages the end of valve-stem 13. The other end of valve-body 16 is screw-threaded to receive a screw-threaded end of cap 32. Said cap, also contains packing 27 and holds same firmly against said other end of valve-body 16. The other end of cap 32 is provided with a sleeve 33. Rod 22 extends through aperture 34 in said cap 32. Spring 35, which is preferably of the helical type, encircles said rod and rests on the yoke 17. Said spring protrudes into sleeve 33 and exerts its pressure against cap 32. The valve-body 16 is thus forced upwardly on rod 22

by spring 35 and causes the cap 26 to press the washer 30 tightly against the lower end of valve-body 1, whereby the gas is prevented from leaking through the joint between said valve-body 1 and cap 26.

A passage 36 is formed in rod 22 and registers with passage 15 in valve-stem 13, when said rod engages said stem. Said passage 36 terminates in a pair of apertures 37 which are arranged at right angles to each other and communicate with the chamber 38 in said valve-body. When gas is allowed to enter passage 15 in valve-stem 13, it passes through said passage 15 into passage 36 and then enters apertures 37 which deliver same into chamber 38.

The neck 39 is preferably integral with valve-body 16 and protrudes therefrom at any desired angle. Passage 40 in said neck communicates with chamber 38 and is provided with the valve-seat 41. A portion of said passage 40 is screw-threaded to receive the screw-threaded valve-stem 42 to which the hand-wheel 43, or other suitable means for turning, is fastened at one end thereof. A needle-point 44 is formed on the other end of valve-stem 42, and engages valve-seat 42 when wheel 43 is turned in one direction, but is moved away from said seat when wheel 43 is turned in the opposite direction. Said valve-stem 42 extends through an aperture 45 in the cap 46. Said cap 46 is fitted with a split-ring 47, which retains the packing 27 in the stuffing-box 48 and, also, clamps the valve-stem 42 with sufficient pressure to prevent said stem from working loose. The outlet-passage 49 extends through projection 50 on said neck and communicates with passage 40 so that, when the needle-point 44 is moved from engagement with seat 41, the gas in chamber 38 will pass through passage 40 and out through passage 49. Pipe 51 is secured at one end in the outlet-passage 49 and the other end of said pipe is connected to the tube 52 which leads to the lamps (not shown in the drawings).

In the alternate form of device depicted in Figs. 4 and 5, the spring 10 seats in a depression 53 in plug 6. The cap 26 is screw-threaded to fit into the screw-threaded upper end of valve-body 16 and contains a stuffing-box 54 in which packing 27 is retained by a split-ring 55. The lower end of valve-body 16 is provided with a stuffing-box 56 in which packing is held by a split-ring 57. The aperture 37 here shown as a single one in rod 22 occupies such position relative to chamber 38 that, when valve 8 is in engagement with valve-seat 9, said single aperture lies below said chamber, but, when valve 8 is raised from engagement with seat 9 by rod 22, said single aperture is moved to a position in which same communicates with said chamber. To limit the upward movement of valve-body 16 on rod 22, the pins 58 are fastened to yoke 17, each of said pins projecting into the path of movement of cap 26 on said valve-body.

To connect the controlling valve-body 16 to the main valve-body 1, the valve-body 16 is brought into position under valve-body 1 to cause sleeve 29 to slide on the lower end of valve-body 1, and the yoke 17 is placed over the valve-body 1 so that the clamp-screw 18 seats in depression 21 in plug 6. When the clamp-screw 18 is turned in the direction to clamp the yoke 17 in position, it draws said yoke upwardly and causes sleeve 29 to slide on the lower end of valve-body 1 and, also, causes cap 26 to press washer 30 against the lower end of valve-body 1.

The valve-body 16 can be disconnected from valve-body 1 by turning clamp-screw 18 in the direction to allow the sleeve 29 to slide off the lower end of valve-body 1. When the clamp screw 18, is loosened to disconnect said valve bodies, spring 35, forces the yoke downwardly until the lugs 24, carried by the yoke (Figs. 1, 2 and 3) engage lugs 25, on valve body 16, after which the yoke is moved farther downwardly so as to disengage valve body 16. In Figs. 4 and 5, a similar operation occurs, namely when the clamp screw 19 is loosened, spring 35, forces the yoke downwardly until the pins 58, carried by the yoke 17, engage cap 26, of valve body 16, after which the yoke is moved farther downwardly so as to disengage valve body 16.

