

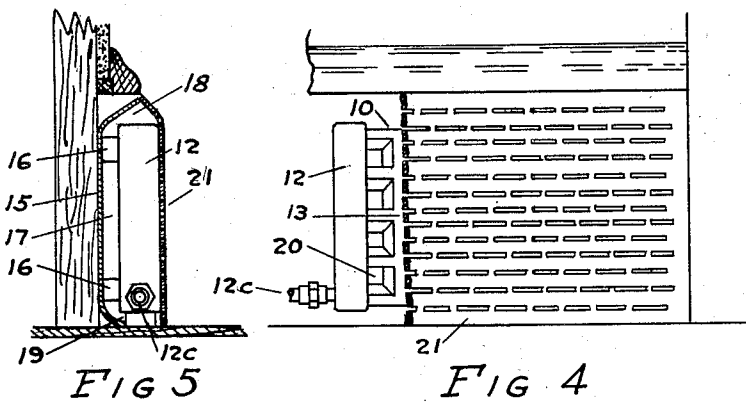
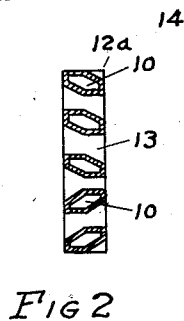
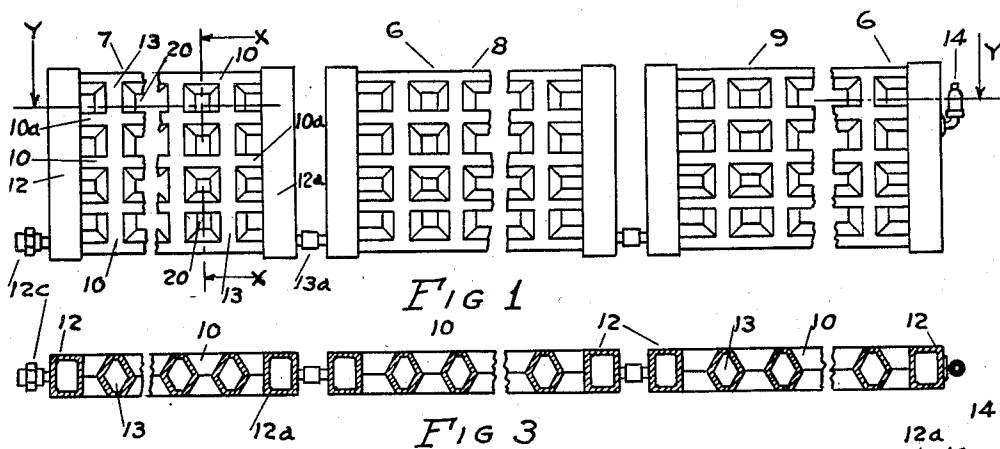
Sept. 10, 1935.

C. B. SIMONEAU

2,014,117

HEAT DISTRIBUTION FOR BUILDINGS

Filed May 23, 1934



INVENTOR
Charles B. Simoneau
By Francis V. McCarthy
ATTORNEY

UNITED STATES PATENT OFFICE

2,014,117

HEAT DISTRIBUTION FOR BUILDINGS

Charles B. Simoneau, Lynn, Mass., assignor to
Ralph S. Taylor, Melrose, Mass., and Francis V.
McCarthy, Lynn, Mass., trustees

Application May 23, 1934, Serial No. 727,135

5 Claims. (Cl. 257—133)

As is well known in the art, it is desirable in the heating of buildings to distribute the heat in the most economic and efficient manner, that is to say, with as little waste as possible and by supplying the heat in a manner to most effectively overcome cold resistance. The more recent development in heat distributing apparatus is to create means for supplying the heat at or near the floor of the room at a low temperature, rather than from contracted radiation means at high temperatures, as is done, for example, by the ordinary radiator commonly used. The latter method results in high convection of air which carries the heat to the ceiling with consequent inequalities in temperature from highest at the ceiling to lowest at the floor, often with a wide difference between the two extremes. This need not be elaborated upon as it is well known.

In baseboard radiation, there has been some development towards low temperature heating, various devices, such as fins or plates being attached to the heat medium conductors to draw off the excessive heat in the conductors. The present invention provides a more efficient and economic construction and greater efficiency of heat distribution than is provided by devices heretofore provided. By means of a plurality of conductors having a large number of by-passes between them, as will be hereinafter described, greatly increased radiating surface is provided and positioned in the small space usually occupied by the baseboard finish; and by installing a proper amount of radiating surface, which is predetermined for each room, a greater amount of heat radiation is provided at the baseboard than is provided by other devices. This results in the installation of a greater amount of radiating surface per unit of space occupied than is to be found in other devices.

