No. 885,795. PATENTED APR. 28, 1908.

N. H. SHAW.

AUTOMATIC GAS LIGHTING MECHANISM.

APPLICATION FILED FEB. 9, 1907.

2 SHEETS—SHEET 1.

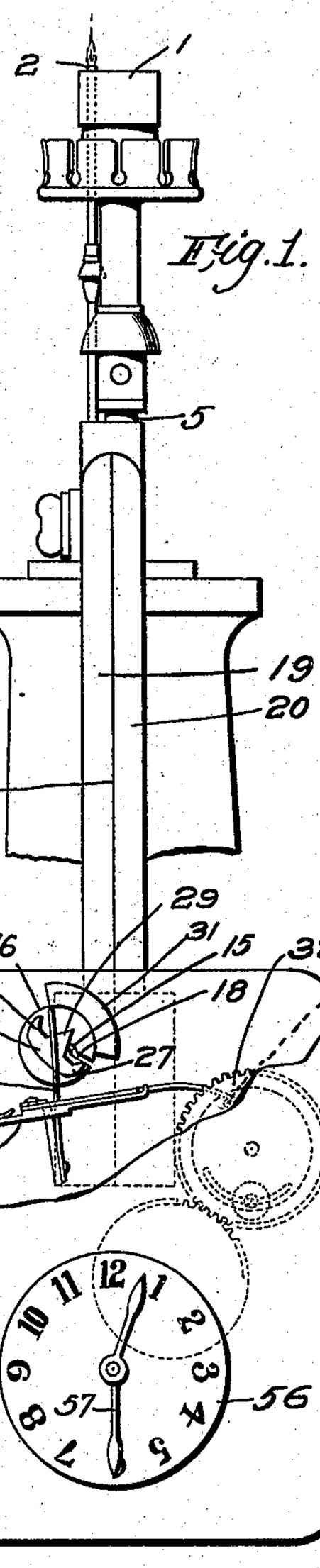

Fig. 1.

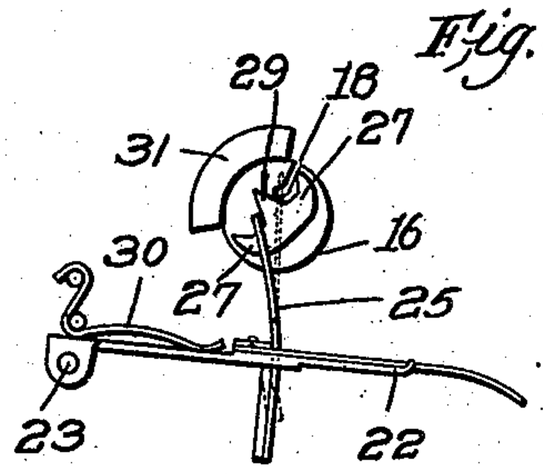

Fig. 3.

