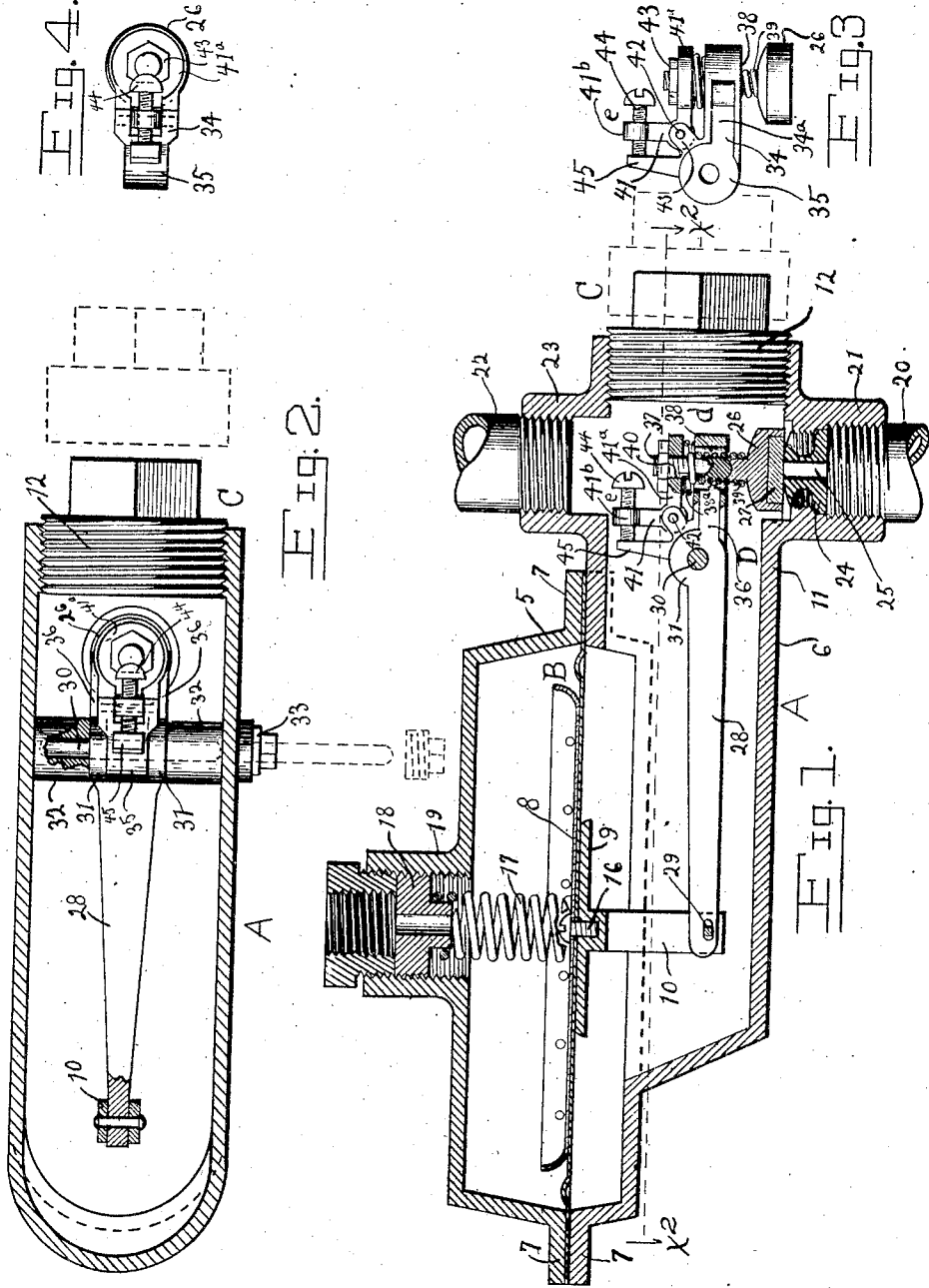


1,058,335.

