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T. H. J. LECKBAND.

CUT-OFF FOR GAS, STEAM, AIR, OR OTHER FLUIDS.

(Application filed Mar. 21, 1898.)

(No Model.)

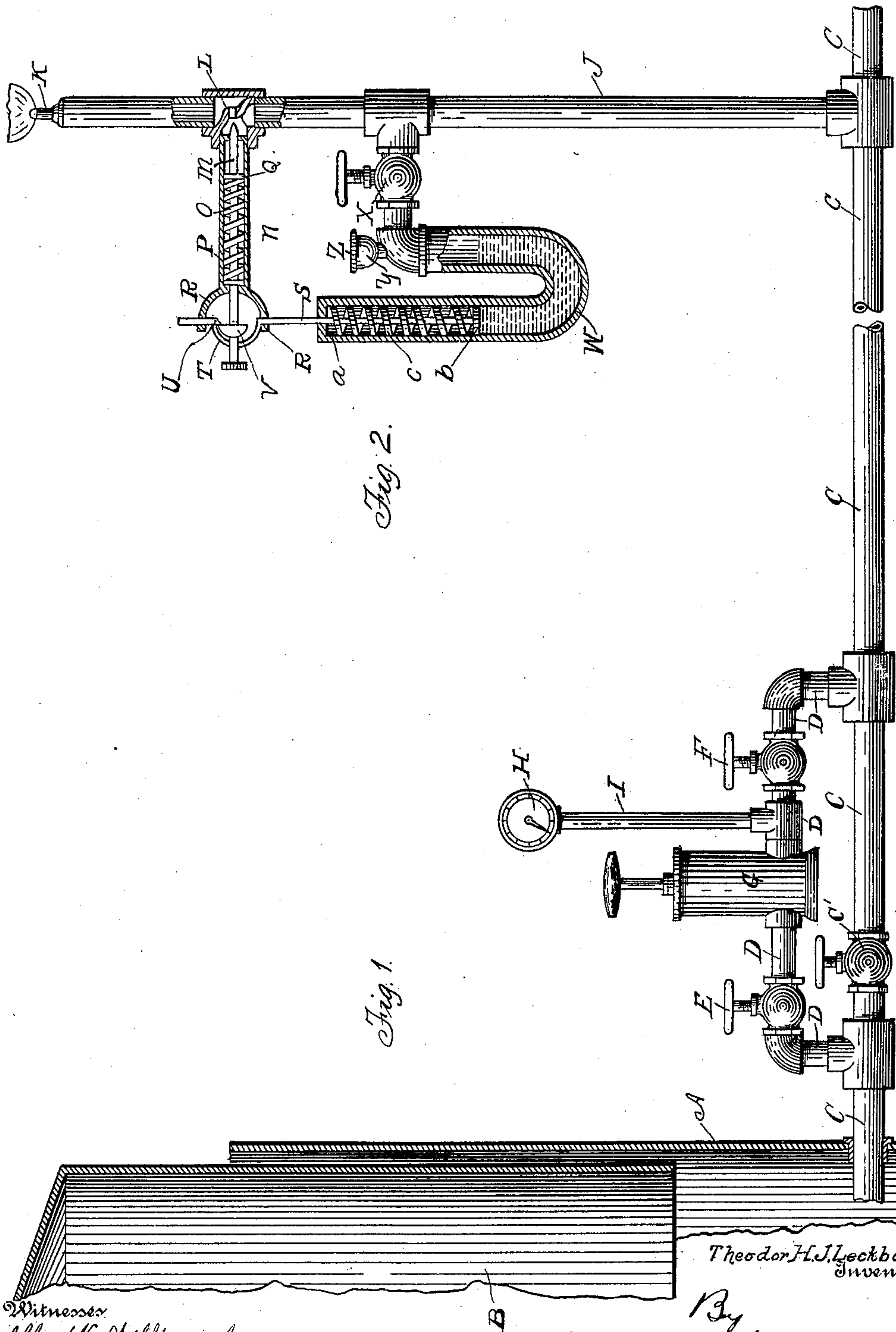


Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

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CUT-OFF FOR GAS, STEAM, AIR, OR OTHER FLUIDS.

