

A. A. BOWSER.

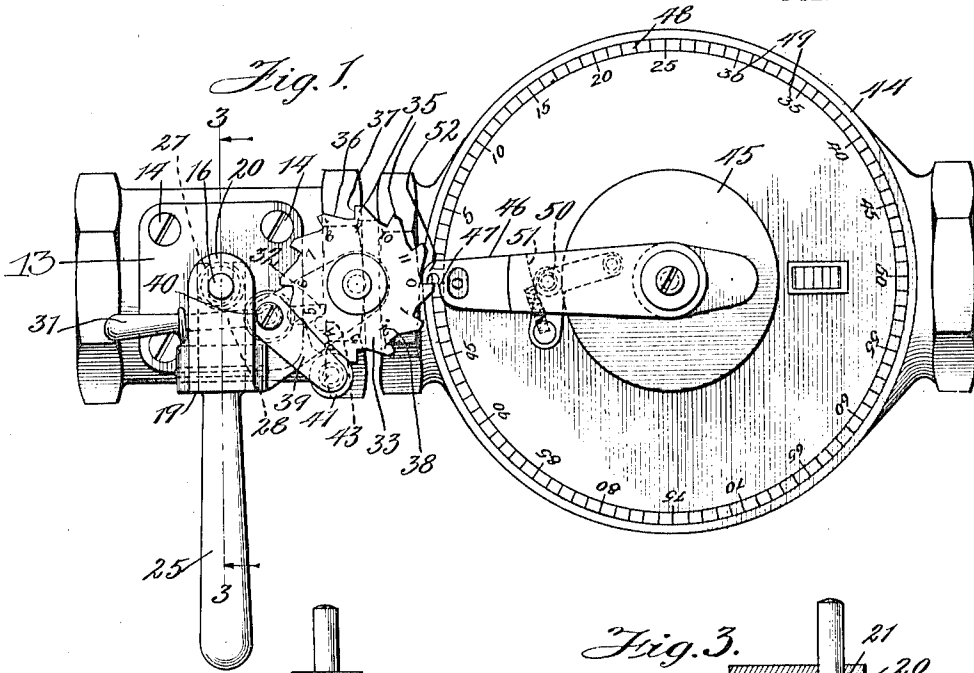
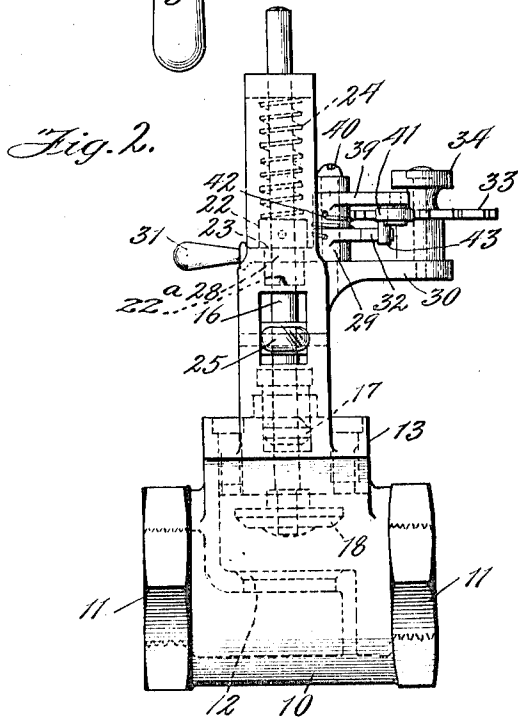
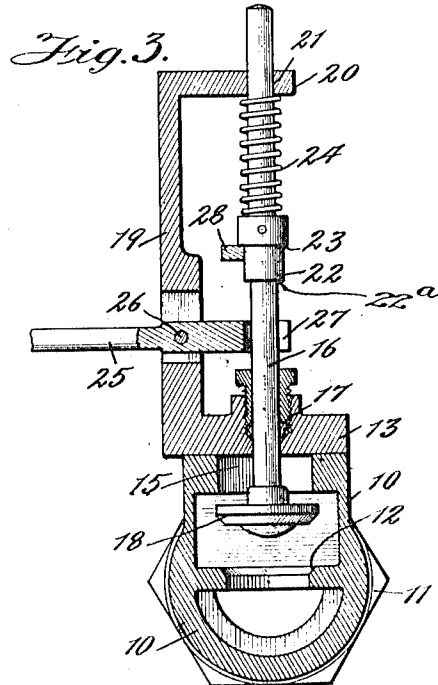
VALVE.

