No. 634,496. Patented Oct. 10, 1899.

L. H. & E. F. FREUND & G. F. KUETT.

GAS, STEAM, OR WATER VALVE.

(Application filed May 31, 1899.)

(No Model.)

Fig. 1

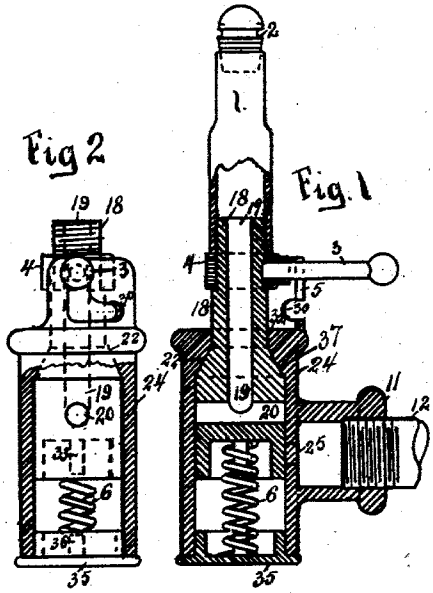

Fig. 2

Fig. 7

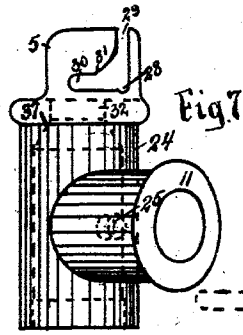

Fig. 12

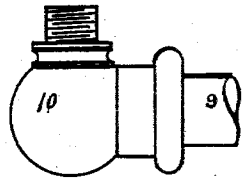

Fig. 3

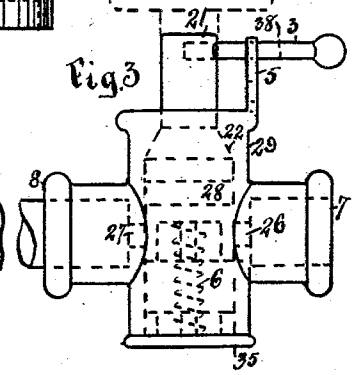

Fig. 11

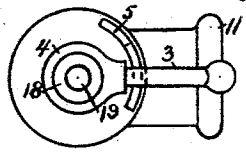

Fig. 5

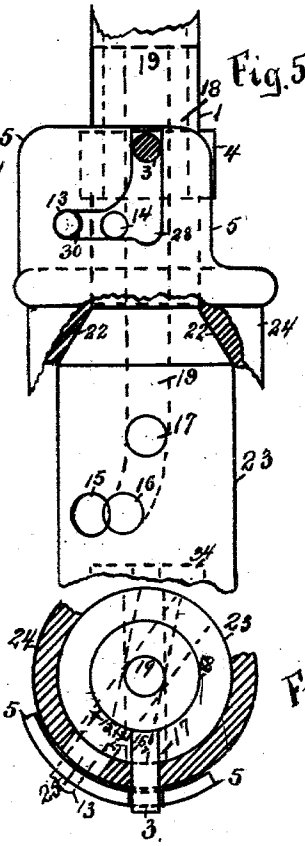

Fig. 4

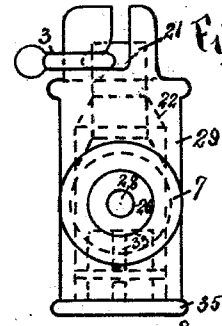

Fig. 9

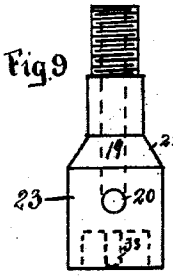

Fig. 10

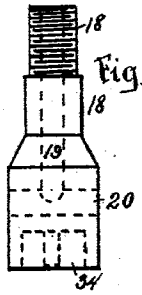

Fig. 6

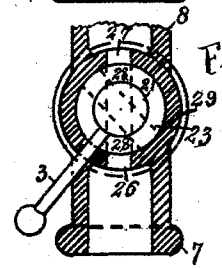

Fig. 8

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UNITED STATES PATENT OFFICE.

