

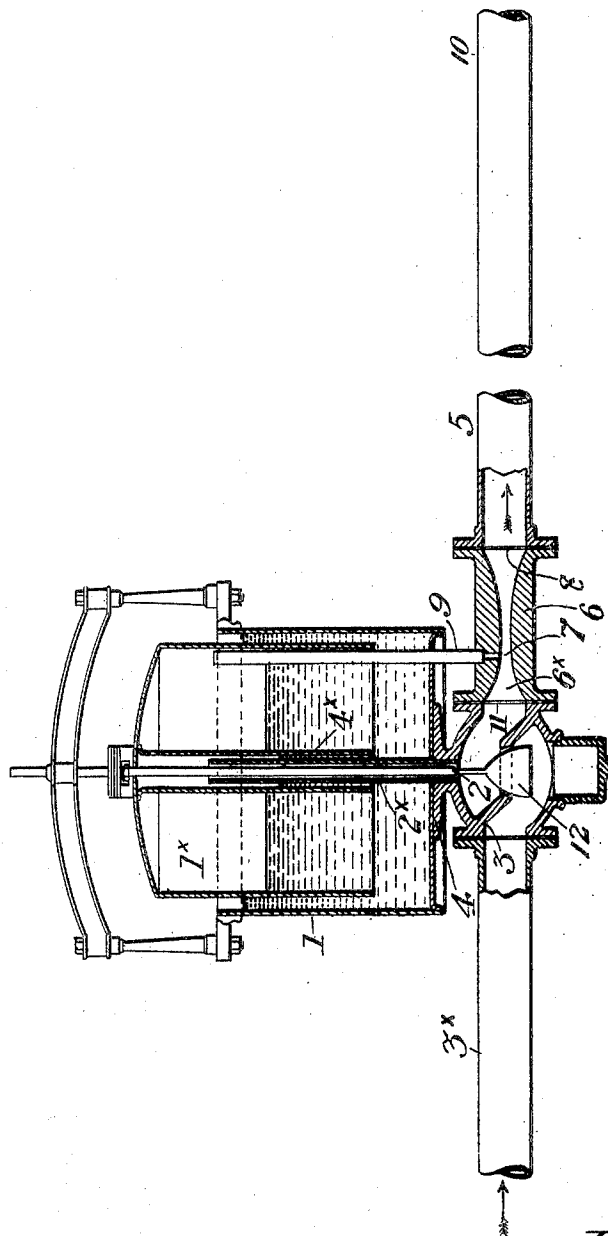
No. 797,766.

PATENTED AUG. 22, 1905.

G. DALÉN.

GAS REGULATING PRESSURE DEVICE.

APPLICATION FILED MAY 19, 1904.



Witnesses:
Ed. Mareson
Edward Sarton

Inventor:
Gustav Dalén
BY *Richard* Attys.

UNITED STATES PATENT OFFICE.

GUSTAF DALÉN, OF STOCKHOLM, SWEDEN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AKTIEBOLAGET GASACCUMULATOR, OF STOCKHOLM, SWEDEN.

GAS-PRESSURE-REGULATING DEVICE.

No. 797,766.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed May 19, 1904. Serial No. 208,778.

To all whom it may concern:

Be it known that I, GUSTAF DALÉN, a subject of the King of Sweden and Norway, and a resident of Stockholm, Sweden, have invented certain new and useful Improvements in Gas-Pressure-Regulating Devices, of which the following is a full and clear specification.

The present invention relates to a gas-pressure-regulating device, and has for its object to maintain a predetermined and constant pressure in a main or conduit at a point distant from the main gas holder or supply.

The invention is based upon the well-known fact that the velocity energy of steam or gas flowing through a channel or nozzle the sectional area of which increases continually in the direction of the flow is converted into pressure energy, provided the ratio of increase is suitably proportioned and the steam or gas is throttled after having passed the channel or nozzle.

For making the invention fully understood reference may be made to the accompanying drawing, which illustrates the device partly in section.

