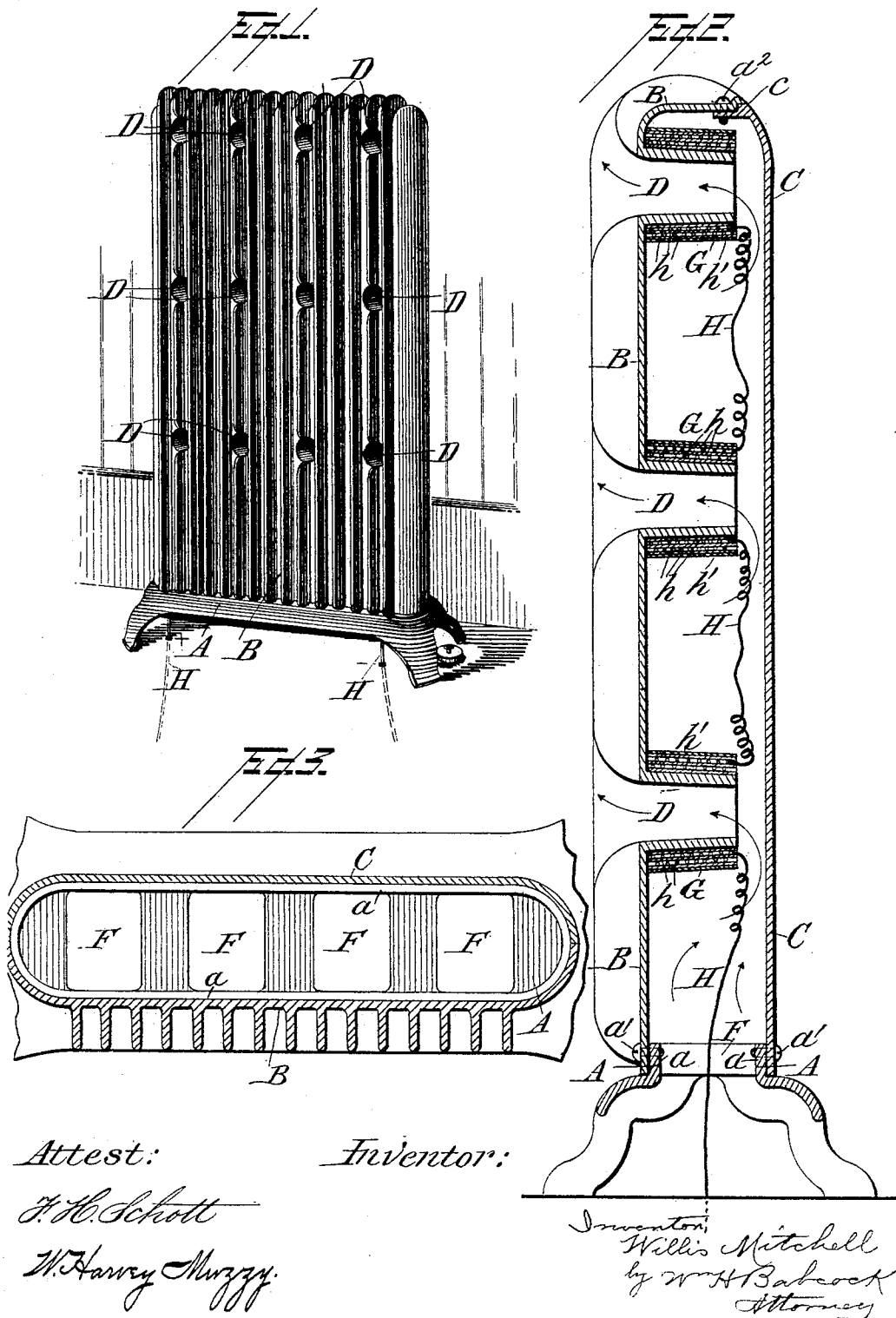


(No Model.)

W. MITCHELL.
ELECTRICALLY HEATED RADIATOR.

No. 494,301.

Patented Mar. 28, 1893.



