

C. DE W. LUKENS.

VALVE.

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987,001.

Patented Mar. 14, 1911.

FIG. 1.

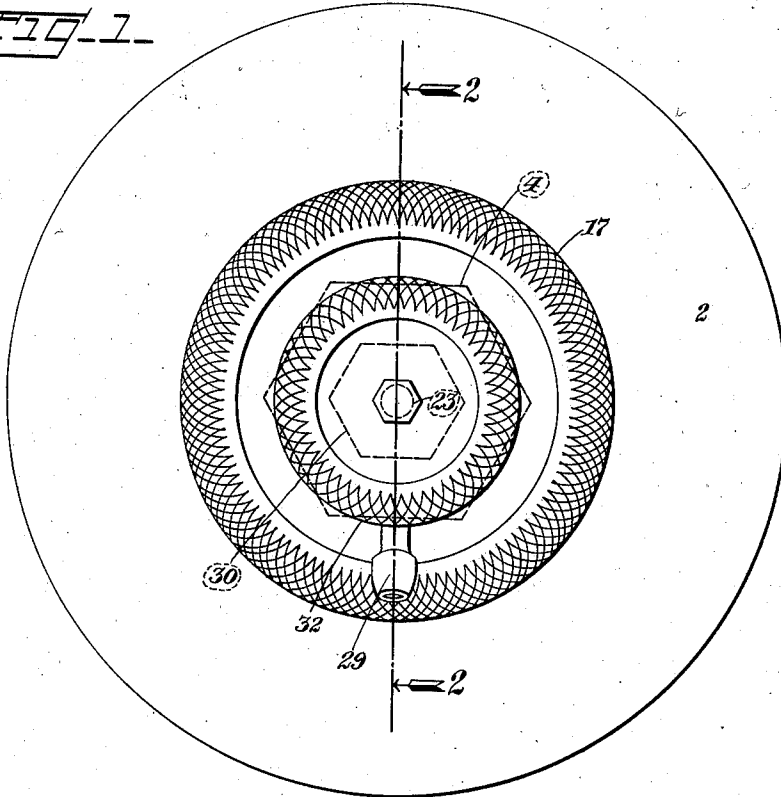
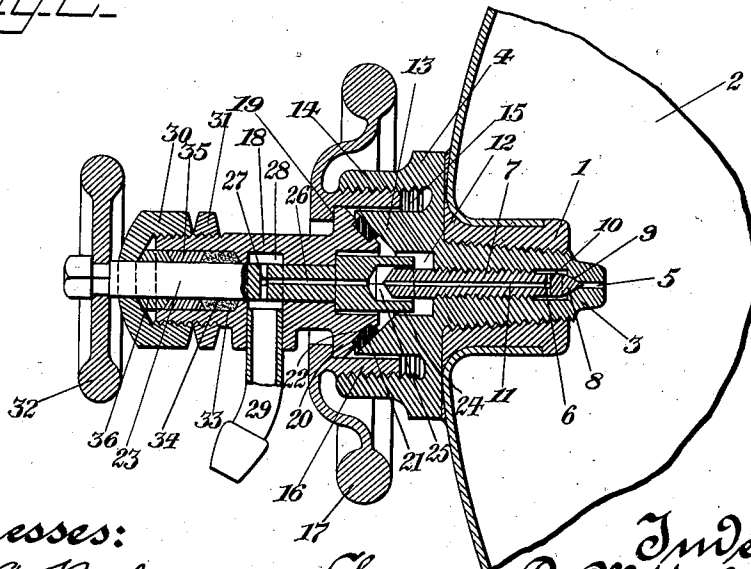


FIG. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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VALVE.

987,001.

Specification of Letters Patent. Patented Mar. 14, 1911.

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To all whom it may concern:

Be it known that I, CLARENCE DEWITT 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, and embodies certain novel improvements on the valve constituting the subject-matter of my copending application Serial No. 543,214, filed February 11, 1910, whereby a more compact valve is obtained.

