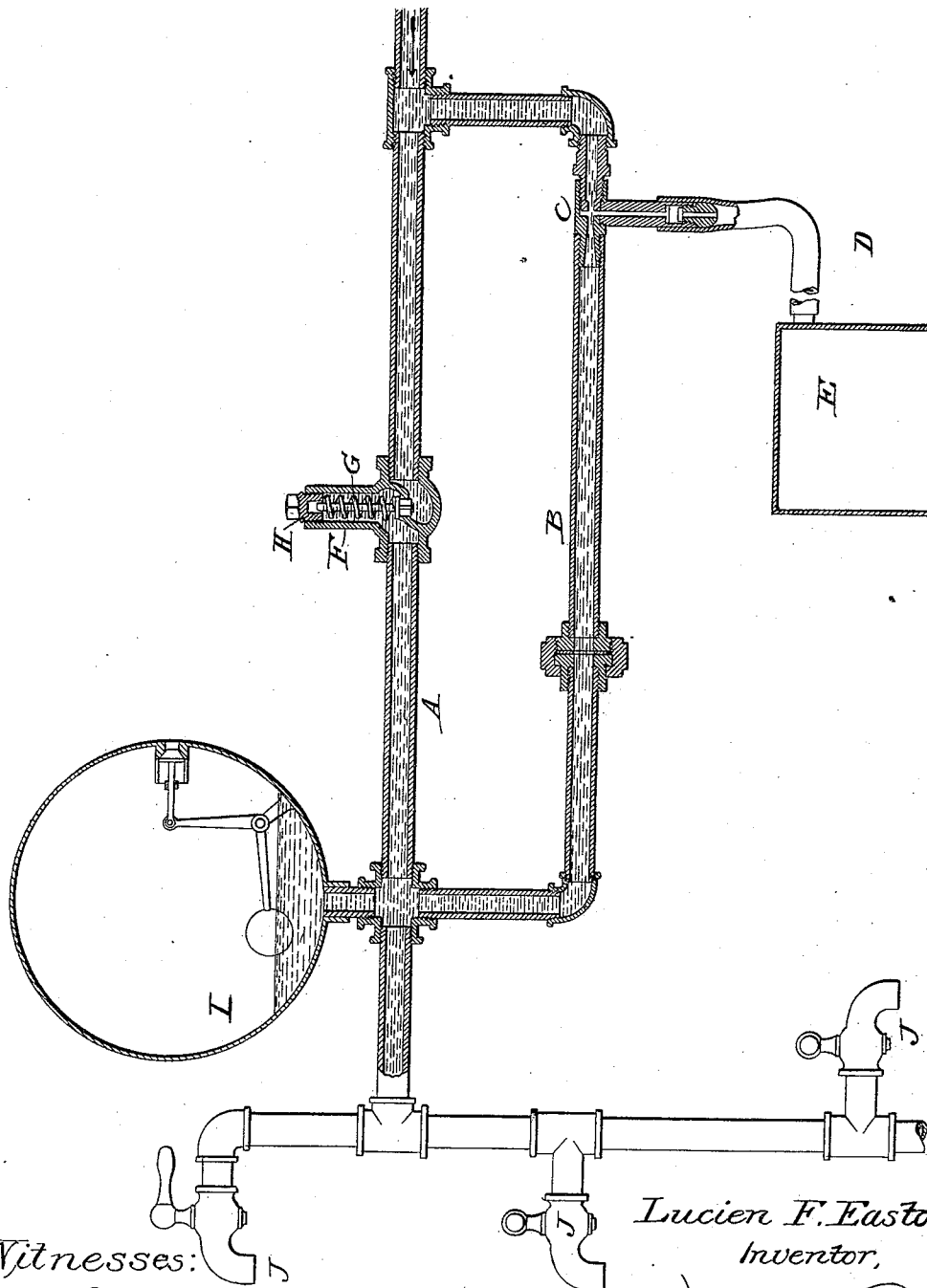


(No Model.)

L. F. EASTON.  
TEMPERATURE REGULATOR.

No. 472,255.

Patented Apr. 5, 1892.



Witnesses:

James F. Duhamel  
Horace A. Dodge.

Lucien F. Easton  
Inventor,

by *Dodges & Sons,*  
Attys.

# UNITED STATES PATENT OFFICE.

LUCIEN F. EASTON, OF LA CROSSE, WISCONSIN.

## TEMPERATURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 472,255, dated April 5, 1892.

Application filed March 16, 1891. Serial No. 385,146. (No model.)

*To all whom it may concern:*

Be it known that I, LUCIEN F. EASTON, a citizen of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain new and useful Improvements in Temperature-Regulators, of which the following is a specification.

This invention has for its object the utilization of the pressure and movement of water in the ordinary service pipes or mains of buildings; and it consists, essentially, in combining with such pipes or mains an aspirator connected in any convenient manner with the tank, vessel, or chamber from which it is desired to exhaust air, so that as water is drawn up from any faucet or opening in the pipe or main beyond the aspirator air shall be drawn in by the aspirator and carried along with the water to be discharged either at the faucet or, as is preferred, into a tank or chamber, from which it may be taken to operate any suitable mechanical appliances or merely allowed to escape under proper control.

The drawing represents a sectional view of the apparatus in its preferred form.

In said drawing, A indicates the service pipe or main, through which water enters and passes in the direction indicated by the arrow, and B a branch pipe, which passes laterally from the pipe A and joins the same again at some distance from the point at which it branches therefrom.

C indicates an aspirator introduced in the branch pipe B and connected by pipe D with a tank or vessel E, from which it is desired to exhaust the air.