APPLICATION FILED JUNE 19, 1908.

1,079,104.

Patented Nov. 18, 1913.

2 SHEETS-SHEET 1.



Witnesses:

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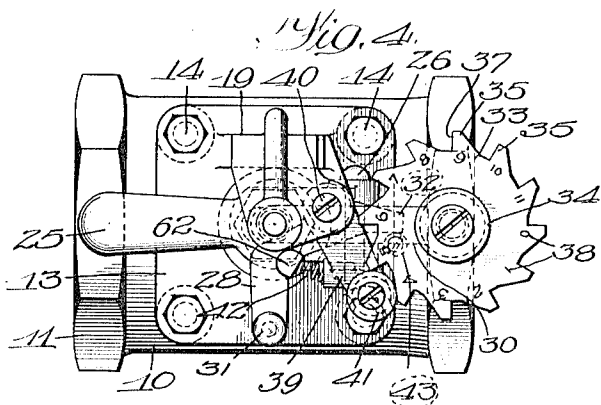
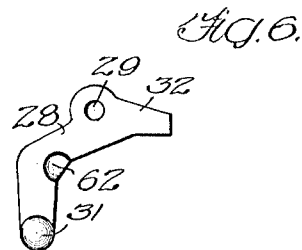
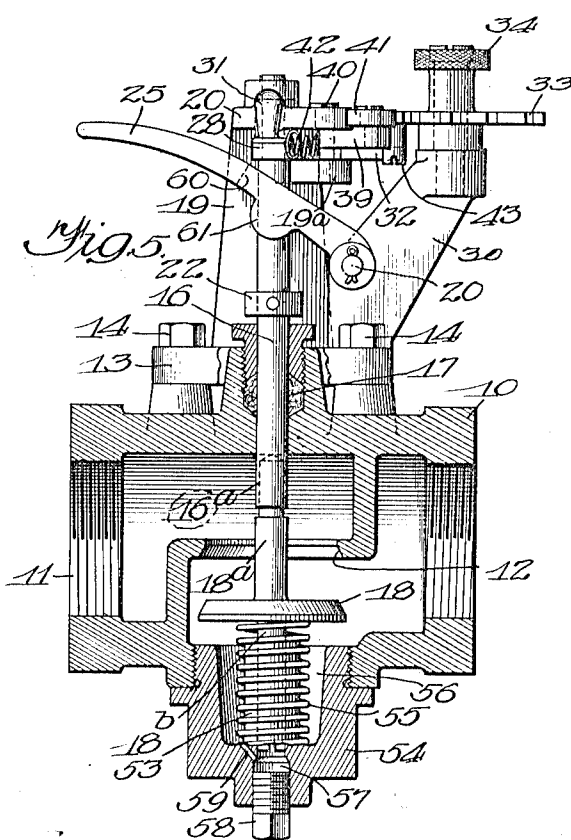
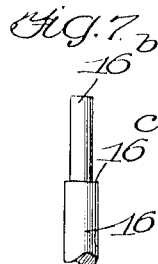
VALVE.

APPLICATION FILED JUNE 19, 1908.

1,079,104.

Patented Nov. 18, 1913.

2 SHEETS-SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALLEN A. BOWSER, OF FORT WAYNE, INDIANA, ASSIGNOR TO S. F. BOWSER & COMPANY, INCORPORATED, OF FORT WAYNE, INDIANA, A CORPORATION OF INDIANA.