Before proceeding to describe my invention in detail, I desire to call attention to the drawing that accompanies and is made a part of this application for a patent, in which Figure 1 represents a front view of my invention; Figure 2 a vertical section through the line X—X in Figure 1; Figure 3 a horizontal section along the line Y—Y in Figure 1; Figure 4 shows the device partly covered by a grille; and Figure 5 an end view of the device in position for operation.

Referring to the drawing, 6 is the device as a whole and is made up of a plurality of units, as 7, 8, 9, of similar construction and, preferably, equal in size. A description of one of the units will, therefore, suffice for all of them. Considering, then, unit 7, for illustration, I provide a

plurality of longitudinal conductors 10 substantially horizontal in position, with their ends 10a affixed to inlet and outlet conductors 12, 12a. I provide a plurality of by-passes 13 connecting the longitudinal conductors with each other, the construction being such as to provide free circulation of the heating medium through all of the conductors and by-passes. Conductor 12, nearest to the source of heating medium, is provided with a port 12c which is connected with the circulatory system of piping leading from the heater in the usual manner. This port may be positioned as shown in the drawing or at the side of conductor 12. Conductor 12a is connected with the next unit, as at 13, by suitable means 13a to provide circulation of the heating medium through the combined units and the process is continued until all of the necessary units are connected. There may be a plurality of connecting means, as at the top and bottom or otherwise, if desired. In steam heating the entire group of units, when installed, has a slight rise from the intake port 12c and in hot water and vapor installations the intake is slightly higher than the farthest lower corner of the combined units. In steam systems I provide a vent valve 14 to accelerate the process of heating.

The amount of radiation provided depends upon the size and position of the room. This having been determined, the installation proceeds as follows: In houses already constructed, the baseboard is removed, preferably along the outer walls, and the device is positioned in the space made by removing the plaster below the plaster bead and in front of the studs, after which a grille 21 is positioned in front of the device in the position occupied by the baseboard before its removal. In new construction the usual baseboard along the outer walls is done away with. It is, of course, obvious that the space occupied is small as to height and depth, and one of the ends accomplished by the present invention is the utilization of this small space to its utmost capacity if necessary or so much thereof as may be necessary to efficiently heat the room.

Before installing the units I follow the usual practice of lining the recess with a non-conductive reflecting material 15 and I do not claim this as invention per se. I provide lugs 16 on the backs of conductors 12, 12a, etc., which, when positioned against the reflecting surface aid quick and accurate installation and provide a uniform space 17 at the back of the device for the circulation of air. Sufficient spaces are also left at the top, as at 18, and at the bottom, as at 19, for air

circulation and it will be seen that the openings
20 between the conductors and by-passes allow air
circulation also. In this connection attention is
called to the angular construction of the con-
5 ductors and by-passes and the angular positions of
the former. The conductors and by-passes are,
roughly, diamond-shaped, with their long dia-
meters shortened to provide flat surfaces at the
10 ends. The lower conductors slope upward to-
wards the back and the upper conductors slope
upward from the back, thus providing ready in-
gress of air at the lower part of the device and
assisting in free passage of air upward and out-
ward as it rises. This is my preferred construc-
15 tion but all of the longitudinal conductors may be
parallel and come within the scope of my inven-
tion.

The multiplicity of radiating surfaces resulting
from my construction provides means for radia-
20 tion far in excess of means provided by the prior
art and makes possible the installation of an
efficient low heat circulatory system at the floor
of the room, the amount of radiating surface be-
ing so great per unit of construction that the room
25 in which it is installed is heated properly without
excessive heat in the device, with consequent
minimum of convection of air currents. The grille
21 being positioned so that it rests against the
front walls of the heating units assists in radiat-
30 ing the heat into the room.

Having in mind that convection results in
throwing the heat rapidly towards the ceiling and
providing of means for decreasing the convection,
it will be seen that the greater amount of heat
35 is radiated and reflected into the room at or near
the floor, resulting in more uniform and there-
fore more satisfactory and economical heat dis-
tribution, it being found in practice that the tem-
perature at or near the floor is only slightly, if
40 any, less than at the ceiling.

I do not wish to be understood as intending to
do away with convection; but I provide means
for assisting convection in the following manner:
When the heating medium enters the conductors
45 and by-passes, the heat radiated from them sets
up air currents that pass in from the room
through the lower openings between the conduc-
tors and by-passes and through the space below
the device, pass upward between the device and
50 the reflector and out through the upper openings
and at the top.

Direct heat rays are radiated from the device
and reflected from the reflector without convec-
tion. As a result of my construction and the in-
55 stallation of a large area of radiating surfaces
per unit of space, it is found in practice that more
heat units are radiated and reflected into the
room than are carried upward by convection,
thus providing the uniform heat referred to above,
60 resulting in the heating of the room in its lower
and middle zones as effectively by radiation and
reflection as the upper or ceiling zone by convec-
tion.