Between the points at which the pipe B branches from and rejoins the main pipe A is arranged a valve F, the plug of which seats against the water-pressure with a force determined by a spring G, which may be varied and regulated by a screw-cap H, bearing upon said spring, as shown. This valve is in a sense a pressure-reducer; but its purpose in the present connection is to permit the water to flow through the aspirator in sufficient quantity to properly operate the same and to allow the passage of water through the main pipe A and valve F when more water is desired than can pass through the aspirator C.

The construction and operation of the aspi-

rator are common and well known and require no explanation herein.

I indicates a compressed-air reservoir or chamber advisably located just above the point at which the pipe B rejoins pipe A, so that the air drawn in through the aspirator by the water passing through pipe B shall be permitted to escape freely into the chamber I, whence it may be drawn to actuate any suitable air-motor or allowed to escape under the control of a suitable valve, the primary object of extracting the air from the water before the water passes to the faucets J being to prevent an undue spattering and noise at the faucets.

J J indicate the faucets, connected to the pipe A at points beyond the chamber I—as, for instance, in the different rooms of a building.

The apparatus being thus constructed and arranged, the action is as follows: Water entering the pipe A passes to the valve F and through branch pipe B and aspirator C to the several faucets. If now one of the faucets J be opened, water will flow out through the same, and in consequence will traverse that portion of pipe A from which pipe B branches off, and will also traverse the pipe B, passing through aspirator C and drawing air in through the inlet thereof from the chamber or tank E, producing a vacuum more or less perfect therein. As the water flows through pipe B back into the pipe A beyond the valve F the air drawn in by the passing water escapes into chamber I, while the water passes on to the faucet J, which is at the time opened. If the aspirator C will not permit the passage of a sufficient quantity of water to relieve the pressure in the pipe or to supply the faucet or faucets that may be opened, the pressure of the water in the main will cause the unseating of the plug of valve F and permit the passage of water through said valve and through the continuation of pipe A, as well as through the branch pipe B and aspirator C. As the water presses equally in all directions, it will be seen that it is not essential that the valve be employed in the pipe A, as the pressure will be divided between the pipe A and the branch pipe B in proportion to their carrying capacities, subject, of course, to

the proportionate difference in friction between large and small pipes and to the freedom from bends or shoulders in the respective pipes. Nevertheless the employment of the valve F is considered desirable, and while I do not restrict myself to its use I consider its employment advisable. If it be not desired to utilize the air delivered into and compressed within chamber I, it may be permitted to escape therefrom by a regulated pressure or escape valve, the pressure of the air within the chamber preventing the entrance of water into the same.

By means of the apparatus thus described I am enabled to produce a vacuum or to more or less completely exhaust air from any suitable chamber, vessel, or pipe without incurring any expense beyond the cost of the apparatus and without waste of water, an objection which has hitherto obtained against the use of aspirators in the arts.

The apparatus is particularly designed for use in connection with temperature-regulating devices operated either by suction or by pressure, and avoids the one objection which has hitherto prevailed against the actuation of such devices by suction. It is, however, to be understood that I do not restrict myself to any particular application of the invention.

It will be seen that it is possible to place the aspirator directly in the main pipe A; but it is not considered desirable so to do, for the reason that it is liable to unduly restrict the capacity or reduce the pressure therein. Still I consider such an arrangement as within the spirit and scope of my invention, and mean to claim the same accordingly.

In the place of the valve F shown in drawing any of the well-known so-called "pressure-reducers" may be used.

As above indicated, I make no claim to the construction of the aspirator, such being an old device used for many years past both for exhausting and compressing air and gases; but my invention is directed to the utilization of a force hitherto commonly wasted—that is, the force with which water flows through the service-pipes and faucets of a building.

Having thus described my invention, what I claim is—

1. In combination with the water-service pipe or main of a building and with a delivery valve or faucet applied thereto, an aspirator communicating with said pipe at a point

between the street-main and the delivery valve or faucet, and a close tank or chamber communicating with the aspirator, substantially as set forth, whereby the aspirator is caused to draw air from the tank whenever water is drawn from the delivery valve or faucet.

2. In combination with the water-service pipe of a building, a reducing-valve introduced into said pipe and closing against the pressure therein, a branch or by-pass leaving the service-pipe on one side of the reducing-valve and rejoining it on the opposite side thereof, an aspirator in said branch pipe, a close tank or receiver in communication with the aspirator, and a delivery valve or faucet connected with the service-pipe at a point beyond the reducing-valve.

3. In combination with the water-service pipe of a building and with an aspirator located in said pipe, a delivery valve or faucet applied to the pipe and an air-receiver connected with the pipe at a point between the aspirator and the valve or faucet and serving to receive from the water the air drawn in through the aspirator before the water passes to the delivery valve or faucet.

4. The herein-described apparatus for utilizing the force and pressure of service-water in the act of drawing water for other purposes, consisting of pipe A, provided with reducing-valve F, branch pipe B, aspirator C, located in said pipe, air-receiver I, connected with said pipe and serving to receive air drawn in by the aspirator, and delivery valve or faucet J, applied to the service-pipe, substantially as and for the purpose set forth.

5. The herein-described apparatus for utilizing the movement of water in service mains and pipes, consisting of a service-pipe, a delivery valve or faucet applied thereto, an aspirator located in the pipe between the inlet and the delivery-valve, a close tank communicating with the aspirator, and an air-receiver communicating with the pipe at a point between the aspirator and the delivery-valve, all substantially as described and shown.

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

LUCIEN F. EASTON.

Witnesses:

W. E. LOCKERBY,  
A. J. ENGELSTAD.