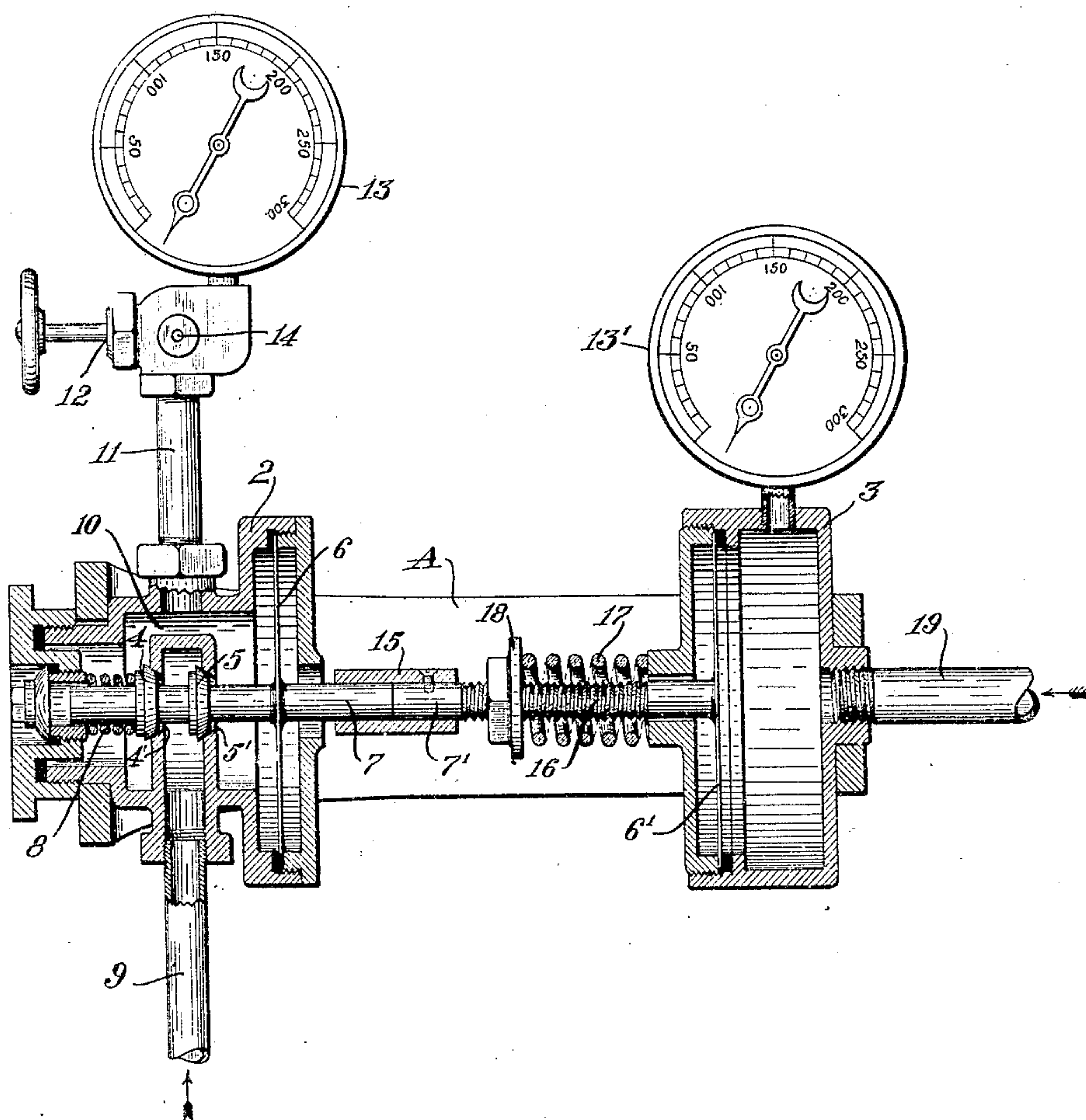


S. H. BITHER.
CARBONATING MACHINE EQUALIZER.
APPLICATION FILED JAN. 2, 1909.

930,033.

Patented Aug. 3, 1909.



WITNESSES;

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SUTLIFFE H. BITHER, OF BERKELEY, CALIFORNIA.

CARBONATING-MACHINE EQUALIZER.

No. 930,033.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed January 2, 1909. Serial No. 470,466.

To all whom it may concern:

Be it known that I, SUTLIFFE H. BITHER, citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Carbonating-Machine Equalizers, of which the following is a specification.

My invention relates to certain improvements in carbonating machine equalizers which are adapted to automatically regulate the flow of carbonic acid gas in the process of carbonating liquids, wherein gaseous matter is forced into the liquids under certain pressure.

