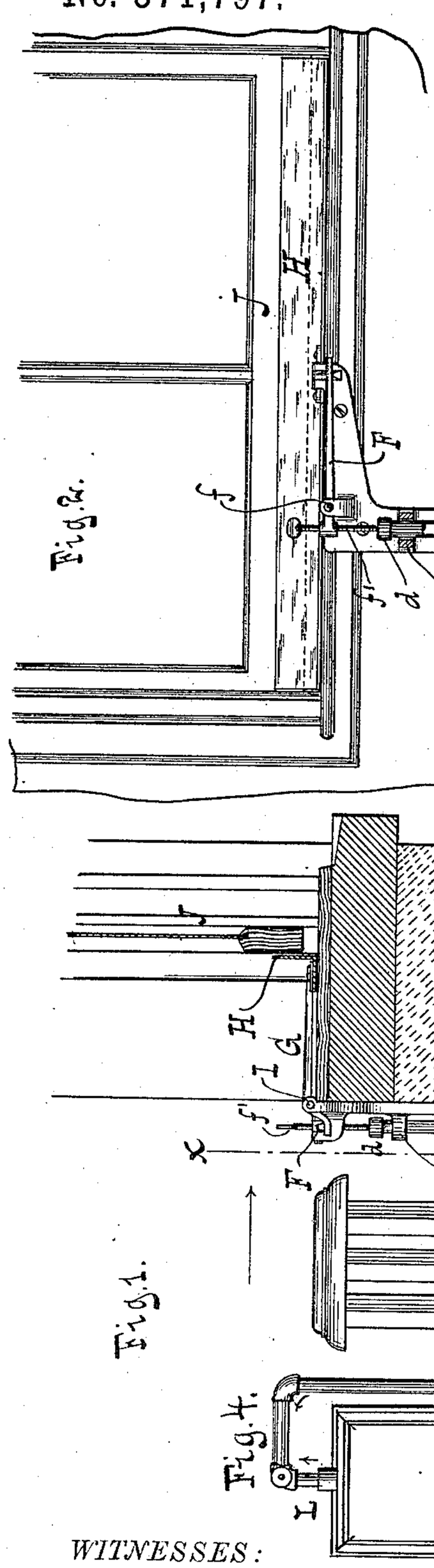
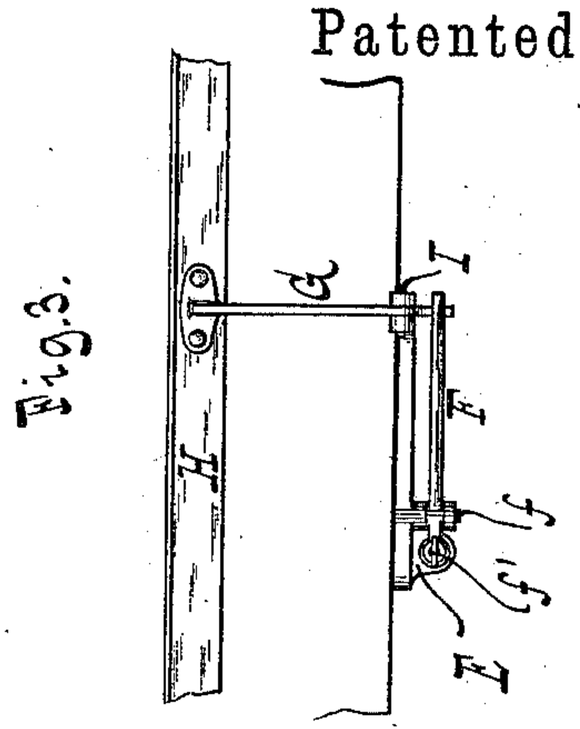
(No Model.)

H. M. SMITH & W. J. BALDWIN.

AIR SUPPLY REGULATOR.

No. 371,797. Patented Oct. 18, 1887.





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UNITED STATES PATENT OFFICE.

HENRY M. SMITH, OF JERSEY CITY, NEW JERSEY, AND WILLIAM J. BALDWIN, OF BROOKLYN, NEW YORK.

AIR-SUPPLY REGULATOR.

SPECIFICATION forming part of Letters Patent No. 371,797, dated October 18, 1887.

Application filed November 26, 1886. Serial No. 219,978. (No model.)

To all whom it may concern:

Be it known that we, HENRY M. SMITH, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, and WILLIAM J. BALDWIN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Air-Supply Regulators, of which the following is a specification.

This invention relates to air-supply regulators for radiators or heating devices; and the object of this invention is to provide novel means to automatically regulate the supply of air which is required for such purposes as ventilation, draft, or the like. We attain this object by the device shown in the annexed drawings, in which—

Figure 1 is a side elevation of the device. Fig. 2 is a vertical section in the plane *x x*, Fig. 1. Fig. 3 is a plan view. Fig. 4 is a plan view of a radiator and connections.

Similar letters indicate corresponding parts.

