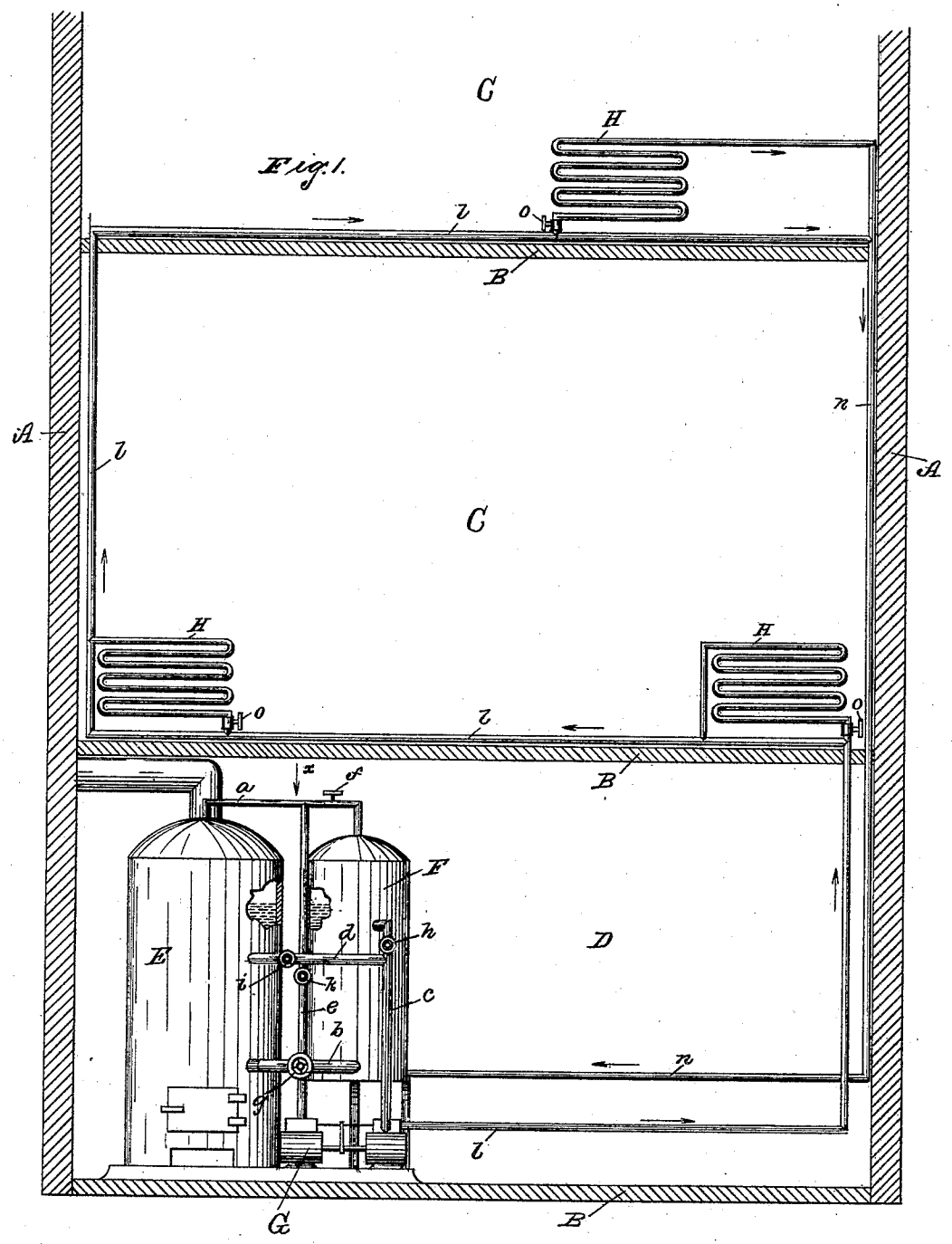
(No Model.) 2 Sheets—Sheet 1.

J. E. STUART.

DEVICE FOR HEATING BUILDINGS.

No. 427,634. Patented May 13, 1890.