In the drawing, 3^x indicates the gas main or conduit leading from a main gas-holder, (not shown on the drawing,) and 3 is a valve-casing coupled to the end of said gas-conduit. 1 indicates a regulating gas-holder of any suitable construction, the bottom of which is fixed to a flange 4 on said valve-casing 3. The spindle 2 of the valve 12 extends through the center of the gas-holder and is fixed to the roof of the bell 1^x. A central pipe 2^x surrounds the valve-spindle 2 and opens into the valve-casing 3, said pipe 2^x in turn being surrounded by a pipe 4^x, extending downwardly from the roof of the bell 1. To the outlet-opening 11 of the valve 2 is coupled a pipe 6, the bore of which is provided with a contracted inlet portion 6^x, from the smallest section 7 of which the sectional area of the bore continually increases to the largest section at 8, which is equal to the sectional area of the gas-conduit 5, coupled to the outlet of the pipe and constituting the continuance of the main gas-conduit leading to the distant point of consumption 10. In the smallest section 7 of the pipe 6 or in the proximity thereof a pipe 9 opens, which extends into the gas-chamber of the bell 1^x.

The operation of the device above described

is as follows: The gas from the main gas-holder flows through the main conduit 3^x, valve-casing 3, pipe 6, and conduit 5 to the point 10 of said conduit, supposed to be a distant place where the gas is to be consumed. During the passage through the contracted portion 6^x of pipe 6 the velocity of the gas is increased, so that it will be greater at the smaller section 7 than at the inlet of the pipe 6. The pressure of the gas is simultaneously reduced, so that it will be smaller at 7 than at the inlet of the pipe 6. The gas-pressure at 7 is the same as that of the gas-chamber of the bell 1^x, owing to the communication through pipe 9, and the gas-pressure of said gas-chamber is maintained constant, owing to the well-known combination of the gas-holder 1 with the valve 12. It will be needless to enter into any further description of the construction of said gas-holder, as this is well known. It may be sufficient to state that if the pressure of the gas-chamber of the bell 1^x should tend to increase the bell will ascend, whereby the valve 12 will throttle the gas-flow through the valve-casing until the gas-pressure resumes its former amount. If, on the contrary, the gas-pressure of the bell tends to decrease, the bell will descend, whereby the valve 12 opens the flow through the valve-casing until the gas-pressure is sufficiently increased. During the passage from section 7 to section 8 the velocity energy of the gas is converted into pressure energy in the well-known manner, due to the continual increase of the sectional area from 7 to 8 and the throttling of the gas-flow beyond the largest section 8, which throttling is effected by the openings of the gas-burners at the consumption place or places, said openings being considerably smaller than the sectional area 8. Thus the gas-pressure at 8 will be greater than the gas-pressure at 7, while the velocity of the gas is correspondingly reduced, and said increase of pressure may be calculated and determined by persons skilled in the art and be made equal to the reduction of gas-pressure during the flow of the gas from 8 to 10—viz., the distant point of consumption due to friction, curvatures, and the like—said reduction of pressure also being easily calculated in the well-known manner by persons skilled in the art. The dimensions of the bore of the pipe 6 thus being properly determined,

the result will be that at 10 the pressure is maintained equal to the pressure at 7 or, which is the same, equal to the pressure of the gas-chamber of the bell 1^x, which is a constant pressure, as above set forth.

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

1. In a gas-pressure-regulating device the combination with the gas-main of means for maintaining a constant gas-pressure at a point of the gas-main and means for raising the gas-pressure corresponding to the reduction of pressure due to friction and the like during the flow between said point and a distant point therefrom.

2. In gas-pressure-regulating device the combination with the gas-main of a gas-holder, a pipe inserted in the gas-main, having its

bore provided with means for converting velocity energy into pressure and a pipe connecting said pipe with the gas-chamber of the gas-holder.

3. In a gas-pressure-regulating device the combination with the gas-main of a gas-holder, a pipe inserted in the gas-main provided with a contracted inlet portion and from said inlet portion with continually-increasing sectional areas and a pipe connecting the gas-chamber of said gas-holder with the smallest section of said pipe.

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

GUSTAF DALÉN.

Witnesses:

WOLDEMAR BOMAN,
T. E. KEROHM.