Patented Apr. 8, 1913.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

JAMES R. RICKETTS, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO PERFECTION GAS REGULATOR COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

GAS-REGULATOR.

1,058,335.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed November 12, 1912. Serial No. 730,886.

To all whom it may concern:

Be it known that I, JAMES R. RICKETTS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Gas-Regulators, of which the following is a specification.

This invention relates to gas regulators whereby the pressure or head of gas for consumption may be controlled automatically so as to be maintained constant and even as desired.

The present invention in certain of its aspects constitutes an improvement upon or departure from or modification with relation to the inventions constituting the subjects of prior applications for Letters Patent for gas regulators filed by me May 28, 1912, Serial Number 700,228; and August 14, 1912, Serial Number 715,050.

The present invention has for its object to provide improvements in gas regulators which will be superior in point of relative simplicity and inexpensiveness combined with positiveness and reliability and efficiency in service and sensitive responsiveness to various working conditions.

Further particular objects of the invention concern the provision of an improved gas regulator which will be more convenient in installation and connection or, disconnection of the entirety and the parts thereof, in which the regulating function may be varied conveniently and accurately, and in which repair and substitution of the parts, as required, may be conveniently made without detachment of the gas regulator in entirety from the main and service pipes.

With the above and other objects in view, the invention consists in the novel provision, formation, construction, combination, association and relative arrangement of parts, members and features, all as hereinafter described, shown in the drawing, and finally pointed out in claims.

In the drawing:—Figure 1 is a transverse, vertical sectional view, parts being in elevation, of a gas regulator constructed and organized in accordance with the invention:—Fig. 2 is a transverse sectional view of the same, taken upon the line x^2-x^2 , Fig. 1, and looking downwardly:—Fig. 3 is a fragmentary view of a portion of the gas feed control means shown in the preceding

figures in detached position; and Fig. 4 is a top plan view of the showing in Fig. 3.

Corresponding parts in all the figures are designated by the same reference characters.

Referring with particularity to the drawing, the improved regulator comprises a casing A within which is held a transverse diaphragm B, the casing preferably comprising or being provided with a circular top member 5, and a circular bottom member 6 detachably joined by matched engaging edge flanges 7, the diaphragm B being held at its edges between such flanges. A weight 8 rests upon the upper surface of the diaphragm and is clamped to the latter by disk or plate 9 beneath the diaphragm and from which a bracket 10, depends within a radial extension 11, of the bottom casing member 6, at the outer end of which extension is a detachable closure C consisting of a plug 12 screwing into the end of such tubular extension 11. The weight 8 and plate 9 are jointly clamped to the diaphragm by a screw 16, and a compression spring 17 bears downwardly upon the diaphragm centrally of the same, being held in position by a screw plug 18 in a nipple 19 rising above the top casing member 5. A gas main pipe 20 screws into a nipple 21 in the outer end of the tubular extension 11, directed downwardly therefrom, and a gas service pipe 22 screws into a corresponding nipple 23, radially opposite to the nipple 21, the axes of said pipes being at right angles to the longitudinal axis of the extension 11. The pipe 20 fits up against a screw plug 24 in the nipple 21, through which is formed a gas port 25 in connection with which coöperates gas feed control means D in which are included a valve head 26 normally spaced slightly above the orifice of the port 25, and having a compressible face 27, which seats to close said port. An oscillating arm 28, loosely pinned at its inner end as at 29, to the lower bifurcated end of the bracket 10, and its outer end is pivotally supported upon a bearing pin or shaft 30, passing through enlarged spaced heads 31 at the outer end of said arm and received in tubular bosses 32 projecting inwardly from opposite sides of the extension 11 and abutting against the heads 31. A threaded cap nut 33 screws into the outer projecting end of one of the bosses 32 holding the pin 30 in place. A

