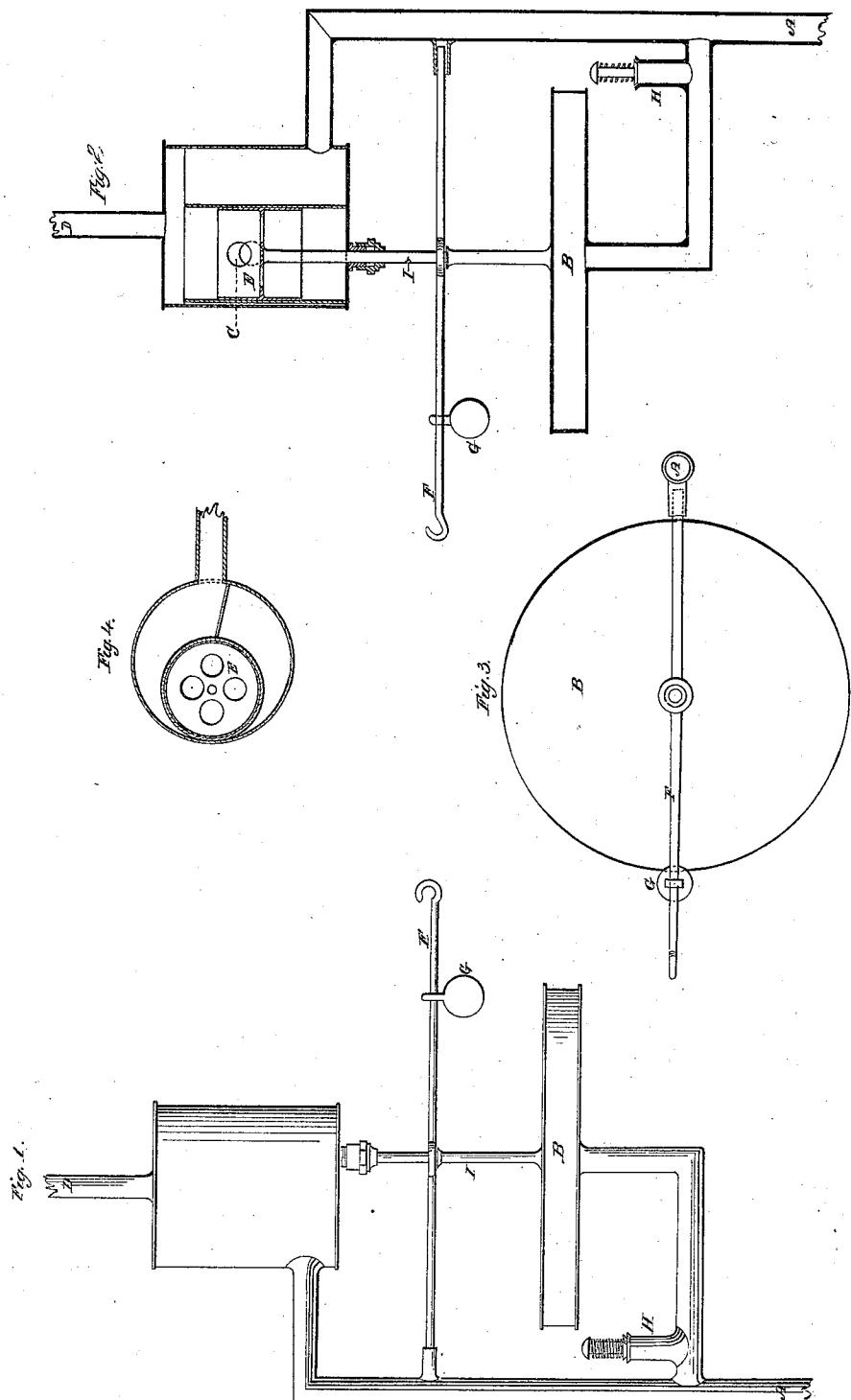


A. P. Pitkin,  
Governor,  
No 24,402 Patented June 14, 1859.



Witnesses.  
Edward M. Bla.  
Jeremy H. B. Lip.

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# UNITED STATES PATENT OFFICE.

A. P. PITKIN, OF HARTFORD, CONNECTICUT.

## STEAM-PRESSURE REGULATOR.

Specification of Letters Patent No. 24,402, dated June 14, 1859.

