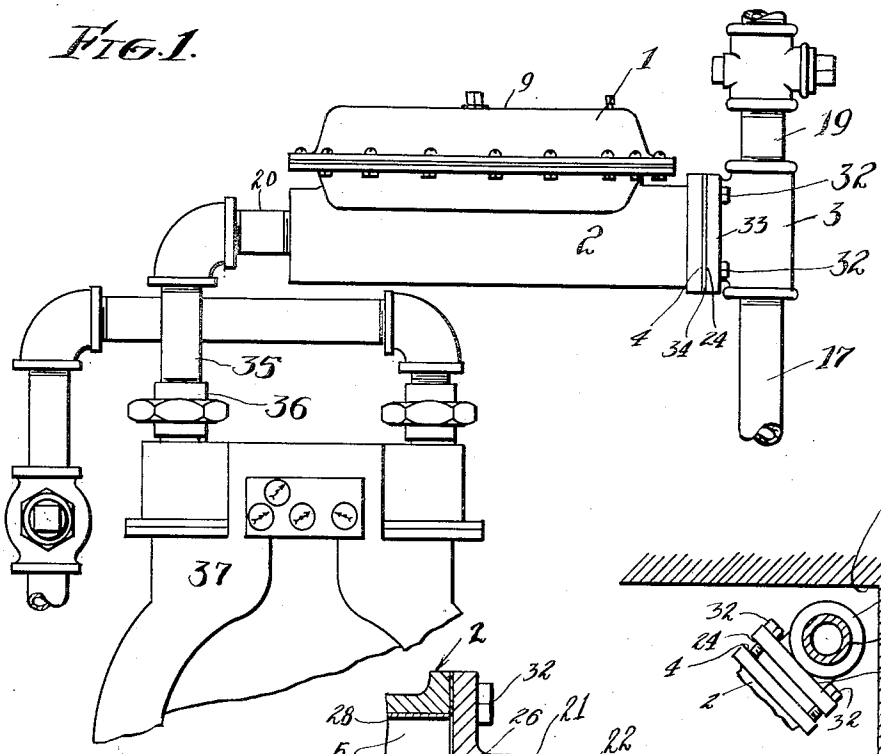
July 14, 1925. 1,546,047

W. I. THRALL

GAS REGULATOR

Filed May 12, 1924

FIG. 1.



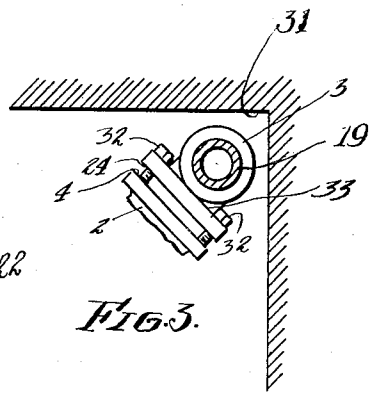


FIG. 3.

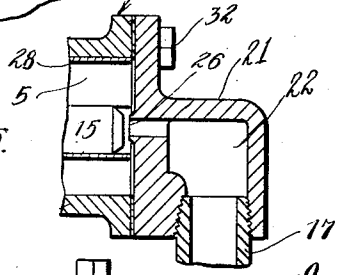
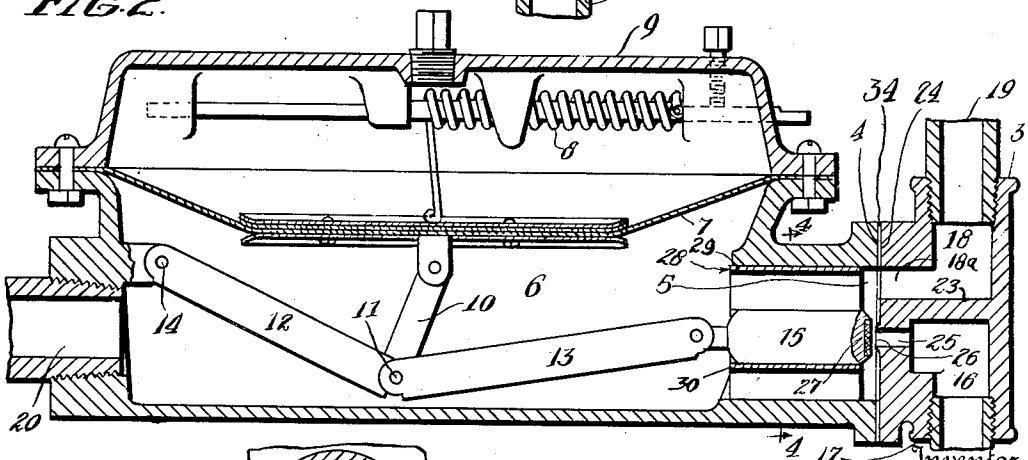


FIG. 5.