valve head 26 is included in valve means *d* in turn comprised in the gas feed control means *D* which further include a bracket or mounting 34 provided at one end with an enlarged head 35, which fits between the spaced heads 31 and between cheeks 36 projecting outwardly from the heads 31 and fitting channels or grooves 34^a in the bracket 34, so as to hold the bracket to the arm 28 to oscillate therewith, the pin 30 passing through a bore in the head 35. A two-part stem 37 extends upwardly from the valve head 26, through an opening 38 in the outer end of the bracket 34, the two parts thereof being yieldingly connected by a coil spring 39 surrounding the same and seated in threads formed thereon. The upper end of the stem 37 is threaded through a bore 40 in one leg 41^a of a bell crank lever 41 pivoted as at 42 upon a bracket 43 ranging outwardly from the head 35 above the major portion of the bracket 34, a lock nut 43 being applied to the upper end of the stem 37 above the bell crank lever. An adjusting screw 44 constituting adjusting means *e* passes through the leg 41^b and bears against a vertical bracket 45 rising from the head 35. A coil spring 38^a between the leg 41^a and the bracket 34 holds the lever 41 and valve head 26 in normal positions.

The operation, method of use and advantages in use of the gas regulator constituting the invention will be readily understood from the foregoing description taken in connection with the accompanying drawing and the following statement: When it is desired to repair or replace any of the features of the valve means *d* or the adjusting means *e*, the cap nut 33 is withdrawn from the bushing 32 and the bearing pin 30 withdrawn from the bushings and the heads 31 and 35, freeing the bracket 34 with its attached parts, which may then be withdrawn completely through the outer end of the extension 11 after the removal of the plug 12 or closure *C* therefrom. It is not necessary to detach the regulator casing members from the pipes 20 and 22, or the pipes from the former, and when the parts described are within the casing the plug 12 effectually closes the same so that all the working parts are housed and protected from tampering or impairment. In this withdrawing action, or in the opposite assembling action, the cheeks 36 slide relative to the bracket 34 in the grooves or channels 34^a, and the parts are finally connected together, in assembling or re-assembling, by the pin which is passed through the three heads 31 and 35 and fitted in the bushing 32 and held therein by the cap nut 33. When it is desired to adjust the valve means *d*, the plug 12 is withdrawn and the adjusting screw 44 is suitably operated to tilt the bell crank lever 41, swinging the valve stem 37 of valve head 26 vertically

through the opening 38 in the bracket 34, toward and away from the orifice of the gas port 25, so that the proper spacing of the valve head from the gas port may be provided to produce the proper action of the gas regulator and the diaphragm *B* thereof to regulate the flow of gas from the gas main pipe 20 through the regulator and out through the gas service pipe 22. The provision of the spring sleeve 39 surrounding the two-parts of the stem 37, the adjacent ends of which are normally slightly spaced apart, adds a spring quality to the action of such stem and provides the valve means *d* with a yielding quality of action, insuring proper centering of the valve head or its facing upon the crowned upper end of the plug 24, through which opens the orifice of the gas port 25, so that the valve head effectually closes the gas port under compression of the spring, irrespective of the swing of the oscillating arm 28 and of the bell crank lever 41 and of the valve stem 37 when the latter are adjusted.

The provision for detachment of the valve means *d* through the extension opening normally closed by the plug 12, together with the provision for adjusting the valve means through the end of the extension when the plug is so withdrawn, are features insuring great convenience and saving of time in the control and repair and adjustment of the essential features of the regulator, and in the assembling and disconnecting of parts.

I do not desire to be understood as limiting myself to the specific features and details of construction and organization herein set forth and disclosed; but reserve the right to vary the same, in adapting the improvements to varying conditions of use, without departing from the spirit of the invention or the terms of the following claims.

