

No. 665,770.

Patented Jan. 8, 1901.

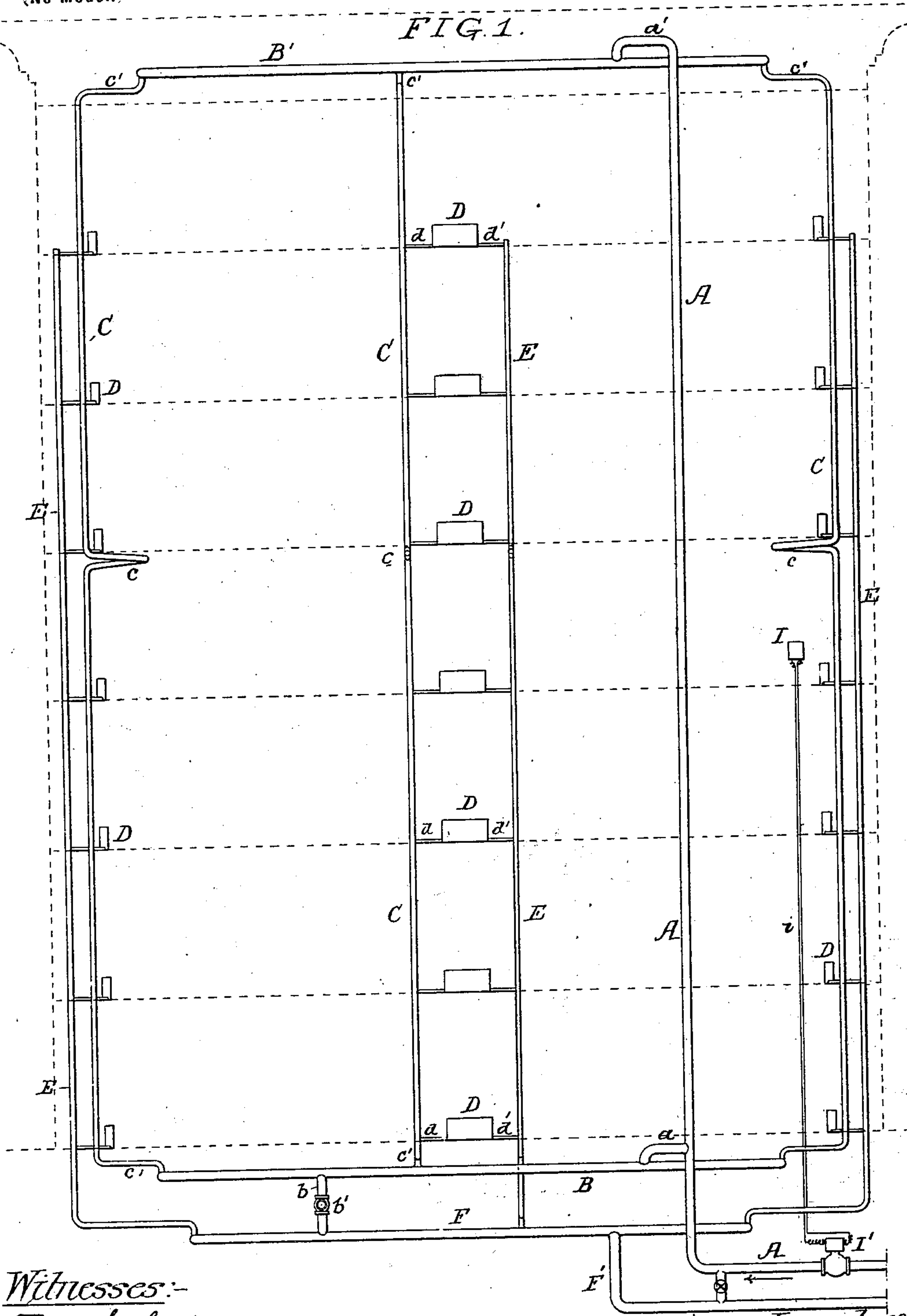
C. G. DARRACH.
STEAM HEATING SYSTEM.

(Application filed Jan. 29, 1900.)

2 Sheets—Sheet 1.

(No Model.)

FIG. 1.