VALVE.

1,079,104.

Specification of Letters Patent.

Patented Nov. 18, 1913.

Application filed June 19, 1908. Serial No. 439,398.

To all whom it may concern:

Be it known that I, ALLEN A. BOWSER, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to improvements in valves and the primary object of the invention is to provide improved means for holding the valve open, and improved means for automatically tripping or releasing the valve to close the same after a predetermined amount of fluid has passed therethrough.

15 A further object is to provide improved means whereby the tripping or releasing mechanism may be adjusted to vary the quantity of fluid discharged through the valve.

20 A further object is to provide an improved device of this character which will be simple, durable and cheap in construction and effective and efficient in operation.

To the attainment of these ends and the 25 accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings, illustrating an exemplification of the invention, and in which—

35 Figure 1 is a top plan view of an improved valve of this character constructed in accordance with the principles of this invention and showing the same applied to a meter. Fig. 2 is a side elevation of the valve. Fig. 3 is a sectional view on line 3—3 40 of Fig. 1, showing the valve open. Fig. 4 is a top plan view of a modified form of the invention. Fig. 5 is a side elevation, partly in section, of Fig. 4. Fig. 6 is a plan view of the locking arm. Fig. 7 is a detail 45 elevation of the extremity of the stem with which the locking arm coöperates.

Referring more particularly to the drawings and in the present exemplification of the invention shown in Figs. 1 to 3, the numeral 10 designates the valve casing, provided with the usual openings 11 and valve seat 12. A cap or closure 13 is adapted to be secured to the casing 10 by means of suitable fastening devices such as screws or 55 bolts 14 or the like to close the opening 15

therein through which the valve stem 16 passes. A suitable stuffing box 17 is supported by the closure 13 and through which the valve stem 16 passes and which forms a guide for the stem on one side of the 60 valve. A valve 18 is supported by the lower end of the stem and is adapted to be seated upon the seat 12 in the ordinary and usual manner. An upright 19 is preferably supported by the cap or closure 13 and extends 65 from some distance above the casing of the valve, and is provided with a laterally projecting portion 20 which extends over the cap or closure 13. This portion 20 is provided with an aperture 21 therein through 70 which the extremity of the valve stem 16 passes and by means of which the valve stem may be guided during its movement in seating and unseating the valve 18. Supported 75 by the valve stem above the cap or closure 13 and below the laterally projecting portion 20 is a sleeve or collar 22 which is provided with a shoulder 23, and surrounding the stem is an elastic member 24, preferably in the form of a coil spring, one extremity of 80 which rests upon the sleeve or collar 22 and the other extremity engages the lower face of the laterally projecting portion 20, and this member 24 tends normally to hold the valve 18 upon its seat 12. A lever 85 25 is pivotally supported intermediate its ends, as at 26, to the upright 19 and this lever is provided with a bifurcation 27 in one extremity thereof and within which the valve stem 16 is adapted to stand. The other 90 extremity of the lever projects beyond the upright 19 to form a handle by means of which the lever may be rocked about its point of pivotal support. When the valve 18 rests upon the seat 12, the lower edge of 95 the sleeve or collar 22 will stand in close proximity to the bifurcated extremity of the lever 25 and will form a shoulder 22^a with which the lever coöperates. When it is desired to unseat the valve, the free extremity 100 of the lever 25 may be depressed so as to raise the bifurcated extremity 27 into engagement with the shoulder 22^a formed by the lower end of the collar 22 and a further movement of the lever in the same direction 105 will unseat the valve 18 against the tension of the spring or elastic member 24.

Any suitable means may be provided for holding the valve open. A suitable and efficient means for accomplishing this purpose 110

comprises a horizontal arm 28, which is pivotally supported as at 29 upon a suitable bracket 30 supported by the upright 19 and this arm 28 is provided with an operating handle 31 which extends for some distance beyond the upright. This arm is located in such a position that when the valve 18 has been unseated against the tension of the elastic member 24, it may be moved below and into the path of the return movement of the shoulder 23 on the sleeve or collar 22 for maintaining the valve 18 in its unseated position. Projecting beyond the pivot of the arm 28 is an extension or projection 32 which is adapted to be engaged by suitable mechanism, to be hereinafter described, for moving the arm 28 about its point of pivotal support and from under the shoulder 23 to permit the valve 18 to be seated by the elastic member 24.

