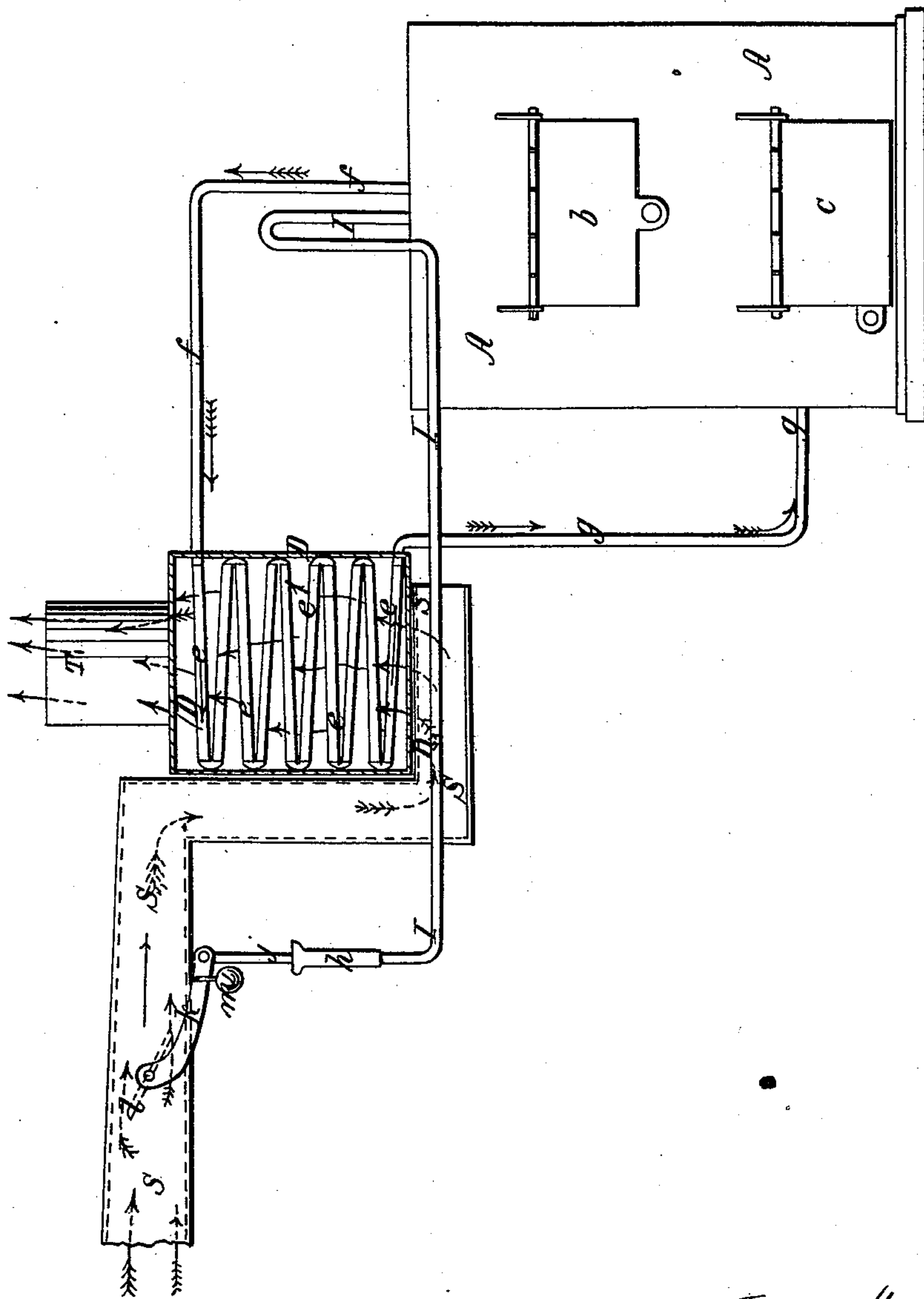


W. C. BAKER.
STEAM HEATER.

No. 44,038.

Patented Aug. 30, 1864



Witnesses;
Wm. A. Lincoln
Andrew de Lacy.

Inventor;
W. C. Baker.
By his attorney
J. A. McVintire

UNITED STATES PATENT OFFICE.

W. C. BAKER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND JOHN J. SMITH, OF SAME PLACE.

AUTOMATIC AIR-DAMPER FOR HOT-WATER HEATING APPARATUS.

Specification forming part of Letters Patent No. 44,038, dated August 30, 1894.