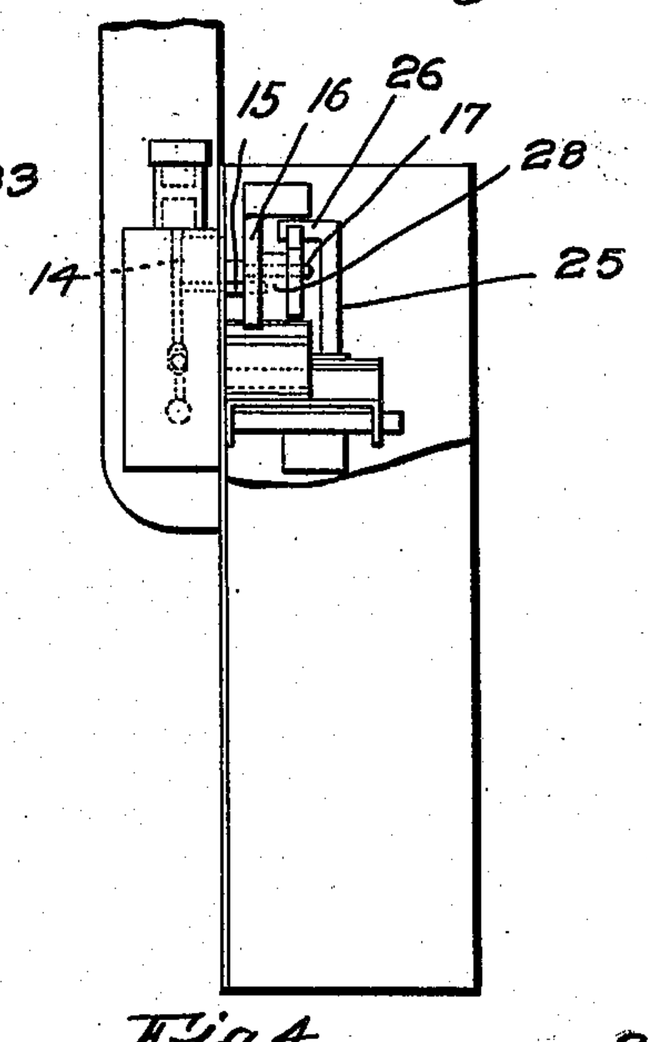

Fig. 2

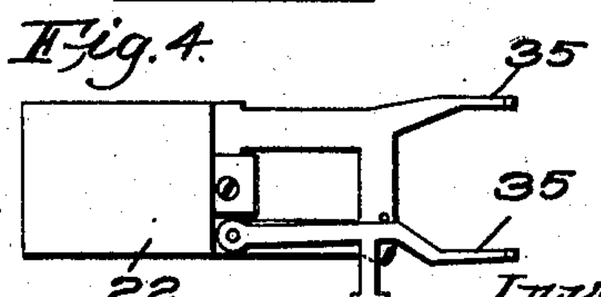

Fig. 4.

Witnesses.
W. C. Dumsford.
Joseph M. Ward.

Inventor.
Nathaniel H. Shaw.
by Cressby & Gregory Atty's.

No. 885,795. PATENTED APR. 28, 1908.

N. H. SHAW.

AUTOMATIC GAS LIGHTING MECHANISM.

APPLICATION FILED FEB. 9, 1907.

