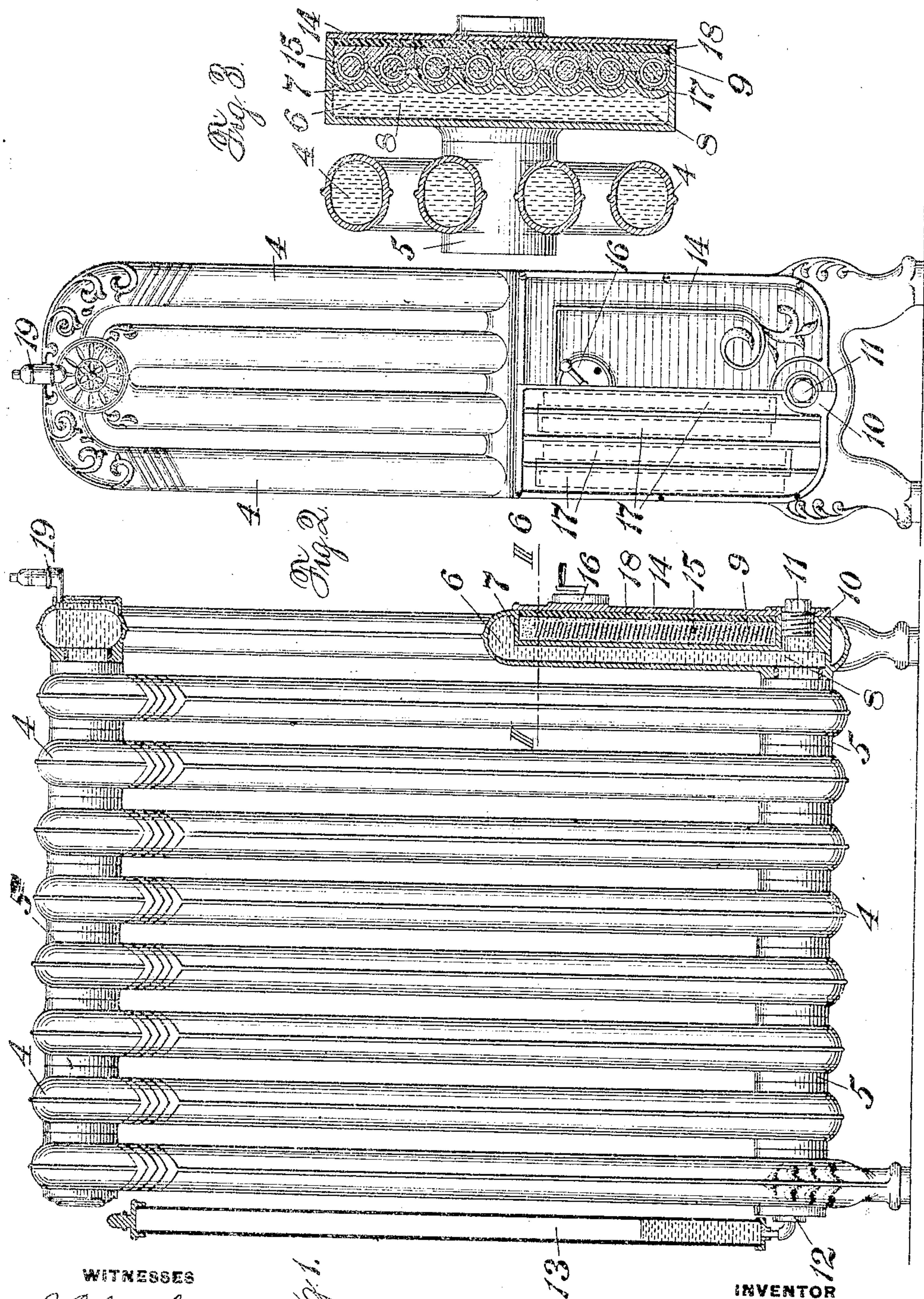


No. 880,079.

PATENTED FEB. 25, 1908.

G. HODGDON.
RADIATOR.

APPLICATION FILED JUNE 8, 1907.



WITNESSES

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Fig. 1.

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UNITED STATES PATENT OFFICE.

GEORGE HODGDON, OF WILKINSBURG, PENNSYLVANIA.

RADIATOR.

No. 880,079.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed June 8, 1907. Serial No. 377,913.

To all whom it may concern:

Be it known that I, GEORGE HODGDON, a citizen of the United States, residing at Wilksburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Radiators, of which the following is a specification.

My invention relates to radiators, and its objects are: to provide a radiator of simple and effective construction which is equally adaptable for use in connection with either a steam, hot-water, or electric system of heating; to provide a radiator which may be used in connection with a combined hot-water and electric system of heating; to provide a radiator in which a body of water may be heated to any desired degree through the medium of an electric current; to provide a radiator of the electric type in which the heating coils are subjected to the action of a current of water, thereby greatly increasing their capacity and presenting an increased radiating surface; to provide an electric radiator which will be free from unpleasant odors ordinarily arising from radiators of this type when operated at a high tension; to provide an electric radiator in which any number of heating coils may be used to vary the capacity as desired and one in which all danger of short circuiting is avoided and in which the coils may be readily removed or replaced at any desired time without necessitating the removal of the radiator or taking it apart. These objects and others which will hereinafter appear, I attain by means of the construction illustrated in preferred form in the accompanying drawings, wherein—

Figure 1 is a side elevation, partly in section, of one form of radiator embodying my improvements, and adapted for use in connection with an electric current;

Figure 2 is a front elevation of the same, with one-half of the electric heater cover removed for the purpose of illustration, and

Figure 3 is a horizontal section on an enlarged scale, taken on the line III—III of Figure 1, through the electric heater and one of the radiator columns.