UNITED STATES PATENT OFFICE.

WILLIS MITCHELL, OF MALDEN, ASSIGNOR TO THE BUTTERFIELD-MITCHELL
ELECTRIC HEATING COMPANY, OF BOSTON, MASSACHUSETTS.

ELECTRICALLY-HEATED RADIATOR.

SPECIFICATION forming part of Letters Patent No. 494,301, dated March 28, 1893.

Application filed June 8, 1892. Serial No. 435,930. (No model.)

To all whom it may concern:

Be it known that I, WILLIS MITCHELL, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electrical Radiators and Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The chief object of this invention is to provide a radiator with means for heating it from within by electricity and to adapt it to allow the passage of a current of heated air through its front plate in order that the room may be heated by this current as well as by radiation.

To this end my invention consists in a radiator having electric heating devices inclosed therein; also more specifically in a radiator front-plate having inwardly extending cores and electrical heating devices mounted on the said cores; also in a radiator thus constructed and having openings in the front plate and some other part of its casing or shell for the passage of a current of air; also in a radiator thus constructed, having the cores made tubular and concentric with the openings of the said front plate, they being inward continuations thereof; also in a radiator having openings in its front plate and its base for the passage of a current of air through it, and in other features hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of a radiator embodying my invention. Fig. 2 represents a vertical central section of the same from front to rear; and Fig. 3 represents a longitudinal section of one of the preferred heaters; although other forms may be employed.

A designates the base of the radiator to which are fastened by screws a' through its raised lugs a , the vertical front plate B and the vertical rear plate C, these two plates being likewise fastened together at the top by screws a^2 and wherever else fastening may be needed. To allow this at the top, the said

rear plate is provided with a flange c which is overlapped by the bent upper edge of the front plate, these two parts being screw-tapped accordingly. Openings D are made at intervals in series through the said front plate to the hollow interior of the radiator; and a tubular core integral with the said front plate extends inward from the edge of each opening, being concentric therewith. In the base A similar openings F are made and the draft of air is from these up through the interior of the radiator to the front openings D. This draft is caused, and the escaping jets of air, as well as the plates of the radiator, are heated, by a series of electrical heaters G each of which is fitted on one of the said tubular cores. By preference each of these heaters consists of a concentric set of asbestos cylinders or layers h , on which from end to end a wire or other conductor H is wound, taking the said layers successively. These cylinders and the wire are covered by a sheet metal cap h' . The heaters thus constructed may be connected in series or as desired; but the wire of each heater forms part of an electric circuit. Any other form of heating device operated by electricity may be substituted, if suited to this use; for example a wire coated with insulating material and passing from core to core being wound in helices on each. Every tubular core serves both as an outlet for air and with the heater on it as a means of heating the said front plate. Of course the radiation of heat from the said front plate warms the air of the apartment or hall in the usual manner; but the streams of hot air continually issuing through the said cores warm it in a different manner by mingling therewith. Thus there is a double action of the device which is available for other purposes than those to which a radiator technically so called is applied.

The rear plate C reflects the heat of the devices G against the front plate and thereby intensifies the heating of the latter. The concentric arrangement of the cores with respect to the openings D makes the draft through the latter much more direct and efficient, and insures the heating of the air which thus passes.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A radiator for heating rooms halls and
5 otherspaces consisting of a shell having a front wall provided with openings and inwardly extending cores concentric therewith and open at their inner ends, in combination with electric heating devices applied to the said cores
10 substantially as set forth.

2. In a radiator consisting of a hollow shell, the perforated bottom A and back plate C in combination with the front plate B provided with openings and short tubular cores D extending inward therefrom and open at their

inner ends and heaters applied to said cores for the purpose set forth.

3. A radiator provided with internally extending cores, in combination with electrical heaters applied to the said cores, each heater
20 consisting of successive helicoidal coils of wire in electric circuit and interposed cylindrical partitions substantially as set forth.

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

WILLIS MITCHELL.

Witnesses:

EDWIN W. PIERCE,
PELATIAH R. TRIPP.