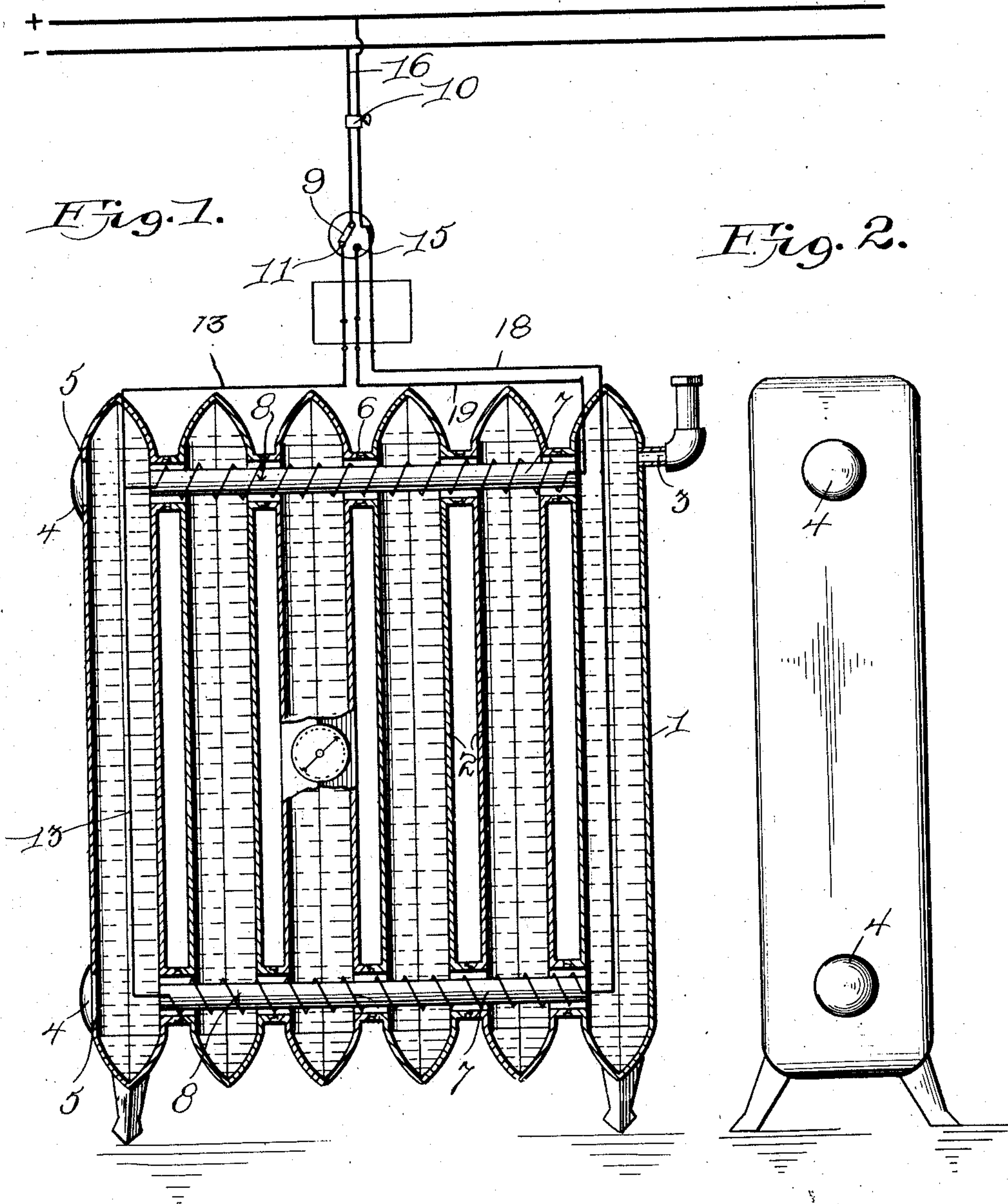


J. A. TUPPER.
ELECTRIC RADIATOR.
APPLICATION FILED AUG. 31, 1909.

Patented Nov. 22, 1910.

976,615.



Inventor

John A. Tupper

Witnesses

J. W. Dill

Mr. L. M. Bathman

By *E. E. Wooman*,
his Attorney.