*To all whom it may concern:*

Be it known that I, A. P. PITKIN, of Hartford, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Steam-Pressure Regulators; and I do hereby declare that the same is described and represented in the following specification and drawings; and to enable others skilled in the art to make and use my improvement I will proceed to describe the construction and operation, referring to the drawings, in which the same letters indicate like parts in each of the figures.

The nature of this improvement consists in forming a connection with the reduced pressure chamber for the purpose of using the reduced pressure steam to operate a diaphragm spring or piston (or their equivalents) thereby opening and closing a passage for the purpose of regulating the pressure of steam in the reduced pressure chamber, or paper machine cylinder. The desired pressure being obtained at all times by moving the weight to and fro on the lever, and further by placing in connection with the reduced pressure chamber a safety valve, so that should any of the machinery fail to operate to prevent an over pressure, the safety valve will open and thereby prevent the bursting of the reduced pressure pipes or chamber.

In the accompanying drawings Figure 1 is a side elevation. Fig. 2 is a sectional view. Figs. 3 and 4 are detached portions thereof.

A is the low pressure pipe, connecting with a reduced pressure chamber or paper machine cylinder.

B is a diaphragm spring or piston (or their equivalents) for the purpose of opening and closing a passage between the high and reduced pressure chamber.

C is a passage between the high and reduced pressure chamber through which the steam passes, the opening and closing of which will regulate the pressure in the reduced pressure chamber A, said passage being opened and closed by means of the piston or valve E connected to the rod I and diaphragm B.

D is a high pressure pipe or chamber connecting with a steam boiler.

F is a lever governed by a weight G, for the purpose of opening the passage C, when

the pressure becomes too low in the pipe or chamber A.

H is a safety valve connected with the reduced pressure pipe or chamber A for the purpose of relieving the pressure in the pipe 60 or chamber A, should it at any time become too great, from the failure to operate, of any of the other parts.

I believe I have thus described the construction of my improvement so as to enable 65 a workman to make the same.

Now the pipe D being connected to a steam boiler and the pipe A connected to a reduced pressure chamber or paper machine cylinder it will be seen that after setting the 70 weight G on the lever F, at any desired pressure on the pipe or chamber A, that should the pressure become greater than desired in the reduced pressure chamber, the diaphragm or spring B will force up the rod I 75 and piston E, thus closing the passage C, and should the pressure at any time become too low in the pipe or chamber A the weight G will force down the diaphragm or spring B rod I piston E thereby opening the passage C, by which means I am enabled at all times to keep up a uniform pressure on the pipe or chamber A.

The advantage derived must be at once apparent, from the great amount of steam saved, by regulating in such a manner as that no more steam shall be used at any time than is required, and also producing a uniform pressure and temperature for the work required at all times. It may perhaps be called a throttle valve, but it is not designed as such and is not to be used as such, neither is it to be used in connection with a steam engine. It is a self acting pressure regulator, designed as such and to be used as such 95 on paper machine cylinders (usually made of thin copper) which will not stand a pressure of over ten pounds to the square inch with safety. The object of this regulator is to keep the steam at all times at any desired pressure, to prevent the bursting of the drying cylinder, and also to keep a more uniform temperature for the drying of the paper, however high the steam may be in the boiler before it passes the regulator.

I do not claim anything new in the expansion of steam, or the cutting off the steam at any particular point. Neither do I claim a new throttle-valve to an engine to regulate 100 the proper amount of steam for the work or

speed required, for these I am aware are old, but what I wish to claim is the particular mode of operating a pressure regulator for the purpose of producing a safe and uniform 5 temperature and pressure on the drying cylinder at all times as described.

What I claim therefore and desire to secure by Letters Patent is—

1. In forming a connection with a reduced pressure pipe or chamber A and diaphragm 10 spring or piston B (or their equivalents) for the purpose of opening and closing a

passage C, between the high and reduced pressure pipes or chambers, A and D as and for the purpose described.

2. Also the combination of passage C, piston or valve E, rod I, lever F diaphragm, spring or piston B and safety valve H arranged to operate in relation to each other as and for the purpose described.

A. P. PITKIN.

Witnesses:

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