FIG. 2.



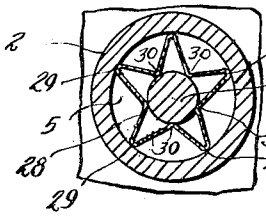


FIG. 4.

Inventor

Walter I. Thrall

By Lyon & Lyon

Attorneys

Patented July 14, 1925. 1,546,047

UNITED STATES PATENT OFFICE.

WALTER I. THRALL, OF PASADENA, CALIFORNIA, ASSIGNOR TO RELIANCE MANUFACTURING COMPANY, OF PASADENA, CALIFORNIA, A CORPORATION OF CALIFORNIA.

GAS REGULATOR.

Application filed May 12, 1924. Serial No. 712,717.

To all whom it may concern:

Be it known that I, WALTER I. THRALL, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Gas Regulator, of which the following is a specification.

This invention relates to a gas-regulator such as used in connection with a gas supply at a relatively high pressure to reduce the pressure to enable the gas to be used in burners. It sometimes happens that the gas pipe where the regulator must be connected is located in a corner or is situated so that there is no clearance to enable the regulator to be rotated to connect it to the supply pipe. It is also necessary, at times, to examine the regulator valve to clean the same or renew its gasket for the reason that solid particles in the gas may lodge on the regulator valve seat or on the valve itself.

The general object of this invention is to provide a construction which will meet these difficulties, and to provide a device of this character which can be readily connected up to a supply pipe; also to provide a construction which will enable access to be had readily to the valve without taking the regulator apart.

A further object of this invention is to provide a construction which will tend to eliminate solid particles in the gas and prevent the same from coming in contact with the valve.

Other objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient gas regulator.

A preferred embodiment of the invention is described in the following specification while the broad scope of the invention is pointed out in the appended claims.

In the drawings:

Figure 1 is a side elevation illustrating an apparatus including a gas regulator embodying my invention.

Figure 2 is a vertical longitudinal section through the regulator and illustrating details of its construction and the means for connecting it in the pipe line.

Figure 3 is a horizontal section taken at a corner in a wall and illustrating the manner in which my invention facilitates making connection to a gas supply pipe located in such an inaccessible position.

Figure 4 is a cross-section taken about on the line 4—4 of Figure 2.

Figure 5 is a vertical section taken at the right end of the regulator and showing a modified embodiment of the invention.

In practicing my invention, I provide a pipe fitting which carries the regulator valve port and which is adapted to be secured to the supply pipe. This pipe fitting is actually a part of the regulator casing and, if necessary, may be attached to the supply pipe while disconnected from the body of the casing. The side of the body of the casing is provided with a seat which is attached by any suitable means, such as removable bolts, to the fitting.

In order to accomplish this, I provide a gas-regulator 1, the casing of which includes a body 2 and a pipe fitting 3. The body 2 of the casing is formed on its outer side with a substantially flat face constituting a seat 4 for the fitting 3 and at the seat I provide a valve-chamber 5 which may be in the form of a large bore extending in through the seat and communicating with a pressure-chamber 6 within the interior of the body. Any suitable pressure-controlled mechanism may be provided within the casing. In the present instance this mechanism includes a pressure-controlled diaphragm 7 which is pressed inwardly by the end of a coil spring 8 carried in the cover 9 of the body. On the underside of this diaphragm a link 10 is attached to a pin 11 of a toggle connection between two links 12, 13, the former of which has a fixed pivot pin 14 at the side of the casing opposite the pressure-reducing valve 15, the stem of which is pivotally connected to the outer end of the link 13. As illustrated in Figure 2, the fitting 3 is constructed so that it carries an inlet 16 threaded for connection to an inlet pipe 17; and the fitting also carries an outlet 18 threaded for connection to an outlet pipe 19, and communicating by a port 18^a with the valve-chamber 5. The outlet and inlet 16, 18 are in alinement with each other to facilitate the connection of the fitting in a pipe line. In addition to the outlet 18 another outlet connection 20 may be provided leading out from the pressure chamber 6. As illustrated in Figure 2, both outlet connections are in use. If desired, however, the outlet at the point