LEO H. FREUND, OF NEW YORK, N. Y., AND EUGENE F. FREUND AND GEORGE F. KUETT, OF PATERSON, NEW JERSEY.

GAS, STEAM, OR WATER VALVE.

SPECIFICATION forming part of Letters Patent No. 634,496, dated October 10, 1899.

Application filed May 31, 1899. Serial No. 718,928. (No model.)

To all whom it may concern:

Be it known that we, LEO H. FREUND, a citizen of Austria-Hungary, residing in the city of New York, State of New York, and EUGENE F. FREUND and GEORGE F. KUETT, citizens of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Valves for Gas, Water, Steam, &c., of which the following is a specification.

Our invention relates to improvements in valves in which the valve after being partially closed closes the remainder of the way automatically; and the objects of our improvements are, first, to provide for a gas-valve which will automatically extinguish itself when turned too low; second, to provide for a safety gas-burner valve in that it cannot be turned low and liable to go out when pressure is relieved by opening another jet or blown out; third, to remove the liability of accidentally opening the valve, and, fourth, to construct a valve for liquids or steam in which the wear on the valve is removed from its ground-seat to some other part. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side section of our invention with an ordinary gas-burner attached. Fig. 2 is an end view of our invention with part of the case shown in section; Fig. 3, a side view of another style of valve; Fig. 4, a front view of Fig. 3, except that the valve is open. Fig. 5 is an enlarged detail of upper part of valve; Fig. 6, a sectioned ground plan of Fig. 4; Fig. 7, a detailed elevation of the case; Fig. 8, an enlarged detail showing several positions of the valve. Figs. 9 and 10 are two views of the center slide of the valve; Fig. 11, a ground plan of Fig. 1 with the burner not shown. Fig. 12 is an ordinary burner connection for gas used in connection with Fig. 3.

Similar figures refer to similar parts throughout the several views.

In the drawings the valve consists of a case 24, in which there is a piece (shown in Figs. 9 and 10) marked 23. The outside of the largest part fits perfectly in sliding contact with the inside of the case 24. The slope of the case corresponds exactly with the cone-shaped part 22 of the piece 23, and the hole 32 in the case also fits over the lower part of 18 in sliding contact. In the bottom of the case 24 a cap or plug 35 is screwed, on which there is a pin 36, and in the bottom of the piece 23 there is also a pin 33. Over each of these pins 33 and 36 each end of a spring 6 is held in position. On the upper part of 18 of the piece 23 there is a thread, on which is screwed a bracket 4, in which the small lever or handle 3 is secured. On this same thread an ordinary pillow 1, with the tip 2, is screwed down to the piece 4. The case 24 has a side connection 11, in which an ordinary pipe 12 is screwed.

Fig. 3 shows a valve with connections on opposite sides in which pipes can be screwed for other fixtures.

In the center slide 23 there is a hole 19, breaking into the cross-hole 20, which receives the gas at one of its ends. In the part 5 there is a slot, in part of which the lever 3 can move horizontally from the part marked 30 to the base of the vertical part 28 and from the point 28 to the part 29 vertically, one side of this opening for the lever 3 from the point 31 an oblique line, or it may be a curved line, is run to the vertical part at 29. There is also a small indentation 28 in the bottom of the vertical slot and at the end of the horizontal slot. Figs. 5 and 8 show the center hole 19, and the dotted lines running crosswise indicate the different positions of the hole 20 as the valve is turned.

25 represents the inlet-hole in the case; 15, the position of 20 in relation to 25 when the valve is open; 16, the position of the valve in relation to 25 when nearly closed, and 17 when closed altogether. The positions of the lever indicated by 13, 14, and 3 correspond with the positions 15, 16, and 17 of the position indicated by 13 in Fig. 5, and the valve is open and the gas is passing freely and directly through the valve horizontally.