It is the object of my invention to provide an equalizer whereby simple means of adjustment are obtained, and in which efficient operation is effected.

In the process whereby carbonated liquids are bottled in large quantities for consumption, the usual method is to force the carbonic acid gas into the liquid during the operation of bottling. Storage tanks containing a quantity of the gas under pressure constitute the source of supply, suitable pumps being used in connection therewith to obtain the desired force. As the pressure in the supply is greater than that required in the bottling, it is necessary to utilize suitable means for reducing and regulating the pressure. In conjunction with such means I provide an adjustable equalizer whereby the regulation of the flow of carbonic acid gas becomes automatic.

The invention consists of the parts, and the construction and combination of parts hereinafter more fully described and claimed, having reference to the accompanying drawings, in which the figure is a sectional elevation.

A is a frame-work or support of any suitable construction in which are mounted the casings 2—3. Within the casing 2 are arranged the parts of a reducing valve which may be of any suitable design, but in the one shown, consists of the throttle disks 4—5, and the diaphragm 6, attached to the spindle 7. A coil spring 8 acts on the spindle and tends to normally retain the throttle disks in their closed relation to the ports 4'—5'.

9 is a pipe leading to the source of gas supply.

10 is the valve chamber, and 11 is the outlet pipe leading to the needle valve 12, pressure gage 13, and outlet 14.

The outer extremity of the spindle 7 is fitted in a sleeve 15, secured upon the spindle 7', a portion of which is threaded as at 16. The inner end of the spindle 7' is connected to a diaphragm 6' within the casing 3. A coil spring 17, placed between the nut 18 and the casing 3, acts upon the spindles 7—7', the diaphragms 6—6', and opposed to the spring 8.

To the casing 3 is attached a nipple 19 adapted to be connected with any suitable water-supply having a certain pressure, such for instance, as that of a city main. A pressure gage 13' is provided for the purpose of indicating the water-pressure.

In the operation of the device, it will be obvious that when water under pressure is admitted to the chamber of casing 3, the spindles 7—7', with its accompanying parts, are acted upon by the diaphragm 6', thereby causing the throttle valve at 4—5 to open and admit the flow of gas into the chamber 10, thence through the pipe and needle-valve to any desired outlet. As the gas admitted to the chamber 10 is under pressure, the diaphragm 6' and the spindle, with its connections, are operated upon in opposition to the action of the water-pressure before described. It is apparent that when the gas pressure in the chamber becomes equal to that of the water, the throttle disks are closed, and the parts resume the normal position shown in the drawings. While the needle-valve 12 is open, the flow of gas through the reducing valve becomes continuous, and is regulated and equalized by the device before described. In the event that the water pressure is lower than the desired pressure of gas, the action of the diaphragms, and their connections can be regulated by the adjustment of the nut 18 on the threaded spindle 7' against the spring 17. Thus, for example, assuming the water pressure in the chamber 3, to be 50 lbs., and the desired gas pressure to be 60 lbs., it will be seen that by compressing the spring 17, to the desired extent additional pressure can be brought to bear upon the spindles 7—7' in such a manner as to permit of the required flow of gas. As the water pressure in the mains constantly varies, it is necessary to vary the pressure of the gas to correspond, and it is the office of this apparatus to automatically equalize the two pressures, and maintain a desired and constant equilibrium.

Having thus described my invention, what

I claim and desire to secure by Letters Patent is—

1. An equalizing device for opposed fluid pressures, said device including a gas-receiving chamber, supply and discharge pipes connected therewith, an interposed double-seating throttle valve, and closing spring therefor, a spindle to which the valve is fixed, a diaphragm on said spindle, a casing in which the diaphragm is contained, a second casing to which a liquid is admitted, and a diaphragm in said second casing and fixed to the said spindle.

2. In an apparatus of the character described, diaphragm-containing chambers, an intermediate shaft or stem to opposite portions of which the diaphragms are fixed, a gas supply and pressure chamber connected with one diaphragm chamber, a liquid supply connected to produce an opposed pressure upon the second diaphragm, a gas controlling throttle and spring by which the throttle is normally closed, and discharge

passage and pressure gage connected with the gas diaphragm chamber.

3. In an apparatus of the character described, diaphragm-containing chambers, an intermediate shaft or stem to opposite portions of which the diaphragms are fixed, a gas supply and pressure chamber connected with one diaphragm chamber, a liquid supply connected to produce an opposed pressure upon the second diaphragm, a gas controlling throttle and spring by which the throttle is normally closed, a discharge passage and pressure gage connected with the gas diaphragm chamber, a second spring and means to regulate the compression thereof.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SUTLIFFE H. BITHER.

Witnesses:

GEO. H. STRONG,
CHARLES EDELMAN.