To all whom it may concern:

Be it known that I, W. C. BAKER, of New York, county of New York, in the State of New York, have invented a new and useful improvement in apparatus for supplying heated air to buildings, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, making part of this specification.

My invention relates to a novel method of regulating the temperature and supply of heated air derived from that kind of heating apparatus in which a supply of cold air passes through a radiator or heater composed of pipes (or other surfaces) heated by hot water, and thence to the apartment or place to be warmed; and my invention has for its object to render this kind of heating apparatus capable of an automatic or self regulation, which shall insure an even temperature to the supply of heated air afforded by it during any and all variations of temperature in its radiator or heater; and to this end my invention consists in the employment, in the pipe or passage through which cold air is supplied to the radiator, of a damper or valve so connected with the water-chamber of the boiler which supplies said radiator as to be operated by the expansion and contraction of the water in said chamber, and thus automatically vary the supply of cold air to the radiator as the condition of temperature of water supplied to said radiator varies, all as hereinafter more fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe the construction and operation of one of my improved hot-water heating apparatuses, referring by letters to the accompanying drawing, in which I have represented in elevation a boiler, a radiator, and the connections thereof, sufficiently to illustrate my invention. I have shown the radiator with the front side of its box removed.

A represents the furnace, having doors *b* and *c*, and within which is arranged the water-chamber or boiler in the usual manner. The radiator is composed of a box, D, within which is arranged a coil of pipes, *e*, connected at its upper part to the top of the boiler by means of a pipe, *f*, and at its lower part to the lower portion of the boiler or water-chamber by

means of a pipe, *g*. By this arrangement a circulation of hot water is kept up between the boiler and radiator, (and through the pipes of its coil,) as indicated by the black arrows in the drawing, in the manner well known to those familiar with hot water heating apparatuses.

S is a pipe or passage through which cold air is supplied to the box D of the radiator, where it is heated, and from where it passes through the exit-pipe T to the place or places to be warmed. In the cold-air passage S there is arranged a damper or valve, *l*, which is opened and closed by means of an arm or lever *k* arranged outside of conduit S. This valve-arm *k* is connected to a piston-rod, *j*, which extends vertically up from a piston in the cylinder *h*, which latter is connected directly by means of a pipe, I, to the water-chamber of the boiler. *m* is a weight attached to the arm *k*, and exerting a constant tendency to move said arm in such a direction as to close the valve or damper *l* in the cold-air passage S. In the drawing the red arrows indicate the direction of the currents of air passing through the supply-pipe S to the radiator, into and around the coil of the latter, and thence out through the exit-pipe T.

The water being heated, and the coil of the radiator supplied in the usual manner through the pipes *f* and *g*, the damper or valve *l* is opened sufficiently to allow a quantity of cold air to pass to the radiator, in which it is heated to the proper temperature, and from whence it is supplied to the place or apartments to be warmed. The damper and piston-rod *j* and weight *m*, being properly arranged and adjusted, the damper *l*, it will be seen, will be opened more or less just as the piston is raised or allowed to descend by the expansion and contraction of the heating medium, (the water.) Now, since the capacity of the radiator to heat to a given temperature different volumes of cold air varies just as the temperature of the heating medium (the water) changes, and since by the construction and arrangement shown and described the damper *l*, which regulates the supply of cold air, is correspondingly varied by the changes of temperature of the heating medium, (which effects its expansion and contraction,) it follows that by my improved arrangement the radiator will

b. always supplied with just the quantity of cold air which it will have the capacity to heat to a given temperature, and that thus during the fluctuations of the temperature of the heating medium (and of the air to be heated) a uniform temperature in the heated air discharged from the radiator will be maintained, thus gaining a great desideratum in hot-water heating apparatus.

I am aware that the supply of cold air to a steam-heated coil has been regulated by the pressure of the steam in the boiler, and do not wish my claim of invention to be confounded with such an apparatus. Neither do I wish to limit my invention to the precise mode of construction shown, or to any details of the apparatus, the gist of my invention resting in the idea of varying the supply of cold air to the radiator automatically by the expansion

and contraction of the water which constitutes the heating medium of the radiator. In the practical application of my invention I shall probably employ a diaphragm in lieu of the piston here shown.

Having explained my invention in hot-water heating apparatuses, what I claim as new, and desire to secure by Letters Patent, is—

Regulating the supply of cold air to the radiator or heater automatically by the varying temperature of the water employed to heat the radiator, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand and seal this 27th day of June, 1864.

W. C. BAKER. [L. S.]

In presence of—

HENRY N. SAWYER,
E. A. HULEN.