Having thus described my invention, I claim and desire to secure by Letters Patent:—

1. A gas regulator, comprising a casing provided with an internal chamber, a diaphragm spanning the chamber, there being a gas port leading to said chamber, and a gas feed control means regulating the flow of gas from said gas port through said chamber; said gas feed control means comprising an oscillating arm operatively connected with said diaphragm, and members detachable from said arm for withdrawal through an opening in the casing, and a closure normally applied to said opening; and a bearing device for said oscillating arm and by which said removable members and said oscillating arm are connected; said oscillating arm being bifurcated to receive one of the withdrawable members.

2. In a gas regulator, a diaphragm, an

oscillating arm operatively connected at one end with said diaphragm, a bearing pin by which the other end of said oscillating arm is supported, a bracket detachably connected with said oscillating arm by said bearing pin, and valve means mounted upon said bracket.

3. In a gas regulator, a diaphragm, an oscillating arm operatively connected at one end with said diaphragm, a bearing pin by which the other end of said oscillating arm is supported, a bracket detachably connected with said oscillating arm by said bearing pin, and valve means mounted upon said bracket; said gas regulator being provided with a casing having an opening adjacent to said bracket, and a closure normally applied to said opening.

4. A gas regulator, comprising a casing provided with an internal chamber and with a diaphragm spanning the chamber, there being a gas port leading to said chamber, said casing being provided with an opening, a closure normally applied to said opening, and gas feed control means within the casing and comprising an oscillating arm operatively connected with said diaphragm, a bearing device upon which the oscillating arm is mounted for movement, a valve head normally slightly spaced from said gas port, means by which said valve head is detachably mounted in connection with said oscillating arm, and adjusting means whereby said valve head may be regulated with respect to its spacing from said gas port; said adjusting means comprising a lever operatively connected with said valve head, and an adjusting device applied to said lever in position for manipulation through said opening in the casing.

5. In a gas regulator, a casing provided with an internal chamber, a diaphragm spanning the chamber, there being a gas port leading to the chamber, and gas feed control means operatively connected with the diaphragm and including a valve head normally spaced from said gas port; said valve head being provided with a two-part support the parts of which are yieldingly connected.

6. In a gas regulator, a casing provided with an internal chamber, a diaphragm spanning the chamber, there being a gas port leading to the chamber, and gas feed control means operatively connected with the diaphragm and including a valve head normally spaced from said gas port; said

valve head being provided with a two-part support, and a coil spring connecting the two parts of said support.

7. In a gas regulator, valve means, comprising a support, a bell crank lever mounted upon the support, a valve stem connected with one leg of the lever, a valve head connected with the valve stem, and an adjusting device applied to the other leg of the lever.

8. In a gas regulator, valve means, comprising a support, a bell crank lever mounted upon the support, a valve stem connected with one leg of the lever, a valve head connected with the valve stem, and an adjusting device applied to the other leg of the lever; said valve stem passing through an opening in said support.

9. In a gas regulator, valve means, comprising a support, a bell crank lever mounted upon the support, a valve stem connected with one leg of the lever, a valve head connected with the valve stem, and an adjusting device applied to the other leg of the lever; said valve stem being formed in two parts, and a coil spring encircling said two parts and seated in threads thereon.

10. In a gas regulator, valve means, comprising a support, a bell crank lever pivoted upon said support, a valve stem playing through an opening in said support and provided with a valve head, said valve stem being adjustably connected with one leg of said lever, a bracket upon said support, and an adjusting device applied to the other leg of said lever and co-acting with said bracket.

11. In a gas regulator, valve means, comprising a support, a bell crank lever pivoted upon said support, a valve stem playing through an opening in said support and provided with a valve head, said valve stem being adjustably connected with one leg of said lever, a bracket upon said support, and an adjusting device applied to the other leg of said lever and co-acting with said bracket, in combination with an oscillating arm, and a bearing device for said oscillating arm and by means of which said support and said oscillating arm are operatively connected.

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

JAMES R. RICKETTS.

Witnesses:

V. J. COBB,
ALFRED H. DAHLER.