In the drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is an end view of a reservoir having this improved form of valve connected thereto; and Fig. 2 is a sectional view on the line 2—2, Fig. 1.

A bushing 1 is secured in any suitable manner in an opening that is preferably located in the center of an end of a reservoir 2 in which the gas or liquid is contained. Said bushing is screw-threaded internally to receive the screw-threaded plug 3 of valve-body 4, which is screwed tightly against the outer end of said bushing, the joint thus formed between said valve-body and the end of reservoir 2 being soldered or otherwise sealed to prevent escape of the gas at that point. A passage 5 in said plug opens into the interior of reservoir 2 and, also, communicates with an opening 6 in said plug, a portion of said opening 6 being screw-threaded to receive a screw-threaded valve-stem 7. A valve 8, preferably conical, is borne by one end of valve-stem 7 and is movable toward and away from valve-seat 9 in the end of passage 5 in order to close or open said passage. Apertures 10 extending transversely through valve-stem 7 communicate with opening 6 and deliver the gas that enters said opening to a passage 11 extending longitudinally into said stem. The other end of valve-stem 7 is

preferably angular and extends into a chamber 12 that is surrounded by the inner circular wall or ring 13 of valve-body 4.

An outer circular wall or ring 14 of valve-body 4 encircles wall 13, and is formed with such diameter internally that a space 15 around wall 13 is left within said wall 14. Said wall 14 is screw-threaded internally to receive the screw-threaded hub 16 of hand-wheel 17, said hub being hollow in order to extend into space 15 and to encircle wall 13. The end of wall 13 is preferably conical to form a seat for the conical end of a neck 18 which passes through hub 16, said neck being arranged to aline with plug 3 of valve-body 4. An offset 19 projecting from the interior surface of hub 16 engages a flange or shoulder 20 on neck 18 and, when the hand-wheel 17 is turned in the direction to cause hub 16 to enter space 15, said offset presses against said flange, thereby causing the conical end of said neck to seat in the conical end of wall 13. A packing washer 21 is set in an annular groove 22 in the conical end of neck 18 and when the conical end of said neck is caused to seat in the conical end of wall 13 in the manner just described, said washer is pressed tightly against the end of wall 13 in order to prevent the gas from leaking out of chamber 12.

A key stem 23 passes longitudinally through neck 18. The inner end of stem 23 is provided with an enlarged socket 24 that projects into chamber 12. An angular opening 25 is formed in socket 24 to receive the angular end of valve-stem 7, and when stem 23 is turned in one direction or another, socket 24 turns valve-stem 7 in opening 6, thereby causing valve 8 to move toward or away from valve-seat 9. A passage 26 extending longitudinally into stem 23 communicates with chamber 12 and terminates in perforations 27. Said perforations 27 extend transversely through stem 23 and communicate with chamber 28 within neck 18. When stem 23 is turned in the direction to cause valve 8 to move away from seat 9, the gas, which enters chamber 12 from passage

11, passes through passage 26 to perforations 27 that deliver it to chamber 28. A pipe 29, which is secured in an opening in the side of neck 18, opens into chamber 28 and conveys the gas from said chamber to a tube (not shown in the drawings) that is connected to the end of said pipe in order to conduct the gas to any desired lighting or heating apparatus.