2 SHEETS—SHEET 2.

Fig. 5

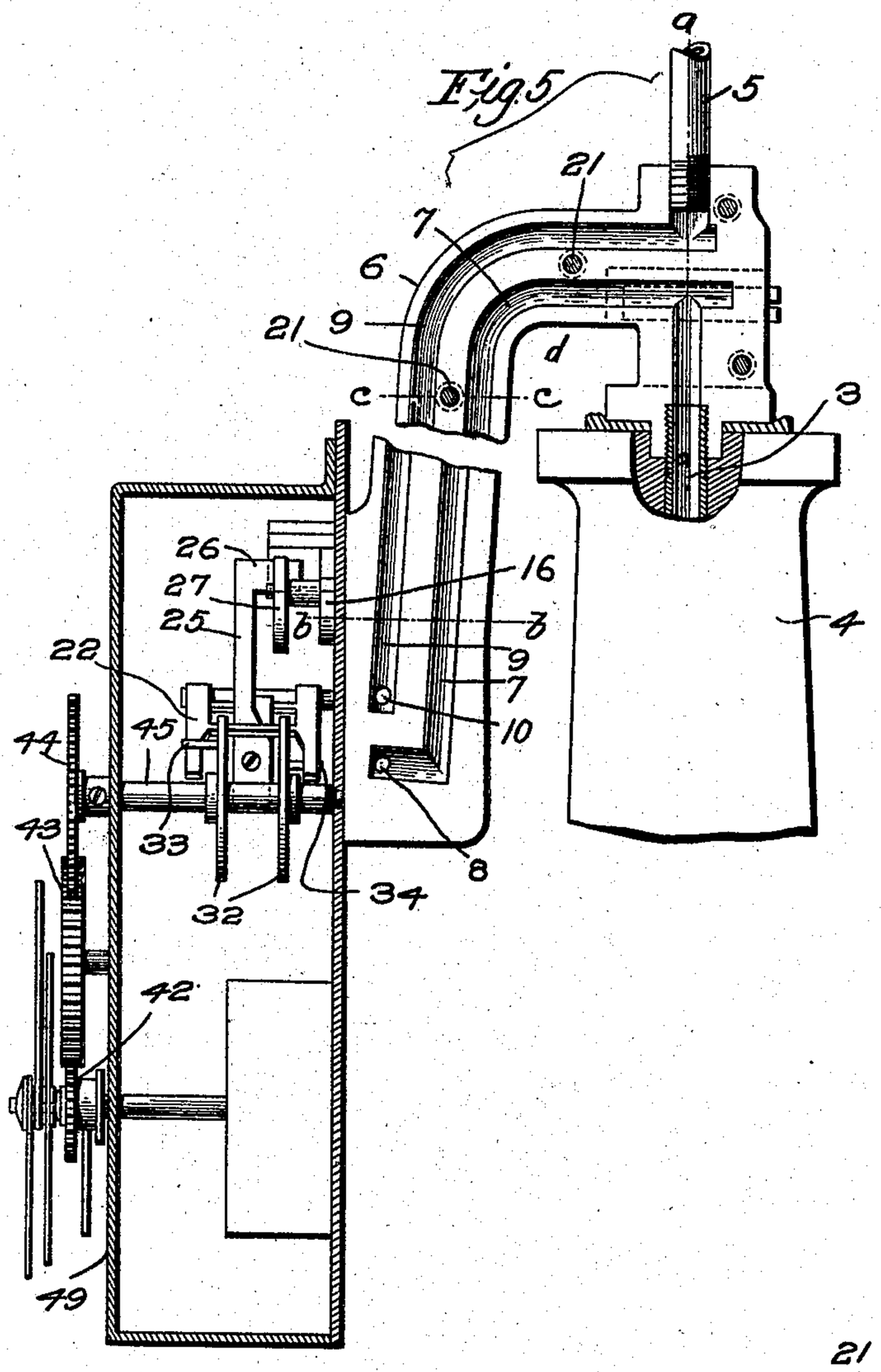

Fig. 6.

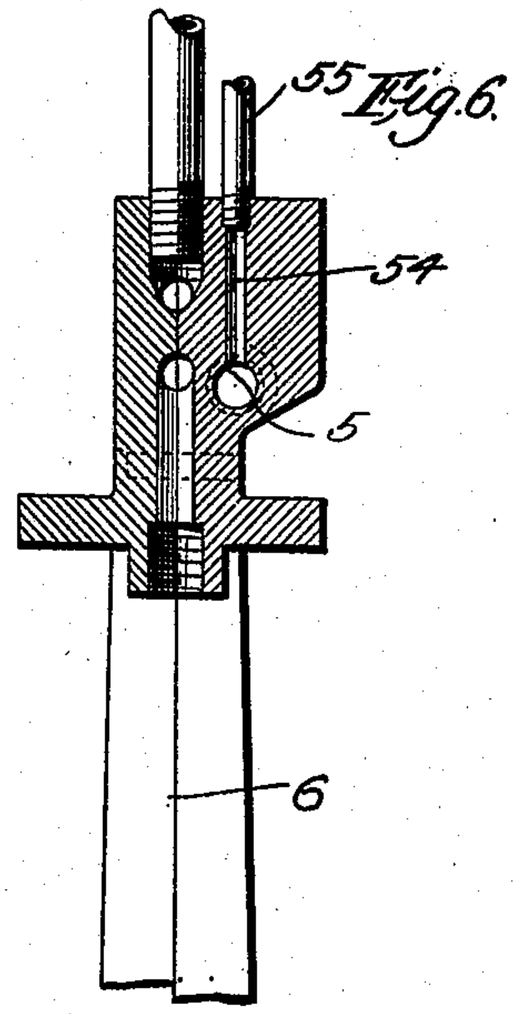

Fig. 7.

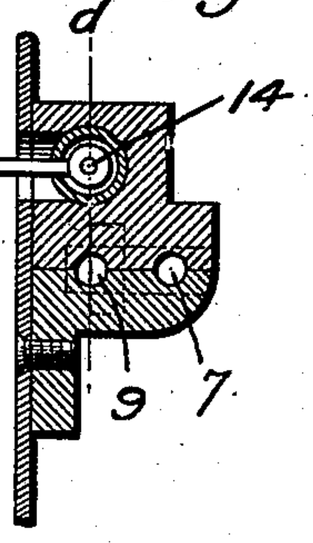

Fig. 8.

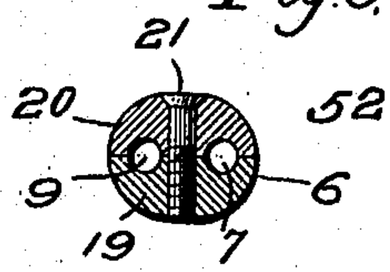

Fig. 9.

Witnesses.
W. C. Lunsford
Joseph M. Ward.

Inventor
Nathaniel H. Shaw.
by
Lemby & Gregory
attys.

UNITED STATES PATENT OFFICE.

NATHANIEL H. SHAW, OF BOSTON, MASSACHUSETTS.

AUTOMATIC GAS-LIGHTING MECHANISM.

No. 885,795. Specification of Letters Patent. Patented April 28, 1908.