Rotatably supported by the bracket 30 is a dial or indicator 33 which is provided with a handle or knob 34 by means of which the dial may be rotated about its axis and this dial is provided with a plurality of spaced peripheral teeth 35, each of which is provided with an inclined face 36 which latter coöperates with a straight surface or face 37 on the next adjacent tooth. A series of graduations 38 which progress from zero are provided one adjacent each of the peripheral teeth 35. A retaining dog or pawl 39 is pivotally supported by one end, preferably by means of the bolt or fastening device 40, which also forms a pivot for the arm 28, and this retaining dog or pawl is provided with an anti-friction roller 41 journaled to the free end thereof and so arranged as to enter the space between two adjacent peripheral teeth 35 of the dial or indicator 33. A suitable elastic member 42 in the form of a coil spring is provided for holding the anti-friction roller 41 between two of the teeth of the indicator. One end of the spring is connected to a portion of the dog or pawl 39 and the other end is connected to the arm 28 whereby the same spring will serve to hold the dog or pawl in an operative position and also tend to hold the arm 28 under the shoulder 23 on the collar 22 when the valve 18 is unseated. The dial or indicator 33 is provided with a lug or pin 43 which depends from the lower face thereof and is adapted to engage the extremity 32 of the arm 28 to move the arm about its point of pivotal support and against the tension of the spring 42 when the dial or indicator 33 is rotated.

In use the dial or indicator may be set to permit a predetermined quantity of fluid to be discharged through the valve when the latter is open and before the valve is tripped to be closed. This is accomplished by rotating the dial or indicator by means of the knob or dial 34 to position the depending

lug or pin 43 a proper distance from the extremity 32 of the arm 28, after which the valve may be unseated by the lever 25 and locked in its unseated position by the arm 28. The valve tripping mechanism may be operated or tripped by any suitable mechanism provided to coöperate therewith which will control the flow of the fluid and in the present exemplification of the invention the valve is shown connected with a meter, the specific construction and operation of which latter forms no part of the present invention. The meter comprises a casing 44 having an inlet and an outlet opening, to one of which, preferably the outlet, the valve casing 10 may be secured. Connected with the meter is a rotatable member 45 and supported by the axle for rotation therewith and for independent rotation with respect to the member 45 is an arm 46, which latter constitutes a tripping element having a constant direction of motion, and is provided with a point or index 47 adapted to coöperate with a series of graduations 48 coöperating with which is a plurality of indicating characters 49 progressing successively from zero.

A locking dog or pawl 50 is supported by the arm 46 and is adapted to coöperate with the periphery of the rotatable member 45 and an inclined face 51 on the arm 46 to lock the arm for rotation with the portion 45. The arm is provided with an extension 52 which is adapted to engage the peripheral teeth 35 of the dial or indicator 36 which latter are arranged to project within the path of movement of the extension 52 when the arm 46 is rotated. The dial or indicator 33 is arranged adjacent the zero indication of the graduations 48 of the meter and the pin or projection 30 is so located with respect to the tooth of the dial adjacent the zero graduation that when said zero graduation stands adjacent the zero graduation of the meter, the arm or lever 28 will be displaced to permit the valve 18 to be seated.

The meter may be set to discharge a predetermined quantity within certain capacity limits. When the extension 52 is moved away from the zero graduation, the anti-friction roller 41 on the locking dog or pawl 39 will cause the zero tooth of the dial or indicator to move over the zero graduation on the meter under the influence of the spring 42 so that in order to permit the arm 46 to assume a zero position, it will be necessary for the dial or indicator 33 to be moved a partial step of rotation sufficient to trip the valve.