UNITED STATES PATENT OFFICE.

JOHN A. TUPPER, OF MONTPELIER, IDAHO.

ELECTRIC RADIATOR.

976,615.

Specification of Letters Patent.

Patented Nov. 22, 1910.

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To all whom it may concern:

Be it known that I, JOHN A. TUPPER, a citizen of the United States, residing at Montpelier, in the county of Bear Lake and State of Idaho, have invented certain new and useful Improvements in Electric Radiators, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to electric heaters in which a plurality of resistance coils are placed in the circuit of an electric current and are adapted to heat the liquid contained within the heater.

The object of this invention is to provide an improved electric heater by means of which the heat may be regulated.

With these and other objects in view this invention consists of certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings: Figure 1 is a longitudinal section of the heater showing the coils positioned therein; Fig. 2 is an end view of the heater.

Referring to the drawings by numerals, 1 designates the casing of the heater, which comprises a plurality of hollow sections or chambers 2. These sections are connected in the ordinary manner and to one of the outer sections is secured an inlet pipe 3, through which can be poured the oil or liquid to be contained within the heater 1. Upon the opposite end of the heater or outer section is secured a pair of knobs or caps 4, which normally close the openings 5, which openings facilitate the placing of the cores or coils within the heater and also allow the liquid to be drained from the heater when it is so desired.

Adapted to be positioned within the heater and extend longitudinally of the same and through the nipples or ordinary connecting means, 6, are cores or longitudinally-extending members 7. It is desirous of having two of these cores, at least, within the heater, one in the upper portion thereof and one in the lower portion. Around each core 7 is positioned a resistance coil 8. Positioned contiguous to the heater 1 is a circuit closure or switch 9 and said switch is electrically connected to a lamp socket 10 to which extend feed wires 16 one of which is continued as at 18 to the lower resistance coil. The switch is, preferably, a two-way

switch, which when forming a contact with one terminal 11 will cause the current to only flow around through the lower resistance coil 8.

The terminal 11 is electrically connected to the lower resistance coil 8 by means of a conductor 13. The other terminal 15 of the two-way switch is electrically connected to the upper coil 8, by means of a conductor 19 and when the lever or switch 9 is thrown into contact with the terminal 15, it will cause the current to flow through both of the resistance coils, therefore, greatly decreasing the amount of heat to be radiated from the heater, while, when the switch 9 is on the contact 11 the current will flow only through the lower coil thus increasing the heat of said lower coil.

It is preferable to have the heater or casing 1, contain oil which is non-conducting and which will retain the heat to a great extent. By having the coils 8 positioned upon the cores 7, which are, preferably, formed of porcelain or some non-conductive material, it will be obvious that the coils can be easily held in place and prevented from becoming distorted.

It is especially to be noted that the coils and cores do not extend into the end sections of the radiator and the cores are surrounded by annular spaces between the sections. By reason of this peculiar arrangement the outer sections are left free for the cooler oil to descend after rising to the top of the heater in the remaining sections. Furthermore, by reason of the provision of the annular passages between the sections, the oil is forced during its circulation in a thin film over the heating coils.

From the foregoing description, it will be readily seen that I have provided means for regulating the heat of the radiator by throwing either one or both of the resistance coils into the circuit. Although the preferred wiring is shown in the official drawing, it should be understood that any combination of electrical connection to increase or decrease the amount of current taken, and, consequently, the amount of heat generated could be used.

What I claim is:

In a heater of the class described, a casing provided with a series of vertical circulating chambers arranged side by side, a series of alined passages connecting the upper ends of said chambers, a second series of

aligned passages connecting the lower ends of
said chambers, cores extending through said
passages and arranged concentric of said
passages to form annular spaces between the
5 cores and the several walls of the passages,
and resistance coils embracing said cores and
extending through the annular passages,
said coils terminating short of the outer

chambers whereby the outer chambers re-
main cooler than the inner chambers. 10

In testimony whereof I hereunto affix my
signature in presence of two witnesses.

JOHN A. TUPPER.

Witnesses:

J. F. PERKINS,
HAROLD TOOMER.