The operation of the device is as follows: When the clamp-screw 18 is turned so that valve-body 16 is drawn in connection with the valve-body 1 in the manner hereinabove described, the spring 35 is compressed and causes a greater pressure of cap 26 against washer 30. Rod 22 forces valve stem 13 upwardly whereby valve 8 is raised from engagement with seat 9, and the pair of apertures 14 in Fig. 3, and the pair of apertures 37 are moved to a position to communicate with chamber 4 and chamber 38, respectively. Gas, which passes through opening 5 into valve chamber 4 from tank 3, enters the pair of apertures 14 in Fig. 3, then passes through passages 15 and 36, and is delivered through the pair of apertures 37 into chamber 38. Similarly, in Figs. 4 and 5, when rod 22 forces valve stem 13 upwardly, thereby raising valve 8 from seat 9, the single aperture 14, and the single aperture 37, are moved to a position to communicate with chamber 4 and chamber 38, respectively. When the hand-wheel 43 is turned to move valve 44 from engagement with valve-seat 41, the gas in chamber 38 is allowed to pass through passage 40 and outlet 49, from which it passes through pipe 51 and tube 52 to the lamps (not shown). When the clamp-screw 18 is turned in the direction to disconnect said valve-bodies, rod 22 moves away

from valve-stem 13 and spring 10 forces valve 8 against seat 9, thereby cutting off the supply of gas.

I claim:

1. The combination, with a main valve-body, and a valve therein, of a body provided with an exhaust chamber, a rod extending loosely through the second-named body and adapted to impinge against said valve, means for holding the second-named body in engagement with the first-named body, and means for shifting said rod endwise to operate said valve.

2. The combination, with a main valve-body, and a valve therein, of a yoke, a rod secured to said yoke and adapted to impinge against said valve for operating the same, means for clamping said yoke to said main valve-body, a body slidable on said rod and provided with an exhaust chamber, and a spring for holding the second-named body in engagement with said main valve-body.

3. The combination, with a main valve-body, and a valve therein, of a yoke, a rod secured to said yoke and adapted to impinge against said valve for operating the same, a body slidable on said rod and provided with an exhaust chamber having an outlet leading therefrom, said rod having an inlet communicating with said chamber, a controlling valve mounted in said outlet, means for clamping said yoke to said main valve-body, and positive means for operating said controlling valve.

4. The combination, with a main valve-body, and a valve therein, of a rod adapted to impinge against said valve for operating the same, means for operating said rod, a body slidable on said rod, means for holding the second-named body engaged with said valve-body and coöperating means provided upon said rod-operating means and said second-named body for limiting the movement of the latter upon said rod.

5. The combination of a main valve-body, a valve therein, a yoke, a rod secured to said yoke and adapted to impinge against said valve for operating the same, a controlling valve-body slidably mounted on said rod, means for clamping said yoke to said main valve-body, a cap provided upon one end of said controlling valve-body and having a sleeve adapted to fit on an end of said main valve-body, and a spring adapted to hold said cap in engagement with the end of said main valve-body.

6. The combination of a main valve-body, a valve therein having a stem formed with a passage opening through the end thereof, and with an aperture communicating with said passage and with the interior of the valve-body, a rod adapted to impinge at one end against the stem of said valve, said rod being formed with an aperture and with a passage in communication with the same and opening through said end, said passage being adapted to register with the first-named passage, a body slidable on said rod and provided with an exhaust chamber with which the second-named aperture communicates, means for shifting said rod endwise to operate said valve, and means for holding the second-named body in engagement with the main valve-body.

7. In combination with a main valve body and a valve therein, a body having an exhaust chamber, a valve operating member slidable in said second named body and being for impinging engagement with said valve, means to hold the second named body in engagement with the first named body, and means for actuating said valve operating member to unseat said valve.

In testimony whereof I have affixed my signature in presence of two witnesses.

CLARENCE DE WITT LUKENS.

Witnesses:

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DAVID LÉON SOLOMAN.