Witnesses:-

Frank L. Graham
Louis M. Holikhead

Inventor:-
Charles G. Darrach
by his Attorneys:-
Howson & Howson

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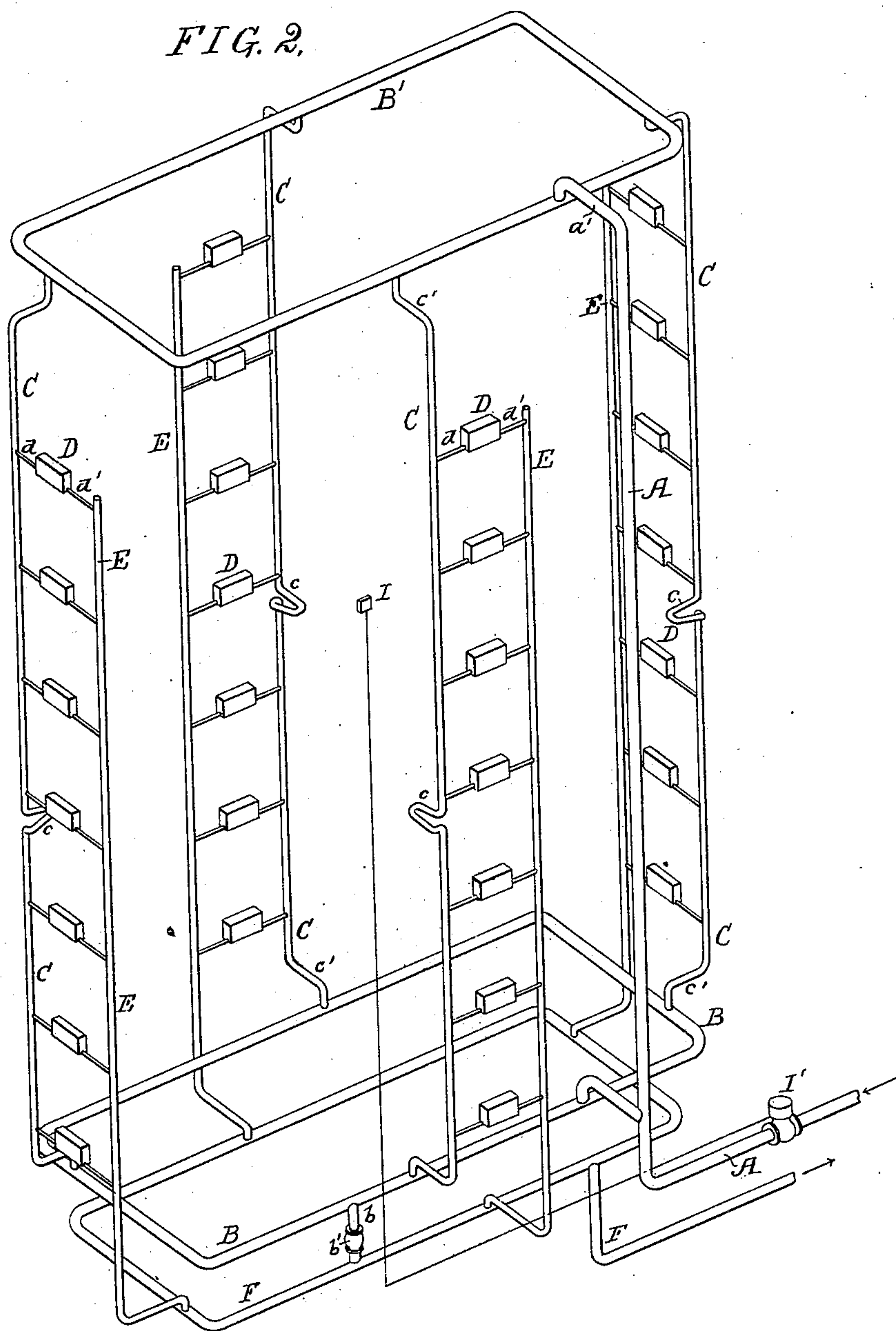
C. G. DARRACH.
STEAM HEATING SYSTEM.

(Application filed Jan. 29, 1900.)

2 Sheets—Sheet 2.

(No Model.)

FIG. 2.



Witnesses:-

Frank H. Graham.
Louis H. Whitehead.

Inventor:-
Charles G. Darrach
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Howson & Howson

UNITED STATES PATENT OFFICE.

CHARLES G. DARRACH, OF RIDLEY PARK, PENNSYLVANIA.

STEAM-HEATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 665,770, dated January 8, 1901.

Application filed January 29, 1900. Serial No. 3,200. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. DARRACH, a citizen of the United States, and a resident of Ridley Park, Pennsylvania, have invented certain Improvements in Steam-Heating Systems, of which the following is a specification.

