

W. S. HADAWAY, JR.
ELECTRIC HEATING SYSTEM.
APPLICATION FILED SEPT. 7, 1911.

1,142,771.

Patented June 8, 1915.

Fig. 1.

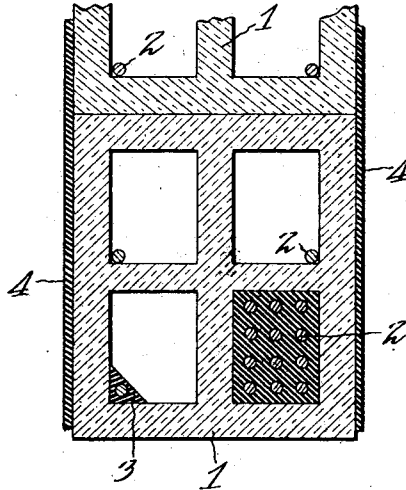
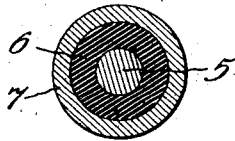


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ELECTRIC HEATING SYSTEM.

1,142,771.

Specification of Letters Patent.

Patented June 8, 1915.

Application filed September 7, 1911. Serial No. 648,060.

To all whom it may concern:

Be it known that I, WILLIAM S. HADAWAY, Jr., a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Electric Heating Systems, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to electric heating systems.

It has among its objects to provide an improved electric heating system, wherein the heating elements transmits its heat to an object which has the capacity of absorbing and storing the heat and which in turn transmits it to the object or thing to be heated.

It further has among its objects to provide an electric heating system which is particularly adapted to use in connection with heating masses of concrete or tile, such as are used in modern building construction, this material being utilized as a part of the heating means.

Other objects and advantages of my improved system will hereinafter appear.

In accordance with a preferred form of my invention, I so place a heating conductor within the walls of a building of concrete, tile or other similar construction, that the heat generated by the conductor is communicated to the surfaces of the inclosing material or conducted directly to this material, by which it is absorbed and transmitted to either the atmosphere or an object to warm the same.

In the accompanying drawings, I have for purposes of illustration shown one form which my invention may assume in practice. My invention is not, however, limited to this specific form, but may assume other forms.

In the view of these drawings: Figure 1 shows a sectional view of this form of my invention. Fig. 2 shows a sectional view of one form of heating conductor which may be used.

I have illustrated my invention as applied to a section of the wall of a building. It is obvious that this wall may be made of any desired construction, the particular construction shown being for purposes of illustration only.

In a preferred form, my invention is especially adapted for use in connection

with buildings wherein the walls or partitions are made up of tile or similar hollow construction. My invention is not, however, limited to use in connection with such constructions but may be used with constructions wherein the walls are of a brick or other construction.

In Fig. 1, a tile construction has been shown, the tiles being indicated by the numeral 1, and having openings extending through the same longitudinally. Within these openings are placed electric conductors 2, which may be of bare wire. In a preferred form these wires are formed of a resistance material. If desired, I may form them of a high resistance alloy such as nickel-chromium or copper-nickel. These conductors are arranged in any desired manner within the openings in the tile.

In Fig. 1, I have shown one wire in each opening, but it is of course obvious that the wire may be bent in any desired shape, and that any desired number of wires may be placed in these openings and arranged in any desirable circuits. Further, if desired, the wires may be effectually insulated from each other, as by any suitable insulating composition 3, such as concrete, cement or a silica-alumina compound, and the wires may be held in any suitable position in the tile by means of an insulating compound.

When current is supplied to the wires 2, the heat generated by the passage of the current through the wire is radiated from the wire to those portions of the tile which are not in immediate contact with the wire. The effect of this radiation is to heat the space within the tile and to transmit this heat to the body of the tile which absorbs the heat and stores the same. The heat which is generated from the portion of the wire in contact with the tile, is conducted directly to the tile and, like the heat radiated, is absorbed, so that the material of the tile serves as a reservoir for the heat. It is obvious that the heat stored in this reservoir will be diffused from the tile to the material in contact with it, such as for instance, the plaster or sizing which forms the inner surface of the walls of a building and will be transmitted through the same to the atmosphere when the atmosphere is at a lower temperature than the wall. Thus it is seen that my invention may be adapted to use as a heating means for the rooms of buildings, the wires being laid in the walls through the

tiling or other material which forms the partitions of the building and there developing heat which is transmitted through the walls to the room to be heated.

5 With my improved system of heating, it is possible to supply the current to the conductors at any time, as for instance, when the load on the power circuit is low. For example, the current may be supplied to the
10 conductors during the early hours of the morning or during the day when the load on the heating circuit is light, and thus the load may be equalized, so that the central station may be producing its maximum output
15 throughout the twenty-four hours of the day. The heat which is transmitted from the conductor through the walls of the building will be absorbed by the same, and when the temperature of the room is above
20 the temperature of the walls this heat will not be transmitted to the room but will be stored in the wall, from which it will be dissipated to the room when the temperature of the latter falls below the temperature of the
25 walls. Thus, it is possible to have the walls of the room serve as a low temperature heat reservoir which tend to maintain the temperature of a room at a certain temperature.

In Fig. 2, I have illustrated a sectional
30 view of a heating conductor which may be readily used with my improved system of heating. This conductor itself forms the subject matter of my co-pending application, Serial Number 647,689 filed September 5, 1911. As therein described, this
35 conductor consists of a core 5, of conducting material, preferably of the nature of high resistance material, which is surrounded by a coating 6 of insulating material, of a heat
40 absorptive character, adapted to take the heat away from the conductor rapidly. A casing 7, surrounds the insulating coating. This casing is preferably formed of a high resistance material, and is one which has the
45 property of readily radiating the heat trans-

mitted to it from the core by the insulating material. As described in that application any desired length of this conductor in itself forms a complete heating unit. It is obvious that this conductor may be laid
50 wherever any conductor may be used, and that it may be placed between the walls of a building in the same manner as the uninsulated conductor 2, heretofore described.

While I have in this application de-
55 scribed my invention specifically I do not wish to be limited to the specific adaptation chosen for the purposes of illustration but wish rather to cover all of the forms of my invention falling within the scope of the
60 patent claims.

What I claim as new and desire to secure by Letters Patent is as follows:

1. An electric heating means for buildings comprising a wall of heat absorptive hollow
65 tile construction having a plurality of openings therein, electric heating conductors disposed in said openings adjacent the walls thereof and acting as heating mediums to dissipate heat in said openings and to said
70 tiles whereby said wall acts as a low temperature heat reservoir for distributing heat slowly and evenly by radiation.

2. The method of heating buildings of hollow heat absorptive tile construction
75 which consists in passing electric heating conductors through openings in the tiles and supplying current to said conductors, said conductors acting as a heating means for the tiles and the latter acting as a low tempera-
80 ture heat reservoir for distributing the heat to the building.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM S. HADAWAY, JR.

Witnesses:

A. B. HUBBELL,

EDWIN N. LIGHTFOOT.