Application filed February 9, 1907. Serial No. 356,500.

To all whom it may concern:

Be it known that I, NATHANIEL H. SHAW, a citizen of the United States, residing at Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Automatic Gas-Lighting Mechanism, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawings representing like parts.

This invention relates to a time gas lighting mechanism, such, for instance, as shown in my Patents No. 755,060, dated March 22, 1904, and No. 842,259, dated January 29, 1907. In the devices illustrated in said patents, the valve which controls the supply of gas to the burner is operated automatically to open and close the valve at definite times by a time mechanism. My present invention relates to the valve-operating mechanism, and has for its object to provide a novel and simple device for automatically reversing the position of the valve by the continuous forward movement of the motor or driving mechanism. In the said patents the valve is sustained by a laterally and downwardly-extending gas conduit which is interposed between the gas main and the burner, and another feature of my invention relates to a novel manner of constructing this conduit.

In the drawings wherein one embodiment of the invention is shown, Figure 1 is a front view of a burner and mechanism for operating the valve; Fig. 2 is a side view of a portion of the valve actuator; Fig. 3 is a detail view of the valve actuator; Fig. 4 is a top plan view of the valve-actuating lever; Fig. 5 is a side view on an enlarged scale and partly in section of the valve-actuating mechanism; Fig. 6 is a section on the line *a*—*a*, Fig. 5; Fig. 7 is a section on the line *b*—*b*, Fig. 5; Fig. 8 is a section on the line *c*—*c*, Fig. 5; Fig. 9 is a vertical section through the valve on the lines *d*—*d*, Fig. 7.

The main burner 1 and the pilot-burner 2 may be of any suitable or usual construction. The gas is supplied to these burners through a gas-supply pipe 3 which is herein shown as extending through a lamp-post 4 on which the burners and valve-actuating mechanism are supported. The gas is delivered from the gas main 3 to the pipe 5 which extends to the main burner through a conduit member 6 which is supported on the lamp-post 4 and which has substantially the same shape as the conduit member shown in my above-mentioned patents, it having the gas duct 7 which communicates with the gas main 3 and terminates in a port 8 leading to the valve and the return duct 9 which communicates at one end with the pipe 5 and at the other end with a port 10 leading from the valve, so that when the valve is open, the gas may flow from the main 3 through the conduit 7 and port 8 to the valve, and through the port 10 and conduit 9 to the pipe 5 and the main burner 1.

Any suitable valve may be employed for controlling the supply of gas to the main burner, that herein illustrated being substantially the same as that shown and described in my Patent No. 842259, dated January 29, 1907. This valve is designated by 11 and is a double valve, as seen in Fig. 9. When in one position it seats on the valve-seat 12 and thus closes communication between the ports 8 and 10, as best seen in Fig. 9, and when in the other position, it opens communication between the ports 8 and 10, thus allowing the gas to flow to the main burner, and seats on the valve-seat 13, thus preventing the escape of gas around the stem 14. The stem 14 has a laterally-extending arm 15 which extends through an opening in the valve casing and into position to be engaged by a valve actuator 16. This valve actuator is suitably pivoted, (as at 17,) and is provided with a slot 18 in which the stem 15 is received, so that oscillating movement of the actuator will operate to raise and lower the valve, thereby to open and close it, as will be obvious. This particular type of valve, however, forms no part of my present invention as it is described and claimed in my above-mentioned patent No. 842259 and so far as the invention herein contained is concerned, any suitable valve might be used.

In order to facilitate the movement of and to reduce the cost of making the gas conduit member 6, I propose to make it in two half sections 19 and 20 which are held together in any suitable way as by means of screws 21. The ducts 7 and 9 are formed partially in each half section, and with this construction, it is possible to cast the two half sections each with half grooves on its inner face, so that when the two half sections are secured together, the half grooves aline with each other and form the ducts 7 and 9. This obviates the necessity of drilling the ducts as

had to be done in the conduit member shown in my above-mentioned patents, and greatly facilitates the manufacture of said conduit member.