One object of my invention is to so arrange and connect the pipes of a steam-heating system that an equal distribution of steam throughout a building is maintained through pipes of much less diameter than heretofore used.

A further object of the invention is to control the initial steam-supply from a central point in the steam-heating system.

These objects I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a diagram view showing the steam-pipes in elevation and the building in dotted lines, and Fig. 2 is a diagram perspective view of the steam-pipes.

In heating high buildings two systems have heretofore been used—namely, the base supply-pipe, to which are coupled vertical service-pipes, which are in turn connected to the radiators. The other system is the top supply-pipe, having downwardly-extending service-pipes extending to the lower floors. In both these systems large supply-pipes and service-pipes are essential, and in the first-mentioned case the upper stories are liable to be cold, while in the latter case the lower stories are liable to be cold; but by my invention I overcome this difficulty, as fully described hereinafter and at the same time use comparatively small pipes throughout the entire system.

A is the main supply-pipe from the initial steam-supply. This main supply-pipe A extends from bottom to top of the building and is connected by a branch *a* to a base feeder B, preferably situated directly below the lower floor of the building and connected by a branch *a'* to the top feeder B', situated, preferably, above the upper floor of the building. By this arrangement steam is supplied to the upper and lower feeders simultaneously.

Connecting the upper and lower feeders B' and B are vertically-arranged service-pipes C. These service-pipes communicate with

both the upper and lower feeders, as illustrated. The service-pipes have one or more expansion-joints *c*, arranged at intervals, and are jointed to the feeders by "L's" *c'* and are anchored, preferably, at or about the center between the "L's" and the expansion-joints, so that they are free to expand or contract. Any suitable expansion-joint may be used for this purpose.

The radiators D are connected to the service-pipes by connections *d*, and the drip-pipes E are connected to the radiators by pipes *d'*. The drip-pipes E extend from the uppermost radiator to the main drip-pipe F in the basement of the building, and this pipe in turn is connected to a vacuum-pump through a pipe F' if a vacuum steam-heating system is used or to a drip-tank or to the boiler if a gravity system is used.

The base feeder-pipe B is connected to the main drip-pipe F by a pipe *b*, having a trap or thermo-valve *b'*, so that any water of condensation which may accumulate in the steam-supply pipes will pass into the main drip-pipe F.

I preferably arrange a thermostat I in a room about the middle of a system—say the central room of a building. This thermostat is connected to a controlling-valve I', which is so set that the thermostat will regulate the supply of steam to the main supply-pipe, so that after the system is in operation the thermostat can be set to operate at a given temperature and completely control the admission of steam to the system, thus insuring the proper heating of all the rooms of the building.

It will be seen by the above that steam is supplied to the system from the top to the bottom simultaneously, steam entering both ends of the vertical service-pipes, so that the steam need not travel so far in the service-pipes, and by allowing the steam to enter both ends of the pipe I am enabled to reduce the diameters of the supply and service pipes materially without interfering with the proper circulation of steam.

The upper and lower feeders may in some instances be simply single pipes to which the service-pipes are connected, as in narrow buildings, or they may be in the form of rings, as shown in the perspective view, Fig. 2, to which are connected a series of service-pipes.

This form is the preferable form; but it will be understood that I do not limit myself to the use of the feeding-rings at top and bottom.

I claim as my invention—

5 1. In a heating system, a main supply-pipe, two feeders in communication therewith, a service-pipe connecting the two feeders, and a series of radiators in communication with the service-pipe at different points between
10 said feeders, substantially as described.

2. In a heating system, the combination of two ring-feeders, a series of service-pipes coupled to the two feeders, a main supply-pipe also coupled to the two feeders so that
15 the feeders will supply steam at both ends of the service-pipes, with radiators connected between the service-pipes at different points along the same, substantially as described.

3. The combination in a heating system, of the upper and lower feeding-pipes, main supply-pipe coupled to both the upper and lower feeding-pipes, service-pipes coupled at each end to the feeders, drip-pipes and a main drip with which the drip-pipes communicate, and radiators coupled to the service-pipes at different points along the length of the same and the drip-pipes, the bottom feeder being coupled to the main drip-pipe, substantially as described. 25

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 30

CHARLES G. DARRACH.

Witnesses:

J. HOWARD REDFIELD,
M. R. MUCHLÉ, Jr.