10 A cap 30 is screw-threaded internally to fit on the screw-threaded outer end of neck 18 and is held in place on said neck by means of a lock-nut 31. The outer end of stem 23 extends through a perforation in cap 30 and receives a hand-wheel 32 that is fastened thereto for the purpose of turning said stem. Said outer end of neck 18 is provided with a stuffing-box 33 within which packing 34 is placed around stem 23. A ring 35, which is preferably conical at both ends, encircles stem 23 and retains packing 34 in stuffing-box 33. A split friction ring 36 is tapered at both of its ends and, also, encircles stem 23. One end of said ring 36 seats in a conical end of ring 35, and the other end of said ring 36 engages the inner conical surface of cap 30. The pressure of cap 30 against the split ring 36 forces same against the ring 35 and causes ring 35 to compress packing 34 tightly around stem 23 within stuffing-box 33, thereby preventing leakage of the gas at that point. By reason of the ends of friction ring 36 being tapered, the conical surface of cap 30 and the conical end of ring 35 cause ring 36 to close inwardly around stem 23, and, when it is desired to maintain a uniform and continuous flow of the gas, the pressure of ring 36 against stem 23 can be regulated by means of cap 30 so that stem 23 is prevented from being rotated.

For the purpose of affording a better gripping surface to facilitate the turning of hand-wheels 17 and 32, the rims of same are roughened or corrugated. When the hand-wheel 17 is turned so that the threads of hub 16 disengage the threads of wall 14, the neck 18 can be removed from connection with valve-body 4.

50 The operation of the valve is as follows: When the hand-wheel 32 is turned in one direction, the stem 23 rotates therewith and causes socket 24 to rotate stem 7, thereby drawing valve 8 away from seat 9. The gas in reservoir 2 flows through passage 5 into opening 6 from which it passes into apertures 10, then through passage 11 into opening 25. The gas that enters opening 25 flows through passage 26 to the perforations 27 which deliver it to chamber 28 and then passes from said chamber to the pipe 29. When the handwheel 32 is turned in the op-

posite direction, stem 23 rotates in the opposite direction and turns the valve-stem 7 in opening 6 so that valve 8 moves against seat 9, thereby closing passage 5 and preventing the gas from flowing out of reservoir 2 until the passage 5 is again opened in the manner hereinabove described.

If it is desired to maintain a uniform and continuous flow of the gas at all times, the valve 8 is moved away from seat 9 so that the gas flows at the desired pressure. The cap 30 is turned so that the pressure of ring 36 against stem 23 is increased sufficiently to prevent rotation of said stem, and said cap is then locked by means of the lock-nut 31.

I claim:

1. In a valve, a valve casing having an opening and a chamber at one end of the same, a valve having an angular head threaded in said opening, a valve seat in said opening for said valve, the valve stem being formed with a passage which communicates with said opening, said casing being formed with a pair of spaced circular outstanding walls, a hand-wheel having a hub threaded into engagement with one of the walls, a neck having a shoulder, the front end of the neck being disposed adjacent the outer end of one of the circular walls of the casing, an offset carried by the hub to engage the shoulder of the neck, a key stem carried by the neck and having a socket to engage said head of the valve, said key stem having a passage which communicates with the chamber, and means to permit the fluid to escape from the key stem.

2. In a valve, the combination of a valve casing having an open-ended outer wall, a concentric inner wall borne by said casing and spaced from the outer wall, a valve, a separable member, means borne by said separable member and operable independent thereof adapted to operate said valve, a hollow member in connection with one of said walls, and means borne by said hollow member adapted to hold said separable member in connection with the other one of said walls.

3. In a valve, the combination of a valve-casing having an open-ended outer wall, an inner wall borne by said casing being spaced from the outer wall and having a conical end, a valve, a separable member having a tapered end, rotatable means borne by said member adapted to operate said valve, a member having a part in threaded connection with said outer wall, and means borne by said last named member adapted to hold the tapered end of said separable member in connection with the conical end of said inner wall.

4. In a valve, a casing, a valve threaded in
said casing, an inner wall and an outer
spaced concentric wall borne by the casing,
a separable member having a head the face
5 of which engages the outer end of one of
said walls, and a hand wheel having a part
which engages said head on its rear side and
having a forward extension which is re-
ceived in the space between said concentric

walls, said extension being threaded into en- 10
gagement with the other of the said walls.

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

CLARENCE DE WITT LUKENS.

Witnesses:

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