SPECIFICATION forming part of Letters Patent No. 617,812, dated January 17, 1899.

Application filed March 21, 1898. Serial No. 674,620. (No model.)

To all whom it may concern:

Be it known that I, THEODOR H. J. LECKBAND, a citizen of the United States, residing at Adair, in the county of Adair and State of Iowa, have invented a new and useful Cut-Off for Gas, Steam, Air, or other Fluid, of which the following is a specification.

The object of my invention is to provide means whereby the flow of gas or other fluid may be promptly cut off or checked, the cut-off proper being located at a remote distance from the operator; and it consists in certain novel features of combination and construction of parts, as will be hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a portion of my invention which is located under the immediate control of the operator, while Fig. 2 illustrates the cut-off proper.

The details of my invention and the accessories deemed necessary to illustrate the application thereof will be designated by letters of reference, in which—

A shows a section of the gas-holder, B indicating the usual telescoping or movable cap or gas-holder proper.

C indicates the main-pipe line, while D designates a branch pipe or lateral extension of the main pipe, which coöperates at both ends with said main pipe and is provided at a proper point thereon with the cocks or valves E and F, while located intermediate between said cocks is the pump G, the purpose of which will be hereinafter fully set forth. I also locate upon the branch pipe D at a point convenient to said pump the indicator H, connected with said branch by the pipe I and which is designed to indicate the pressure in the pipes, as will be more particularly pointed out. The supply-pipe C is tapped at any point desired, and the burner-pipe J (or as many thereof as may be deemed necessary) is connected therewith and is designed to feed the burner K.

At a point preferably near the burner I locate in the pipe J a valve-seat, which in this instance consists of the obliquely-disposed diaphragm L, with which is designed to co-operate the needle-point M of the valve-stem N. Said valve-stem N is normally held so as to force the point M thereof into the aperture

provided in the diaphragm L by means of the spring O, which is disposed around said stem and housed in the tubular bracket P, the pin or collar Q being fixed to the stem N, so as to receive the force of said spring, while the opposite end of said spring is disposed against a suitable shoulder formed in the housing P. (Not shown.)

Formed upon the housing P are the brackets R, each having a vertically-disposed aperture in which is designed to freely move the piston-rod S, the upper portion of said rod being curved, as indicated at T. A catch U is formed upon the upper end of the curved section T and which is designed to engage the disk V upon the extended end of the valve-stem N, as will be hereinafter set forth.

Below the diaphragm L, I locate the seal W, which is in connection, by means of the valve or cock X, with the pipe J, said seal being designed to contain any suitable sealing liquid, as mercury or the like, which may be readily introduced therein through the funnel Y, provided with a suitable cap Z, which will thoroughly close the same.

The free end *a* of the seal W is designed to receive the piston-rod S, which is provided at its lower end with a piston or valve *b*, and designed to hold said valve normally downward is the spring *c*, the lower end of which is disposed against said piston, while the upper end thereof is received by the closed end of the pipe *a*, it being understood that there is an aperture in said closed end which will permit the rod S to loosely reciprocate therein.

In order that an increase of pressure in the pipes C and J will operate to cut off the flow thereof to the burner, the valve-stem N is drawn outward, thus withdrawing the point M from the seat L, said outward pull being against the tension of the spring O. When said stem is withdrawn a sufficient distance, the catch U will ride up the outer beveled face of the disk V, causing said catch to drop down upon the inner face of said disk, and thereby hold the valve-stem in an outwardly-extended position, so that the point M will leave the valve-seat open, and thus permit an unimpeded flow of the gas to the burner K.

