

No. 735,798.

PATENTED AUG. 11, 1903.

J. F. McELROY.  
ELECTRIC HEATER.

APPLICATION FILED APR. 30, 1903.

NO MODEL.

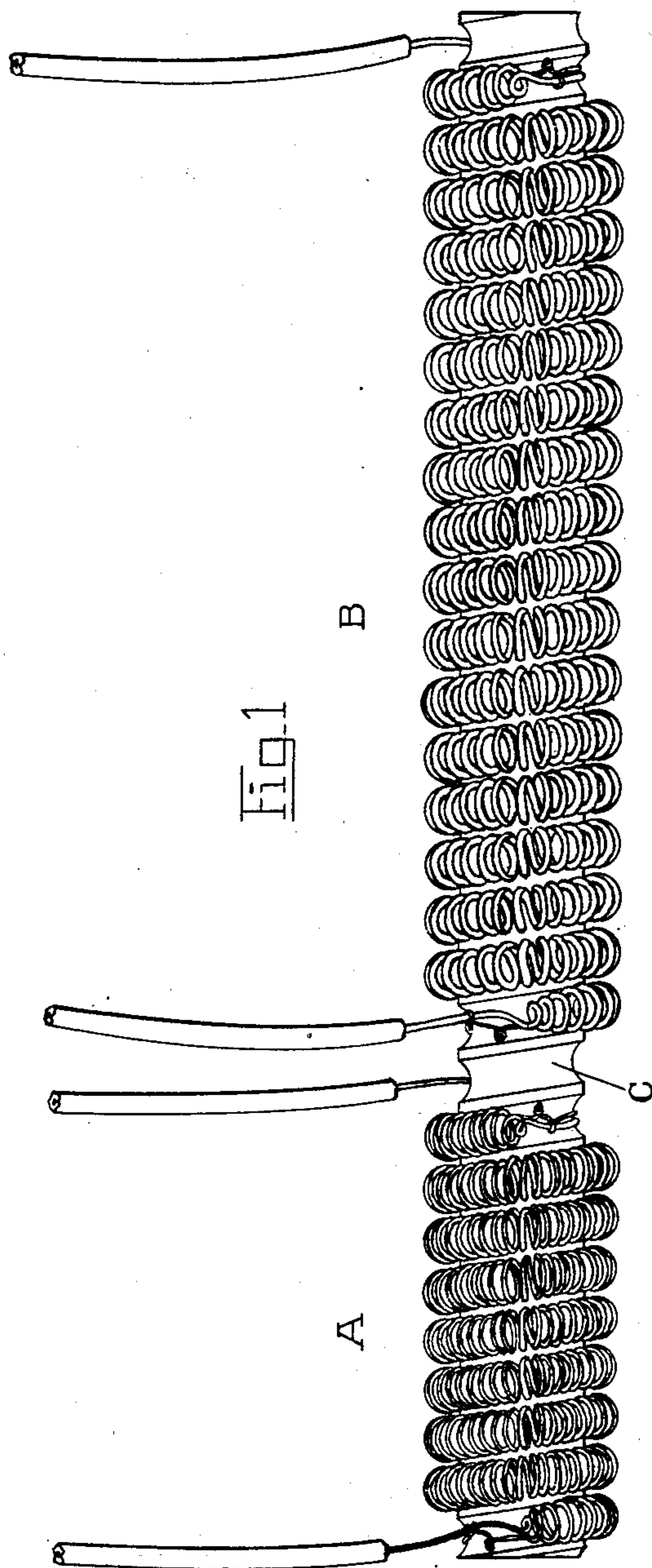


Fig. 1

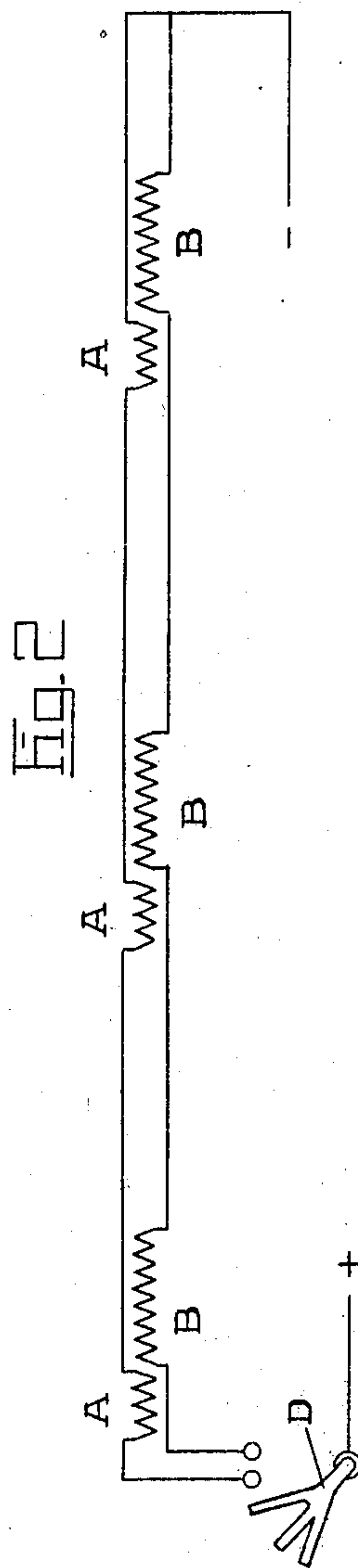


Fig. 2

Witnesses  
L. J. Shaw  
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Att.



# UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK.

## ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 735,798, dated August 11, 1903.

Application filed April 30, 1903. Serial No. 154,923. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing at Albany, county of Albany, and State of New York, have invented certain new and useful Improvements in Electric Heaters, of which the following specification, with its accompanying drawings, sets forth as an illustration that form of my invention which I now consider the best one out of the various forms in which the principles of the invention may be embodied.

In the drawings, Figure 1 shows the construction of the heater, and Fig. 2 shows a diagram of the circuits for which my device is intended.

It has heretofore been customary in electric heating to provide a series of heaters and to divide each heater of the series into sections, which sections are respectively included in separate circuits, so that either all or a part of each heater of the series may be energized, according as all or a part of the said separate circuits, each including sections of different heaters, are connected to the source of supply. Usually two circuits are employed and the sections in one circuit made up of finer wire than that used in the other section, so as to have a smaller heating capacity. Then the circuit with the fine-wire sections will give the lowest degree of heat when it alone is connected up. The second circuit, with heater-sections of larger wire, will when used alone give a second degree of heat, and both circuits used together will give a third degree. Heretofore these different sections of a heater-coil have been placed side by side on a continuous supporting-core, each occupying the same longitudinal space on the core; but this gives rise to an uneven distribution of heat, since the large coil, giving about twice the heat of the smaller coil, occupies an equal length of the core, with the result that the heat per unit of length is twice as intense along one half of the core as it is along the other half. I have therefore so arranged the respective coils that the distribution of heat along the core will be uniform and have the same intensity per unit of length at all points, whether measured along the smaller or along the larger section of heating-coil.