20 can be closed by a plug. Furthermore, instead of providing the fitting 3 with an outlet 18, I may employ a fitting having the features of construction shown by the pipe fitting 21 in Figure 5. This fitting is like the fitting 3, but simply has an inlet connection 22 and is without any outlet connection. In either case the fitting should be constructed so that it presents a transverse wall in the path of the incoming high pressure gas so that the gas impinges upon the wall, for this wall is intended to intercept solid particles in the gas. In the construction shown in Figure 2, I provide a transverse wall 23 which prevents direct communication between the inlet and outlet of the fitting and it is disposed in a plane transverse to the direction of flow of the gas entering by the pipe 17. The fitting 3 is provided with a side face 24 carrying a valve port 25, the longitudinal axis of which is disposed at right angles to the direction of flow of the incoming gas. On the face 24 and at the port 25 I provide a slightly raised annular seat 26 to cooperate with the valve 15. The end of the valve 15 is provided with a gasket 27 of any suitable material, which is set into a recess in the valve.

Any suitable means may be provided for guiding the valve so that it will move in a line substantially at right angles to the plane of the fitting-seat 4; for example, I may provide a star-shaped guide 28 formed of bent sheet metal providing a plurality of horns or points 29 which engage the bore of the valve-chamber 5 and a plurality of points 30 which engage and guide the side of the valve 15.

My invention enables a regulator to be attached very readily to a vertical supply pipe which is in an inaccessible position; for example, in a corner 31 formed in a wall. See Figure 3. In attaching the regulator to a vertical supply pipe 17 in such position, the inlet end of the pipe fitting 3 should be attached to the pipe 17 and if the fitting is of the double type, that is to say having an outlet 18, then the pipe 19 should be connected at the upper end of the fitting. If the fitting is of the type shown at 21 in Figure 5, it is simply attached to the inlet pipe 17.

After the fitting 3 has been attached to the pipe in the manner suggested, then the body 2 of the regulator casing is secured to the fitting by means of removable bolts 32 which may be in the form of studs projecting from the seat 4 and passing through a flange 33 on the adjacent side of the fitting. When the regulator body has been attached in this way the valve seat 26 is in proper position to cooperate with the valve 15. The position of the seat 26 may be regulated as desired with respect to the valve 15 by providing one or more gaskets 34 of thin metal between the seat 4 and the flat face 24 of the fitting.

My improvement also greatly facilitates obtaining access to the valve 15 without dismantling the regulator. This is illustrated in Figure 1 in which the outlet connection 35 from the regulator is attached by a coupling 36 to a meter 37. It is evident that by loosening up the coupling 36 and taking off the nuts of the bolts 32, the regulator can be disconnected from the fitting and then swung around on the axis of the coupling 36 so that the valve-chamber is moved clear of the fitting. The pipe fitter can then clean the face of the valve or make any necessary repairs to the valve.

It is understood that the embodiment of the invention described herein is only one of the many embodiments this invention may take, and I do not wish to be limited in the practice of my invention nor in my claims, to the particular embodiment set forth.

What I claim is:

1. In a gas regulator, the combination of a casing having a body with a face on its outer side constituting a fitting-seat and having a pressure chamber for the gas, a pressure reducing valve guided in the casing body to move in a plane substantially at right angles to the plane of said face and with the outer end of the valve adjacent the plane of said face, a threaded pipe fitting having a face secured against the said seat and having a port with a valve seat formed on said last named face cooperating with the end of said valve.

2. In a gas regulator, the combination of a casing having a body with a face on its outer side constituting a fitting-seat and having a pressure chamber for the gas, a pressure reducing valve guided in the casing body to move in a plane substantially at right angles to the plane of said face and with the outer end of the valve adjacent the plane of said face, a threaded pipe fitting having a face secured against the said seat and having a port with a valve seat formed on said last named face cooperating with the end of said valve, said fitting having means for admitting the high pressure gas in a direction flowing substantially at right angles to the axis of the said port and having a baffle wall beyond the port extending from said side face and operating to intercept solid matter in the incoming gas, said fitting further having means for attaching an outlet pipe connection for carrying off the low pressure gas from the regulator.

3. In a gas-regulator, the combination of a casing having a pressure-chamber for the gas, said casing having a fitting-seat at one side with a valve chamber formed in said seat, a substantially star-shaped valve guide fixed in said valve chamber having horns

for engaging the wall of the chamber at a plurality of points and having horns for engaging the side of the valve at a plurality of points to guide the same, a valve mounted to slide longitudinally in said guide, pressure-controlled mechanism within the casing connected with the valve for actuating the same, and a pipe fitting removably mounted on said fitting-seat having means for attaching an inlet pipe for the gas and having an inlet port and a seat cooperating with the end of said valve.

Signed at Pasadena, California, this 6th day of May 1924.

WALTER I. THRALL.