It will be seen that the outer edge of the disk V is beveled or inclined, which will permit the valve-stem N to be freely drawn out-

ward by the operator, as the outer inclined or beveled face of said disk will readily ride over or past the hook or catch U, permitting said catch to drop downward upon the inner
5 side of said disk, and thus insure that the valve-stem N will be held outward thereby until the piston carried by the rod S will be raised by an increased pressure in the pipes.

It is assumed that the parts just referred to
10 are at a remote distance from the operator, who, for the purpose of illustration, may be supposed to be near the source of supply, and as he desires to cut off the flow of the gas to the burner K or a series of burners, as the case
15 may be, he will close the valve C', thus directing the flow of the gas through the branch D, it of course being understood that the valves E and F are to be opened after the valve C' has been closed. When the valves E and F are
20 thus opened, the pump G is operated, which draws the gas from the source of supply and forces the same onward through the pipes C and J, and the increased pressure thus established will when the valve X is open act upon
25 the sealing liquid and indirectly upon the piston b, forcing said piston upward, causing the catch U to be released from the disk V, and thus releasing the valve-stem N, which by action of the spring O is forced inward,
30 thus causing the point M to enter the seat L and effectually cutting off all further flow of gas to the burner K.

It is thought that best results will follow when a sealing liquid is employed, though it
35 is obvious that the sealing liquid may be entirely omitted, in which case the pressure of the gas will act directly upon the piston b.

By use of the means which I have described it is clear that one or a series of burners lo-
40 cated beyond the cut-off will be readily controlled by the one seal. The indicator H is designed to enable the operator to determine the amount of pressure he has placed within the pipes by the pump G, it being clear that
45 the indicating-finger will register such pressure as a constantly-varying quantity until the burners are all cut off, when a marked increase of pressure will be indicated.

Having thus fully described the construction and use of my invention, what I claim as
50 new, and desire to secure by Letters Patent, is—

1. In a cut-off for gas, or the like, the combination with a main supply-pipe having a
55 valve and a lateral extension communicating with the main pipe on either side of said valve, said extension being provided with a pump and valves upon either side of the pump, of a seal located near the burner or
60 burners, a piston carried by said seal and

having an upwardly-extending rod provided with a hook, a valve located in the burner-pipe intermediate said seal and burner and having an outwardly-extending valve-stem; means to hold said valve-stem normally in-
65 ward and additional means carried by the valve-stem to engage said hook whereby said stem may be automatically released when the pressure is increased to a given point, as specified and for the purpose set forth. 70

2. The herein-described device for cutting off the flow of gas, or the like, consisting of a seal in operative connection with the supply-pipe, in combination with a valve carried by the burner-pipe and having an outwardly-
75 extending valve-stem provided with a beveled disk, a spring to hold said stem normally inward, a piston located in said seal and having an upwardly-extending rod provided with a catch adapted to engage said disk whereby
80 said disk will be automatically released when said piston is raised by an increase of pressure in the pipes, as and for the purpose set forth.

3. A cut-off for air, gas, or other fluid, designed to automatically close the burner-pipe when the pressure is increased to a given point, consisting of a pipe connected with the burner-pipe and so shaped as to provide a
85 bend or seal; a piston having an upwardly-extending rod mounted in the end of said seal; a valve carried by the burner-pipe and having an outwardly-extending valve-stem, means to hold said stem normally inward and means carried by said piston-rod adapted to
90 automatically release the valve-stem and permit the same to be thrown inward when the pressure is increased to a certain point, as specified and for the purpose set forth. 95

4. In a cut-off for gas, steam, or the like, the combination with the burner-pipe, of a valve
100 located therein and having an outwardly-extending valve-stem; a seal carried by the burner-pipe and in communication therewith; a piston mounted in the end of said
105 seal and having a catch upon its upwardly-extending rod; a disk having an outwardly-beveled face secured to the valve-stem, whereby when the latter is drawn outward against the tension of its spring, said catch will en-
110 gage said disk and be automatically released from such engagement when the pressure is increased sufficiently to force said piston and catch upward, all operatively combined in the manner specified and for the purpose set forth. 115

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