An element of manufacturing economy in my
65 invention is the construction of the units, this
construction being low in cost, each unit being
cast as a whole and not in sections, thus doing
away with the greater part of the labor involved
in the construction and installation of other
70 systems, with or without fins or blades. Each
unit being cast in one piece, it is necessary only
to join the required number of units together and
instal them as described.

My preferred installation comprises the posi-
75 tioning of the units along the outer wall or walls,

the number of units being predetermined. If de-
sired, however, my device may be cast in one unit
of sufficient length to provide the necessary heat
in the place of installation, and such construction
comes within the scope of my invention.

For the purpose of setting forth my invention
I have illustrated and described a unitary con-
struction with three conductors, but a greater or
less number of longitudinal conductors may be
used when necessary or advisable; and while I 10
have described and illustrated a steam heating in-
stallation, the use of my device in hot water or
vapor installations comes within the scope of my
invention as well as changing the relative posi-
tions and shapes of the conductors and by-passes. 15

Having described my invention and its mode of
operation, what I claim is:—

1. In a baseboard heating system, a heat con-
ducting unit comprising a plurality of longitudinal
conductors operatively connected with intake and 20
outlet conductors, and a plurality of by-passes
disposed between the intake and outlet conduc-
tors and operatively connecting all of the longi-
tudinal conductors with each other to provide
means for the circulation of the heating medium 25
through all of the conductors and by-passes and
means for facilitating the movement of air, said
means comprising the positioning of the radiating
surfaces of the longitudinal conductors in angu-
lar relation to each other. 30

2. In a baseboard heating system, a heat con-
ducting unit comprising a plurality of longitu-
dinal conductors operatively connected with in-
take and outlet conductors, a plurality of by-
passes disposed between the intake and outlet 35
conductors and operatively connecting all of the
longitudinal conductors with each other to pro-
vide means for the circulation of the heating me-
dium through all of the conductors and by-passes
comprising the unit, and means for facilitating 40
the movement of air, said means being the posi-
tioning of the adjacent surfaces of the conductors
and by-passes in angular relation to each other.

3. In a baseboard heating system, a heat con-
ducting unit comprising a plurality of longitu-
45 dinal conductors operatively connected with intake
and outlet conductors, a plurality of by-passes
disposed between the intake and outlet conduc-
tors and operatively connecting all of the longi-
tudinal conductors with each other to provide 50
means for the circulation of the heating medium
through all of the conductors and by-passes com-
prising the unit, means for providing direct radi-
ation of heat rays, said means comprising many
radiating surfaces on the conductors and by- 55
passes, and means for facilitating the movement
of air, said means comprising the positioning of
the radiating surfaces of the conductors in angu-
lar relation to each other, the positioning of the
adjacent surfaces of the conductors and by-passes 60
in angular relation to each other, openings be-
tween the adjacent surfaces of the conductors
and by-passes, spaces below and above the unit,
a reflector back of the unit and a space between
the unit and the reflector. 65

4. In a baseboard heating system, a heat con-
ducting unit comprising a plurality of longitu-
dinal conductors operatively connected with intake
and outlet conductors, a plurality of by-passes
disposed between the intake and outlet conduc- 70
tors and operatively connecting all of the longi-
tudinal conductors with each other to provide
means for the circulation of the heating medium
through all of the conductors and by-passes com-
prising the unit, means for providing direct radi- 75

ation of heat rays, said means comprising many radiating surfaces on the conductors and by-passes and a grille in contact with all of the front surfaces of the unit, means for facilitating the movement of air, said means comprising the positioning of the radiating surfaces of the longitudinal conductors in angular relation to each other, the positioning of the adjacent surfaces of the conductors and by-passes in angular relation to each other, openings between the adjacent surfaces of the conductors and by-passes, spaces below, behind and above the unit, and means for providing reflection of heat rays, said means comprising a reflector behind the unit, whereby heat rays radiated from the unit and projected against the reflector are reflected into the room.

5. In a baseboard heating system, a plurality of heat conducting units, each unit comprising a plurality of longitudinal conductors operatively connected with intake and outlet conductors, a plurality of by-passes disposed between the intake and outlet conductors and operatively connecting all of the longitudinal conductors with each other to provide means for the circulation

of the heating medium through all of the conductors and by-passes comprising the unit, means for operatively connecting all of the units with each other to provide for circulation of the heating medium through the units, means for providing direct radiation of heat rays, said means comprising many radiating surfaces on the conductors and by-passes and a grille in contact with all of the front surfaces of the units, means for facilitating the movement of air, said means comprising the positioning of the radiating surfaces of the longitudinal conductors in angular relation to each other, the positioning of the adjacent surfaces of the conductors and by-passes in angular relation to each other, openings between the adjacent surfaces of the conductors and by-passes, spaces below, behind and above the units, and means for providing reflection of heat rays, said means comprising a reflector behind the units, whereby heat rays radiated from the units and projected against the reflector are reflected into the room.

CHARLES B. SIMONEAU.