While my improvements are equally applicable to radiators in general, I have in the accompanying drawings shown them in connection with a standard radiator consisting of a plurality of four column sections 4, connected at the top and bottom by means of the usual nipple joints 5, in such a manner as to permit a current of fluid to circulate

through the entire apparatus. The columns forming one of the end sections terminate at their lower ends in a box or casing 6 which is divided in two compartments, not connected, by means of a wall or partition 7. The inner of said compartments 8 is in communication with the radiator columns and is provided at its lower end with a nipple connection 10 by means of which it may be connected to the inlet pipes of a heating system when it is desired to use the radiator in this manner, but when the radiator is intended for use as a portable heater, *i. e.* when a body of water is inclosed therein and heated by means of an electric current in a manner to be presently described, the opening 10 is closed by means of a threaded plug 11, as illustrated in Figures 1 and 2. The section at the other end of the radiator is provided with the usual outlet connection 12 which is either connected to a discharge pipe, when the radiator is used in connection with a system of piping, or to a compression chamber 13 when such system of piping is dispensed with and a body of water is contained in the heater as illustrated in the drawings.

The outer compartment 9 of the box 6, is provided with a removable cover 14, and is adapted to receive an electrical heater of any preferred construction, such for instance as that shown in the drawings, which consists of a series of coils 15 embedded in porcelain or some other suitable material and controlled by means of an electrical switch 16 which may be located upon the cover 14 as illustrated in the drawings, or any other convenient point. While I do not limit myself to any one form of electrical heater, I prefer to construct the same in accordance with the drawings wherein the dividing wall 7 is provided with a series of grooves or corrugations 17 as illustrated in Figure 3, for the reception of the porcelain covered coils 15, and in order that the coils may be readily replaced or removed and the capacity of the heater thereby increased or diminished proportionally to the number of radiator sections employed, I prefer to construct the coils in units of one, two (as shown in the drawings), or more coils each. To insure a greater amount of radiation of heat through the wall 7, a layer of asbestos or some other non-conductor 18, is placed between the coils and the cover 14. The radiator is further provided with the usual automatic air valve 19 of any preferred construction.

From the foregoing it will be seen that my improved radiator may be used in connection with a steam or hot water heating system by making the usual pipe connections at 10 and 12, in which case the coils 15 may be dispensed with entirely, or if so desired, the electric heater may be used in connection with a hot-water system by simply connecting the coils 15 to some suitable source of supply, in which case the temperature of the water will be raised during its passage through the box 6.

When it is desired to use electricity alone as a source of heat, no pipe connections are necessary, the opening 10 in this instance being closed by means of the plug 11, while a compression chamber or tube 13 is connected at its lower end to the radiator at 12. The radiator is approximately filled with water through the opening at the top in which the valve 19 is tapped, and the valve is then replaced. Water will be prevented from rising to any great height in the tube 13, by reason of the compression of the air therein, and it will be seen that when the water is heated it will expand into the tube 13 and it will result in a continuous circulation of the water through the columns 4 and heating chamber 6 when the device is in operation.

It will thus be seen that my device may be used in connection with either a steam, hot-water, or electric system of heating without necessitating any change in its construction as it comes from the factory, and when once installed it may be readily changed from one system to the other if desired, with a minimum amount of labor and at a trifling expense. Furthermore, when used as an electric radiator, it may be moved around as desired, and it will be noted in this connection that by reason of the cooling action of the water upon the heating coils their capacity will be greatly increased, and a small electric heater constructed in connection with my invention will be equal in effect to one of much larger size where no water is used. A further advantage of my device is that one size of section embodying the heater may be used in connection with any number of radiator sections, as its construction is such that it will be equally effective when but few coils are used in connection with a limited number of sections, as when the entire

number of coils and a large number of column sections are employed. Other advantages of the device will readily occur to those familiar with the art.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. A radiator section comprising a plurality of vertical pipes arranged side by side and communicating at their lower ends with a casing 6, a partition 7 extending back into the casing and forming a compartment, and electrical heating means in the compartment and a cover for the recess.

2. A radiator comprising a plurality of sets of columns 4, the end one of which is provided with a casing 6 provided with an inclosing partition 7 forming a compartment 9, electrical heating means in the compartment, and a cover for the compartment.

3. A radiator section comprising a vertical casing, a plurality of radiator pipes of substantially the thickness of the casing seated thereon and communicating therewith, a partition extending back into the casing and forming a compartment, electrical heating means mounted therein and a cover for the compartment.

4. A radiator section of substantially uniform width and thickness from top to bottom and comprising a vertical casing and a plurality of radiator pipes communicating with the end thereof, a corrugated partition extending backwardly into the casing and forming a compartment, electrical heating coils mounted in the corrugations and a cover for the compartment.

5. A radiator section comprising in combination a vertical radiator column provided at its lower end with an integral closed casing, said casing being provided with an opening for the reception of a hot water or steam pipe, and a recess adapted to receive an electric heater.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

GEO. HODGDON.

Witnesses:

F. E. GAITHER,
ARCHWORTH MARTIN.