Attest:
M. L. McDermott.
F. A. Watson.

Inventor:
John E. Stuart.
By E. B. Whitmore, Atty.

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Fig. 2.

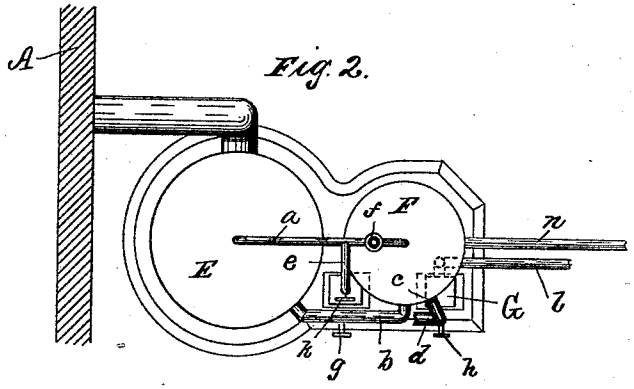
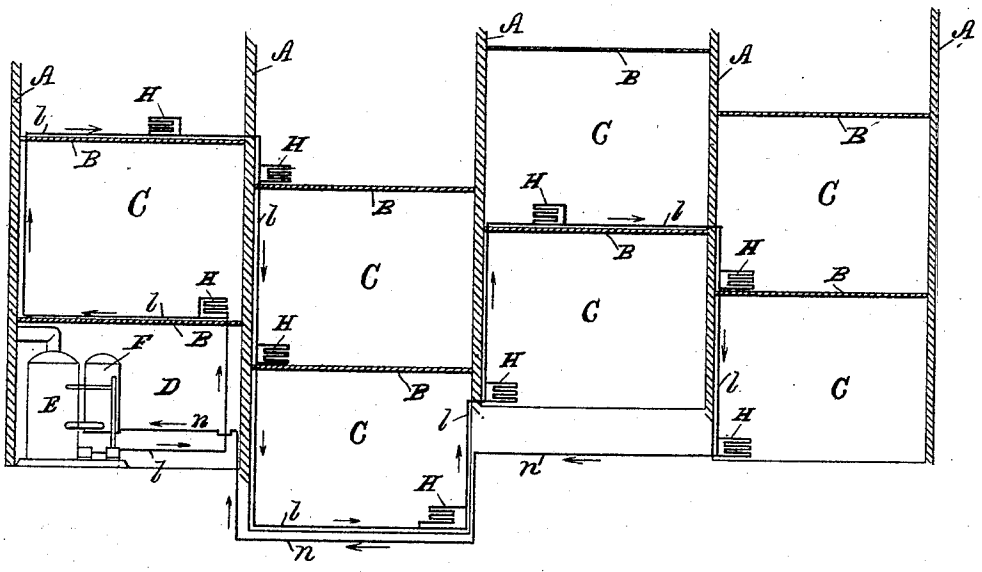


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN E. STUART, OF NEWARK, ASSIGNOR OF ONE-HALF TO SILAS B. STUART, OF ROCHESTER, NEW YORK.

DEVICE FOR HEATING BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 427,634, dated May 13, 1890.

Application filed January 31, 1889. Serial No. 298,248. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. STUART, of Newark, in the county of Wayne and State of New York, have invented a new and useful Improvement in Devices for Heating Buildings, which improvement is fully set forth in the following specification, and shown in the accompanying drawings.

My invention relates to heating buildings by means of radiators filled with steam or hot water; and the object of the invention is to overcome certain difficulties attending the use of these devices and this means of heating.

The invention is hereinafter fully described, and the features of novelty particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a vertical section of a building, showing my improved device for heating attached; Fig. 2, a plan view of some of the parts seen, as indicated by arrow *x* in Fig. 1; and Fig. 3, a general view, on a smaller scale, of a series of rooms, serving to illustrate the advantages of the invention.

Referring to the parts, A are the walls of a building or inclosure of any kind; B, the floor; C C, apartments of various stories, and D the boiler-room in the basement.