When it is desired to discharge more liquid than the quantity designated by the indicator of the meter, all that is necessary is to move the arm 46 to the predetermined graduation on the meter indicator and then axially rotate the dial or indicator 33 so

that any one of the next succeeding teeth after the zero tooth will stand adjacent the zero graduation on the meter. For example, if it is desired to discharge 105 gallons of liquid, the arm 46 will first be adjusted to the graduation "5" of the series 49 of the meter and then the dial or indicator may be axially adjusted by the knob or handle 34 until the tooth thereof, which is indicated by the character "1," stands over the zero graduation. The valve 18 may then be opened and the meter started to operate. During the operation the arm 46 will move step by step toward the zero graduation and when it comes in contact with the tooth of the dial or indicator indicated by the character "1," it will move the dial or indicator one step of rotation as the extremity 52 passes the zero graduation of the meter and this operation will cause the zero tooth of the dial or indicator to stand over the zero graduation on the meter so that when the extremity 52 of the arm 46 again approaches the zero graduation after having made one complete revolution, it will again move the dial or indicator another step of rotation to move the zero tooth sufficiently to permit the index 47 to stand over the zero graduation on the meter and this last step of rotation of the dial or indicator will cause the pin or projection 43 to engage and rock the arm 28 to trip or release the valve and permit the latter to be seated. Obviously the amount to be discharged through the valve may be increased by simply adjusting the dial or indicator 33 to permit the arm 46 to make the desired number of rotations about the indicator on the meter before the pin or projection 43 will trip the arm 28.

In the exemplification of the invention shown in Figs. 4 and 5 of the drawings, the stem 16 is separate from the valve 18, which latter is adapted to be seated upwardly. The stem 16 is provided with a recess 16^a in one extremity adapted to receive the extremity of a short stem 18^a which projects above the valve 18 and the free extremity of the stem 16 is provided with a reduced portion 16^b where it passes through the bearing 21 in the laterally projecting portion 20 of the upright 19 to form a shoulder 16^c. The valve 18 is also provided with a depending stem 18^b which is seated and moves loosely within a guide 53 which is supported by a cap 54 removably secured to the casing 10 below the valve seat 12, and an elastic member 55, preferably in the form of a coil spring under compression, surrounds the guide 53 so that one extremity will rest upon the bottom of the recess 56 in the cap 54 within which the guide 53 is located and the other extremity of the spring has engagement with the lower face of the valve 18 and tends normally to seat the valve 18. The cap 54 may be provided with an aperture 57

opening through the bottom thereof and through which an instrument may be inserted to engage the lower extremity of the stem 18^b to rotate the valve 18 upon its seat 12 to grind the seat to insure a tight joint between the two when the valve is seated. This aperture 57 may be closed by a suitable removable cap 58 and the cap 54 may be provided with a port or passage 59 which communicates with the aperture 57 above the closure 58 and the recess 56 to permit any liquid which has entered the aperture 57 to be withdrawn from the aperture as the valve 18 is seated. In this exemplification of the invention the lever 25 is pivotally connected by one extremity to the bracket 30 and this extremity is preferably bifurcated as at 60 to permit the extremity of the stem 16 above the collar 22 to stand within the bifurcation and there may be provided a suitable projection 61 on the lever which is adapted to engage the collar or sleeve 22 to depress the stem 16 and unseat the valve 18 against the tension of the elastic member 55. The arm 28 is preferably pivotally supported by a projecting portion 19^a of the member 19 and is arranged adjacent the reduced extremity 16^b of the stem 16 so that when the stem 16 is depressed by the lever 25 to unseat the valve 18, a portion of the arm is adapted to project over and within the path of the return movement of the shoulder 16^c on the stem 16 to lock the valve 18 open. The elastic member 42 in this exemplification of the invention is preferably arranged between the adjacent edges of the arm 28 and the retaining dog or pawl 39, each of which is preferably provided with a socket or recess 62 into which one extremity of the elastic member is adapted to be seated. This elastic member 42 is preferably arranged remote from the pivot of the arm 28 and the dog or pawl 39 and normally tends to hold the two elements separated so that when the stem 16 is depressed in the manner set forth, the elastic member 42 will tend to automatically move the arm 28 in a position to lock the stem against return movement. The valve in this form of the invention is tripped or released in the same manner as in the form shown in Figs. 1 to 3, that is, when the dial or indicator 33 is rotated, the pin or projection 43 thereon will engage the extremity of the arm 28 to move the latter about its point of pivotal support and out of engagement with the shoulder 16^c on the stem 16 to release the stem and valve and when released the elastic member 55 will force the valve 18 upon its seat 12, at the same time raising the stem 16 to move the shoulder 16^c above the arm 28 and when the stem is in this position the elastic member 42 will cause the adjacent edge of the arm to rest against the stem. It will also be apparent that with this form of the invention