The valve actuator 16 is oscillated by means of an actuating lever 22 which is shown as pivoted at 23 to a backing plate 24 that is preferably secured to the conduit member 6. This actuating lever 22 has extending therefrom a resilient arm 25 provided with a nose 26 which is adapted to engage either one or the other of two arms 27 extending laterally from a hub 28 which projects from the actuator. Between the arms 27 is situated a V-shaped projection 29 which as the actuator 16 is oscillated is thrown first to one side and then to the other of the normal position of the arm 25, and which serves to direct the nose of the arm 25 first into position to engage one arm 27, and then into position to engage the other arm 27, as will be described. The actuator is shown in Fig. 1 in the position it occupies when the valve is closed, the lever 22 is shown as elevated, and the resilient arm 25 is in position for its nose 26 to engage the left-hand arm 27 when the actuating lever 22 descends. During such descending movement, the weight of said lever, augmented by a suitable spring 30 if necessary, operates to turn the actuator into the position shown in Fig. 3 and thus open the valve. When the actuating lever 22 is again raised, the nose 26 of the arm 25 engages one side of the projection 29 and is forced out of its normal position thereby so that when said lever 22 is raised sufficiently for the nose 26 to clear said projection the resiliency of the arm 25 causes the nose to be carried to the right-hand side of the said projection 29, as shown in dotted lines Fig. 3, so that when the actuating lever 22 again descends, the arm 25 acts on the right-hand arm 27, thereby turning the actuator 16 back again to the position shown in Fig. 1 and closing the valve. In the same way on the next upward movement of the actuating lever the nose 26 is shifted automatically to the left-hand side of the projection 29, so that when the lever again descends the valve actuator will be turned to open the valve. The actuator 16 is preferably provided with a counterweight 31 which serves to hold it in either of its two positions. This reversing mechanism is very simple and yet always effective, and one up-and-down movement of the actuating lever 22 will open the valve and the next up-and-down movement will always close the valve.

The actuating lever 22 may be given its oscillatory motion by any suitable means, and for this purpose I have shown a clock mechanism which is operated by a suitable main spring within a spring chamber 40 and which clock mechanism includes a pair of wheels 32 provided with pins 33 and 34. As the wheels 32 are rotated by the time mechanism, each pin 33, 34, at the proper time engages one of the fingers 35 extending from the actuating lever 22 and raises the latter into the full line position Fig. 1, thereby carrying the resilient arm 25 to one side or the other of the V-shaped projection 29. As the pin passes out from under the finger of the actuating lever, it drops downwardly partly by its own weight and partly by the action of the spring 30, thereby turning the actuator and operating the valve, as above described. Any suitable form of time mechanism, however, might be employed for operating the actuating lever 22, and so far as my invention is concerned, the reversing mechanism for operating the valve might be used in connection with any type of burner whether it employs the laterally and downwardly-extended gas conduit or not.

I have herein shown one embodiment only of my invention, and therefore do not wish to be limited to the exact construction shown.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described, the combination with a valve, of an oscillating actuator therefor, said actuator having oppositely-disposed arms, a pivoted gravity-actuated lever, means to moye the lever in one direction, a spring arm carried by said lever, and means to cause said spring arm to engage the arms of the actuator alternately upon successive downward movements of the lever.

2. The combination with a valve of an oscillatory actuator therefor having oppositely-disposed arms, an actuating lever having a resilient arm which is adapted to engage one of said arms of the actuator during the movement of the lever in one direction and is automatically shifted into position to engage the other arm during the movement of the lever in the opposite direction.

3. The combination with a valve of an oscillatory actuator therefor having two oppositely-disposed arms, a V-shaped projection carried by said actuator, an actuating lever having a resilient arm which is adapted to engage one of the arms of the actuator during the movement of the lever in one direction, said resilient arm bein gcarried by its resiliency over said projection and into position to engage the other arm of the actuator during the movement of the lever in the opposite direction.

4. In a device of the class described, the combination with a valve, of an oscillatory actuator therefor having oppositely-disposed arms, a gravity-actuated lever provided with a resilient arm extending substantially at right angles thereto and provided with a nose to engage the arms of the actuator, and a V-shaped projection carried by the actuator

and operating to automatically shift the nose from one arm to the other upon successive downward movements of the lever.

5. The combination with a valve, of an oscillatory actuator therefor having two oppositely-disposed arms and a V-shaped projection between the arms, the apex of said projection moving from one side to the other of the vertical plane of the axis of oscillation of said actuator as the latter oscillates, an actuating lever having a resilient arm which is adapted to engage one of the arms of the actuator during the movement of the lever in one direction, said arm being carried out of normal position by the movement of said V-shaped projection as the actuator oscillates, whereby when the actuating lever is moved in the opposite direction, the resiliency of said arm carries it over the apex of said V-shaped member into position to engage the other arm of the actuator during the next movement of said lever.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

N. H. SHAW.

Witnesses:
LOUIS C. SMITH,
MARGARET A. DUNN.