E is a steam-boiler of any suitable kind or pattern, and F an adjacent hot-water chamber on a level with the boiler, and connected with the latter at the top by a steam-pipe *a* and near the bottom by a water-pipe *b*.

G is a pump of any kind—for instance, a steam-pump—connected with the hot-water chamber by a water-pipe *c* and with the boiler by a branch water-pipe *d*. The pump is connected with the steam-space of the boiler by a steam-pipe *e*, extending from the steam-pipe *a*. These pipes described are provided, respectively, with gates *f*, *g*, *h*, *i*, and *k*.

l is an outflow-pipe leading from the pump to the various radiators H, located in the apartments of the building.

n is a corresponding return-pipe leading from the radiators to the water-chamber F. Steam passing from the boiler to the chamber through the pipe *a* above the water-line heats the water in the chamber, and the pipe *b*, joining the boiler and chamber at points nearer the bottom of the water-space of each, admits of a free flow of water from one to the other.

The inflow-pipe *n* is joined to the chamber F, at the bottom thereof, and the suction-pipe *c* of the pump is joined to the chamber at a point just below the water-line, as shown. Now, in operating this device, by closing the gate *i* the water for the radiators H may be drawn wholly from the chamber by the pump, or by opening the gate *i* and closing the gate *h* the water may be drawn wholly from the boiler. By this means either hot or warm water may be forced through the radiators, according to whether the weather is cold or moderate, or as it may be desired. The cool water from the radiators flowing back into the chamber reduces the temperature of the water contained therein, and if the gates *f* and *g* of the steam and water pipes, respectively, are closed or nearly closed the water in the chamber may be reduced to any degree of coldness down to the temperature of the surrounding air. This enables the operator to perfectly regulate the heat of the apartments.

It frequently occurs in practical house-heating that the floors of adjacent parts of a building, or of adjacent buildings to be heated from the same boiler, are on different levels, as shown, for instance, in Fig. 3. In such cases the steam or water for heating has to be conducted downward and upward to various levels, and traps or pockets are formed holding "dead-water," and a free circulation or flow to some of the radiators is prevented.

By using the device herein shown a steady flow of hot or warm water may be maintained through any or all of the radiators wholly without regard to the matter of the levels at which the radiators are placed, and trapping or pocketing water is wholly prevented. The pump forces the hot water through all the heating-pipes or radiators back to the hot-water chamber, there being a forced circulation through the whole.

This device is adapted equally well for heating ordinary dwellings, business blocks, hot-houses, establishments for evaporating fruit, railway-cars, boats, &c.

The radiators may be constructed so that by

closing a valve *o* in each the hot water will be shut off therefrom and turned directly through the outflow pipe or conduit *l*.

What I claim as my invention is—

1. In a device for heating buildings, a steam-boiler and a water-chamber separate from the steam-boiler in the same apartment with the boiler, in combination with radiators placed at different levels in the building, a pump to force water through the radiators to said water-chamber, pipes for connecting the radiators with the pump and the water-chamber, respectively, pipes connecting the boiler and the water-chamber, one pipe being above and the other pipe being below the water-line of the boiler and the chamber, a pipe connecting the pump and water-chamber, a pipe connecting the pump and water-space of the steam-boiler, and gates for controlling the two pipes last mentioned, so that water may be drawn by the pump from either the water-chamber or the boiler, for the purpose set forth.

2. The combination, in a device for heating buildings, of a steam-boiler, a separate chamber for holding the water for the radiators, a pipe connecting the steam-space of the boiler with the space above the water in the water-chamber, a pipe connecting the water-space of the boiler with the water-space of the water-chamber, radiators for the apartments of the building, a pump to force water through the radiators to the water-chamber, a pipe connecting the pump with the steam-space of the boiler, a pipe connecting the pump with the water-space of the boiler, a pipe connecting the pump with the water-space of the water-chamber, an outflow-pipe connecting the pump with the radiators, and a return-pipe connecting the radiators with the water-chamber at a point below that at which the pump draws water from the water-chamber, substantially as described.

JOHN E. STUART.

Witnesses:
E. B. WHITMORE,
M. L. MCDERMOTT.