the valve will be provided with a guide on each side thereof, that is, by the guide 53 on one side, the stuffing box 17 serving as a guide on the other side of the valve thereby preventing the valve from becoming strained and insuring the proper seating of the valve when the locking mechanism is released.

In order that the invention might be fully understood the details of the foregoing embodiment thereof have been thus specifically described, but

What I claim as new is—

1. In a measuring valve, the combination of a casing, a valve having a bias toward closing within the casing, liquid control means comprising tripping mechanism for releasing the valve when a predetermined amount of liquid has been discharged through the valve, said tripping mechanism embodying an element having a constant direction of motion, and means operatively related to the said element whereby the tripping mechanism will be operated to release the valve when the element reaches a predetermined point in its movement, said tripping means embodying means whereby the said element may be allowed to pass said point one or more times at will without releasing the valve.

2. The combination of a valve casing, a valve within the casing, means tending normally to seat the valve, means for locking the valve in its unseated position, means for automatically tripping the valve when a predetermined amount of fluid has been discharged, mechanism whereby the last said means may be adjusted to vary the amount discharged, and means whereby the said tripping mechanism may be operated.

3. The combination of a valve casing, a valve within the casing, means tending normally to close the valve, means for unseating the valve, means for holding the valve unseated, a tripping member, and means whereby the tripping member may be operated to release the valve, the last recited means embodying means whereby said tripping member may be moved one or more times at will without releasing the valve.

4. The combination of a valve casing, a valve within the casing, a valve stem for the valve projecting beyond the casing, means for opening the valve, means operatively related to the stem for holding the valve open, an indicator dial, means operatively related to the dial for tripping the last said means as the dial is moved to a predetermined point, means for closing the valve when released, and means whereby said dial may be moved.

5. The combination of a valve casing, a valve within the casing, a valve stem for the valve projecting beyond the casing, means for opening the valve, means operatively related to the stem for holding the

valve open, an indicator dial, means operatively related to the dial for tripping the last said means as the dial is moved, to a predetermined point, and means for closing the valve when released, said tripping means embodying means whereby said dial may be moved one or more times at will without releasing the valve.

6. The combination of a valve casing, a valve within the casing, a valve stem for the valve projecting beyond the casing, means for opening the valve, means operatively related to the stem for holding the valve open, an indicator dial, means for adjusting the dial, means for holding the dial in its adjusted position, means operatively related to the dial for tripping the valve holding means, as the dial is moved to a predetermined point, means for closing the valve when released, and means whereby the said dial may be moved against the tension of the holding means.

7. The combination of a valve casing, a valve within the casing, a stem for the valve projecting beyond the casing, means tending normally to hold the valve closed, there being a shoulder operatively related to the stem, a lever adapted to engage the shoulder to unseat the valve against the tension of the first said means, a locking member, means on the stem with which the locking member coöperates for holding the valve open, an indicator, means operatively related to the indicator adapted to engage and move the said locking member to release the valve when the indicator is moved, and means whereby the indicator may be moved.

