(No Model.)

E. W. HAYNES.

DAMPER REGULATOR.

No. 383,950. Patented June 5, 1888.

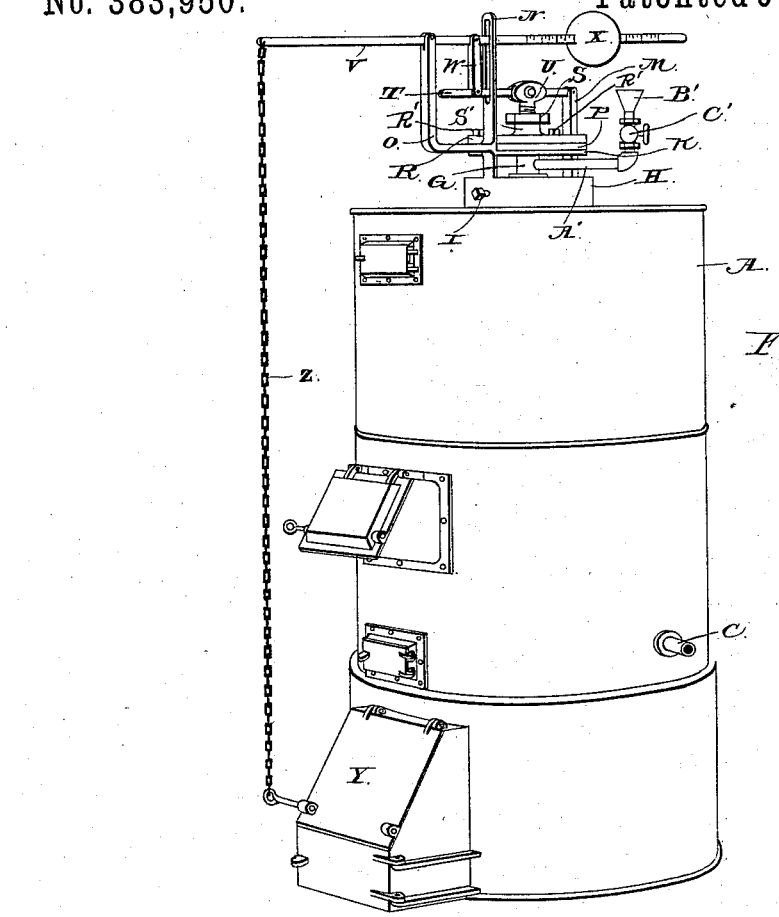

Fig. 1.

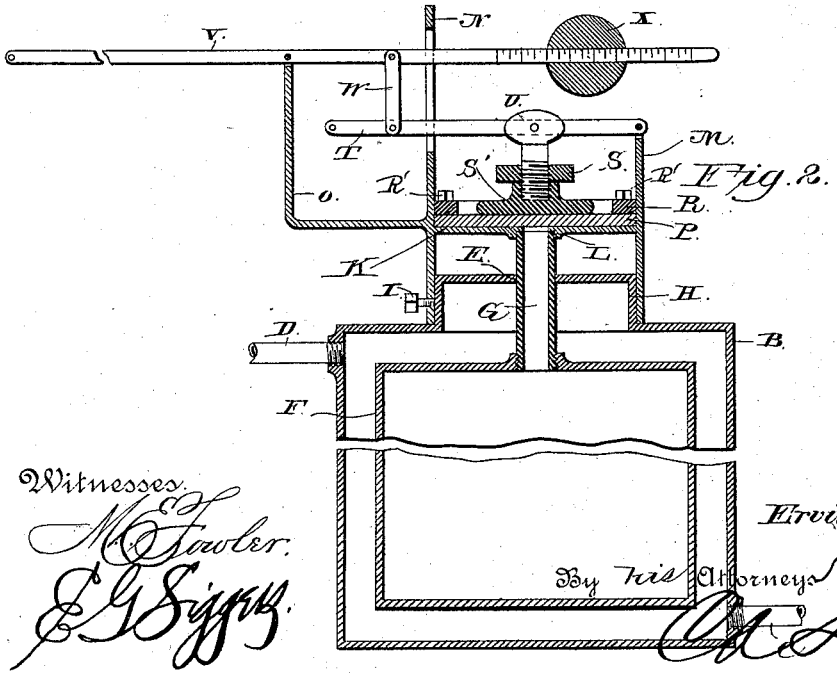

Fig. 2.

Witnesses.
M. Fowler.
E. G. Siggers.

Inventor.
Elvin W. Haynes.
By his Attorneys
A. Knowles

UNITED STATES PATENT OFFICE.

ERVIN W. HAYNES, OF FRANKLIN FALLS, NEW HAMPSHIRE.

DAMPER-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 383,950, dated June 5, 1888.

Application filed November 12, 1887. Serial No. 255,004. (No model.)