A is a radiator, and it may be of any well-known construction and provided with a suitable base, *a*. From a suitable part of the radiator, as, for example, from the base *a*, extend tubes or pipes B, leading to a tube or pipe, C. The pipe C is provided with a partition or diaphragm, C′, as seen in Fig. 2. Any supply of heat—as, for example, steam or hot water—in the radiator will pass, as indicated by arrows, through one of the pipes B, into the tube or pipe C, along one side of the diaphragm C′, and out of the tube C, along the other side of the diaphragm C′, through the other tube B, to the radiator A.

One end of the tube or pipe C is securely attached to a bracket or holder, D. The other end of the tube or pipe C passes loosely or freely through a hole or passage in an arm or bracket, E. The brackets D E can be attached at any suitable place, as for example, to the wall of a room. The free end of the tube or pipe C is closed by a suitable device, as a plug or cap, *d*, or may be welded. As the tube or pipe C becomes heated or cooled, said tube expands or contracts, thus imparting motion to the free end of said tube. This motion of the tube C opens or closes a slide or valve, H, by means of levers or arms F G. The lever or arm F is suitably fulcrumed, as at *f*, and said lever is provided with an adjusting-screw, *f′*, to bring said lever F into position to properly operate the valve or ventilator H. The motion of the lever or arm F imparts motion to a lever or arm, G, and to the valve or slide H, communicating with the lever G. The lever G is suitably fulcrumed, as at I. The slide or valve H is adapted to close any suitable opening or air-supply. A ready adaptation for the valve H can be found by applying said valve H to a window-frame and partly opening the window J, as seen in the drawings. As the heat expands the tube C, the ventilator H is opened, giving free passage to air. As the tube C cools and contracts, the ventilator or air-supply is closed. The supply of air is thus automatically regulated by the increase or decrease of the heat developed.

The tube or pipe C is advantageously fastened to the wall or other fixed portion of the building, and the tubes B B are preferably made somewhat flexible, or constructed as spring-tubes, so that when the radiator A settles, by reason of its weight pressing on the floor or from other causes, the motion of the radiator A will not affect or change the position of the tube C. The tube C, in place of being made with a diaphragm, can be made in the shape of a double tube or two tubes communicating with each other, by which construction a circulation of heat-supply can also be secured.

Heretofore ventilators or air-supply valves have been controlled by a system of levers and tubes expanded and contracted by the temperature in a room; but such is not our invention and is not claimed by us.

Circulation can be caused in the pipes B B C, as indicated by the arrows, Fig. 2, by connecting one of the pipes B to the inlet-tube K of the radiator A and by connecting the other of the pipes B to the outlet-tube L of the radiator A. The inlet-tube K is shown in Fig. 1 and the outlet-tube L is shown in Fig. 4, and said inlet and outlet tubes are shown as being at or near the base of the radiator A. By connecting one tube B to an outlet-tube and the other tube B to an inlet-tube, as stated,

the steam or heat supply will be caused to flow into one of the tubes B and out of the other tube B, thus causing circulation, as indicated by arrows in Fig. 2.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination of a radiator, A, a pipe, B, communicating therewith at two different points, a tube, C, communicating with the said pipe and having one end closed and free to rise and fall by expansion and contraction incident to the passage therethrough of the heating-fluid from and to the radiator, a pivoted lever, F, acted upon at one end by the said tube, and an air-supply valve, H, connected with the other end of said lever, substantially as described.

2. The combination of a radiator, A, a pipe, B, communicating therewith at two points, a tube, C, communicating with said pipe and having one end closed and free to rise and fall by expansion incident to the passage therethrough of the heating-fluid from the radiator, a lever, F, pivoted intermediate its ends, an adjusting-screw, *f'*, carried by one end of the lever and acting upon the free end of the tube, and an air-supply valve, H, connected with the other end of said lever, substantially as described.

3. The combination of a radiator, A, a pipe, B, communicating therewith, a tube, C, communicating with the said pipe and having one end closed and free to rise and fall by expansion and contraction incident to the passage therethrough of the heating-fluid from the radiator, a swinging pivoted lever, F, connected at one end with said free end of the tube, an air-supply valve, H, and a pivoted lever, G, connecting with the aforesaid lever and the valve, substantially as described.

4. The combination, with a radiator, A, of the tube C, communicating at one end therewith and closed and free at its other end, to rise and fall by expansion and contraction incident to the passage therethrough of the heating-fluid from the radiator, a lever acted on by the free end of the tube, and an air-supply valve, H, connected with said lever, substantially as described.

5. The combination, with a radiator or pipe, A, of a tube, B, communicating at two points with the base of the radiator, a pipe or tube, C, provided with a diaphragm or partition and communicating with the tube B, a lever connected to the pipe C, and a valve connected to said lever, substantially as set forth.

6. The combination, with a radiator or pipe, A, and connecting-tube B, of a pipe or tube, C, provided with a diaphragm or partition and connected to the tube B, a lever connected to the pipe C, and a valve connected to said lever, substantially as set forth.

In testimony whereof we have hereunto set our hands and seals in the presence of two subscribing witnesses.

HENRY M. SMITH. [L. S.]
WILLIAM J. BALDWIN. [L. S.]

Witnesses:
WM. C. HAUFF,
E. F. KASTENHUBER.