The valve is put together in the following way: The case 24, with a pipe connection 11 on one side and a hole 25 to admit of the gas to the valve, the slide or valve 23 inserted in the case, the upper end 32 fitting around 18 and having the piece 4 screwed on 18 to a shoulder, and the pillow 1, with tip, is screwed on 18

down to the piece 4 or like, Fig. 3, with no thread on the top. The lever 3 is inserted directly into the piece 21 and lying in the slot in the piece 5. The spring 6 is then placed in position over the pin 33 and the pin 36 of the cap 35, which is screwed in the bottom of the case 24. A wheel or handle 40 (represented by dotted lines on top of 21) can be used and a pin in the slot instead of a lever, the pin ending at 38. The lever 3 being in the position shown in Figs. 1, 2, and 3—that is, in the highest point in the vertical slot and held there by the compressed spring 6, having its upward tendency—when it is desired to open the valve the lever is pressed downward and a little to one side or the other, depending on the way the horizontal slots run, and then to the end 30 of the horizontal slot. In Fig. 5 the opening 25 in the case which admits the gas corresponds to the opening 15 and then to the hole 19 to the burner. From this point the gas can be closed off from the burner as much as desired—say three-fourths—that is, one-fourth of the receiving-hole left open. This point depends on the point 31 in the slot, for as soon as the center of the lever 3 passes the point 31 the lever, impelled by the spring through the slide, automatically raises the slide and lever to the position of 3, (shown in Fig. 5,) which effectually closes the last one-fourth of the opening. This prevents the turning of the gas-light so low that a draft of air can blow it out, or if another valve on the same line of pipe were opened and the pressure removed from this jet by the flow from the other it would go out, and when the other jet was turned off again the gas would escape from this and probably cause damage. When the valve is closed, it cannot be opened by accident or a light touch. It is necessary to intentionally press downward and to one side on the lever 3 to open it, thus securing against accidents.

The slide 23 is as tight a joint in the case 24 as can be. To be consistent with its moving up and down, it also has the slope in the upper part of the case, which corresponds with the cone shape 22 of the piece 23. This cone pressed in the slope by the spring 6 also makes a perfectly-tight joint to prevent leaks, and the slope also limits the distance which the slide can move upward, and the slot limits the distance downward. If when closed the spring 6 should break, the slide from gravity will drop and the lever 3 drop in the small hollow 28 and the valve still remain closed, as the position occupied by the openings will be as 15 and 17 in Fig. 8, and the spring can also be repaired and replaced by unscrewing the cap 35 and putting in another spring and replacing the cap without interfering with the valve, the same being closed the whole time.

This valve can be used wherever any ordinary gas-cock is used and in as many forms. The openings in the slide bearing the same relation to the openings in the case, the only change necessary is in some instances to deliver the gas from the top through the hole 19 and in others to deliver the gas from the other end of the same hole, as the inlet, as shown in Fig. 3. The case has a pipe connection on opposite sides, and the delivery and receiving holes in the case are directly opposite each other, and the hole 20 in the valve-slide passes through the center of said slide. The lever serves the double purpose of a controlled or directed pin in the slot in 5, and for turning the valve-slide any wheel or piece can be put on the top, as shown by the dotted lines 40, to turn the valve in place of using the lever.

This valve enlarged can be used for steam or liquids, for in steam and water valves and cocks there is a constant wearing on the seat of the valve, which renders it useless unless repaired; but with our improvement the action on the seat is removed and the only wear from use would be on the sides of the openings without any material damage to the valve-joint.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a gas, water, or steam valve the combination with the case, the slide, the lever or pin 3, the slot or opening, the different features designated by the numbers 28, 29, 30, and 31, for the purpose of limiting the movement of the lever 3, and the impelling-spring for the purpose of closing the ports in the case when the lever is moved from 30 to just past 31, as set forth and described in the foregoing drawings and specification.

2. In a gas, water or steam valve the combination of the case having one or more ports, the slide the horizontal opening 20, in connection with the upright opening 19, the ground-joint 22 to prevent leaking, the spring, the spring-guide 33, and the cap, and the spring-guide in the cap, 36 as set forth and described in the foregoing drawings and specification.

Signed at Paterson, in the county of Passaic and State of New Jersey, this 18th day of April, A. D. 1899.

LEO H. FREUND.
EUGENE F. FREUND.
GEORGE F. KUETT.

Witnesses:
WM. A. ARNOLD,
A. TILT.