To all whom it may concern:

Be it known that I, ERVIN W. HAYNES, a citizen of the United States, residing at Franklin Falls, in the county of Merrimac and State of New Hampshire, have invented a new and useful Improvement in Damper-Regulators, of which the following is a specification.

My invention relates to an improvement in hot-water or steam draft or damper regulators for steam boilers and heaters; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a heater provided with a draft or damper regulator embodying my improvements. Fig. 2 is a vertical sectional view of an upper portion of the same and illustrating my improved draft or damper regulating apparatus.

A represents a heater or furnace in the upper portion of which is a hot-water tank or chamber, B.

C represents an inlet-pipe to supply steam or hot water to the chamber B, and D represents a pipe to convey steam or hot water from the said chamber. The upper portion of the chamber B is reduced in diameter and is provided with a central opening, E.

F represents an interior tank, which is arranged in the tank or chamber B, and is provided at its upper end with the vertical pipe G, which extends through the opening E.

H represents a case, which is swiveled on the reduced upper portion of the chamber B, and is provided with a set-screw, I, by means of which it may be secured at any desired point. The said case H is provided with a cross bar or bridge, K, having a central opening, L, which aligns with the opening E. From one end of the cross bar or bridge extends a vertical standard, M, and from the opposite end of the same extends a vertical standard, N.

O represents a right-angular arm, which extends outward from the standard N and is then extended upward, as shown.

The upper end of the pipe G is secured in the opening L, as shown, and on the upper side of the cross bar or bridge K is a diaphragm, P, which is made of rubber or other material and covers the upper end of tube G. The said diaphragm is secured in position by a ring, R, which is arranged on the same and is bolted to the bridge K by bolts R'.

S represents an adjusting-nut, which is arranged above the center of the diaphragm and is provided with a threaded recess, as shown, and bears upon a follower, S'.

T represents a lever, which is pivoted to the standard M, extends across and over the adjusting-nut, and projects through a vertical slot in the standard N.

U represents a screw, which has its upper end pivoted to the lever T and its lower threaded end engaged by the threaded recess in the nut S.

V represents a multiplying-lever, which is fulcrumed to the upper end of the standard O, is connected to the free end of the lever T by means of a link, W, and is provided at one end with an adjusting-weight, X, which slides over a graduated scale, with which the lever V is provided, and the opposite end of the said lever V is connected to a damper or draft regulator, Y, with which the furnace is provided, by means of a cord or chain, Z, as shown.

A branch pipe, A', communicates with the pipe G, near its upper end, and is provided with a funnel, B', through which water and other fluids may be introduced through the inner tank, F, and has a stop-cock, C', as shown.

The operation of my invention is as follows: The inner tank, F, is entirely filled with water or other fluid, which rises to the upper end of the pipe G, and is heated by the hot water or steam in the tank or chamber B. Supposing that it is desired to maintain the temperature of the water or steam in the radiating-pipes, (not shown,) which are connected with the pipes attached to the outer tank, B, at 180°, the weight X will be moved to a point on the end of lever V indicating 180°, and the adjusting-nut S will be turned, so as to cause the screw U to raise the lever T and the latter to lower the outer end of lever V sufficiently to just close the damper or draft regulator Y. In order to regulate the steam, the weight may be moved on the lever to the required point. When the pressure by expansion, caused by the

temperature of the water in the tank F, exceeds the pressure exerted by the weight X against the upper side of the diaphragm, the latter is pressed up against the follower, and the adjusting-nut consequently supporting the lever T in its elevated position. When the water or fluid in the tank F cools, it contracts and descends in the pipe G, thereby causing the diaphragm to lower, and consequently causing the lever T to be also lowered and the lever V to be raised sufficiently to open the door or regulator Y, when combustion in the furnace will be promoted sufficiently to raise the water in the tanks to the requisite temperature, as before, when the draft-regulator Y will again close.

By reason of having the case or frame H swiveled on the upper ends of the tank B, the same may be turned to any desired position on the heater, according to the side in which the draft-regulator Y is arranged.

Having thus described my invention, I claim—

1. The combination of the outer tank, B, the case or frame H, secured thereon, having the bridge K, the diaphragm P, and the follower on the said diaphragm, the inner tank, F, arranged in the tank B and having the pipe G, secured to the bridge K under the diaphragm, the levers connected to the said follower, the adjusting-weight on one of the said levers, the damper or door Y, and the connection between the same and the weighted lever, substantially as described.

2. The combination of the furnace having the door or damper Y and the tank B, the case or frame H on the upper side of said tank and adapted to turn thereon, said case or frame having the bridge K, the diaphragm resting on said bridge, the follower on said diaphragm, the levers supported on the case or frame, connections between the same and the follower and door or damper, the inner tank, F, arranged in the tank B, and the pipe G, extending upward from said inner tank and secured to the bridge K and communicating with the lower part of the diaphragm, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ERVIN W. HAYNES.

Witnesses:
W. D. HARDY,
E. B. S. SANBORN.