8. The combination of a valve casing, a valve within the casing, a stem for the valve projecting beyond the casing, means tending normally to hold the valve closed, there being a shoulder operatively related to the stem, a lever adapted to engage the shoulder to unseat the valve against the tension of the said means, a locking member, means on the stem with which the locking member coöperates for holding the valve open, an indicator, means operatively related to the indicator adapted to engage and move the said locking member to release the valve when the indicator is moved, and means whereby the indicator may be moved, the third recited means embodying means whereby one or more steps of movement may be imparted to the indicator without releasing the valve.

9. The combination of a valve casing, a valve within the casing, a stem for the valve projecting beyond the casing, means tending normally to hold the valve closed, there being a shoulder operatively related to the stem, a lever adapted to engage the shoulder to unseat the valve against the tension of the first said means, a locking member, means on the stem with which the

locking member coöperates for retaining the valve open, an adjustable indicator, means for holding the indicator in its adjusted position, yielding means operatively related to the last said means and to the valve locking member for holding said parts in operative position, means operatively related to the indicator adapted to engage and move the said locking member against the tension of the holding means to release the valve when the indicator is moved, and means whereby said indicator may be moved.

10. The combination of a valve casing, a valve within the casing, a stem for the valve projecting beyond the casing, means tending normally to hold the valve closed, there being a shoulder operatively related to the stem, a lever adapted to engage the shoulder to unseat the valve against the tension of the said means, a locking member, means on the stem with which the locking member coöperates for retaining the valve open, an adjustable indicator, means for holding the indicator in its adjusted position, yielding means operatively related to the last said means and to the valve locking member for holding said parts in operative position, means operatively related to the indicator adapted to engage and move the said locking member against the tension of the holding means to release the valve when the indicator is moved, and means whereby said indicator may be moved, and embodying means whereby one or more steps of rotation may be imparted to the indicator without releasing the valve.

11. The combination of a valve casing, a valve within the casing, means tending normally to close the valve, means for locking the valve open, means for automatically tripping the valve when a predetermined amount of fluid has been discharged, mechanism whereby the last said means may be adjusted to vary the amount discharged, means whereby the said tripping means may be operated, said casing having an opening through which access may be had to the valve and a closure for said opening.

12. The combination of a valve casing, a valve within the casing, a stem for unseating the valve, said stem having a loose engagement with the valve and projecting beyond the casing, means for moving the stem to unseat the valve, means operatively related to the stem for holding the valve open, an indicator dial, means operatively

related to the dial for tripping the last said means as the dial is moved to a predetermined point, means for closing the valve when released, and means whereby said dial may be moved.

13. The combination of a valve casing, a valve within the casing, elastic means tending normally to seat the valve, a stem for unseating the valve, said stem having a loose engagement with the valve and projecting beyond the casing, means for moving the stem to unseat the valve against the tension of the said elastic means, means operatively related to the stem for holding the valve open, an indicator dial, means operatively related to the dial for tripping the last said means as the dial is moved to a predetermined point, and means whereby the said dial may be moved.

14. The combination of a casing, a valve within the casing, said valve being provided with a stem projecting beyond each side thereof, a guide for one of the stems for guiding and supporting the valve, the stem on the other side of the valve comprising sections connected for independent rotation, one of the sections projecting beyond the casing, elastic means tending normally to seat the valve, means for moving said section to unseat the valve against the tension of the elastic means, means operatively related to one section of the stem for holding the valve open, an indicator dial, means operatively related to the dial for tripping the last said means as the dial is moved to a predetermined point, and means whereby the dial may be moved.

15. The combination of a valve casing, a valve within the casing, means for holding the valve open, a tripping member, means whereby the tripping member may be operated to release the valve when said member passes a predetermined point, and means for closing the valve when released, the second said means embodying means whereby a portion of the latter second recited means may be allowed to pass said point one or more times at will without releasing the valve.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of June A. D. 1908.

ALLEN A. BOWSER.

Witnesses:

JOHN L. HANDY,
J. R. MATLACK.