This I accomplish by so disposing the coils on the core that each shall occupy a portion of the longitudinal space corresponding approximately to the fraction of the total heat represented by it. Thus of two coils, one having half the heat intensity of the other, the smaller will occupy one-third and the larger two-thirds of the length of the core.

In the drawings, coils A and B represent sections of a unitary heating-coil placed side by side on a core or support C, the coil A being of fine wire and the coil B of coarse wire. Each coil is connected in a circuit containing corresponding coils in other similar heaters as shown in Fig. 2. The switch D of Fig. 2 will in its first position connect to the source of supply the circuit containing all the sections A, which will give the lowest degree of heat, and in its next position will connect to the source of supply the circuit containing all the coils B, which will double the heat, assuming that each coil B gives twice the heat intensity of each coil A. In its third position the switch will connect in both circuits, which will treble the intensity of heat. It will be observed, however, that the coil A occupies but one-third of the longitudinal space on the core C, and the coil B two-thirds, so that when both coils are energized the heat intensity per unit of length of the heater will be uniform from end to end, whether measured along coil A or coil B. This will provide the uniformity of heat distribution in the one apparatus, which I seek to attain.

What I claim as new, and desire to secure by Letters Patent, is—

1. An electric heater having its heating-coil divided into sections of different intensity each section occupying a longitudinal space substantially proportionate to its fraction of the total heat intensity.

2. An electric heater having its heating-coil divided into sections of different intensity located in line along the length of the heater and each section occupying a longitudinal space substantially proportionate to its fraction of the total heat intensity.

3. An electric heater having its heating-coil wound on a continuous core and divided into sections of different intensity each section occupying a space on the core substantially

proportionate to its fraction of the total heat intensity.

4. A series of electric heaters, each having its heating-coil divided into sections of different intensity, all the coils of equal intensity being included in a single circuit extending through all the heaters and each section occupying a space in its heater longitudinally in line with the other sections of the same heater and of a length substantially propor-

tionate to its fraction of the total heat intensity of the heater.

In witness whereof I have hereunto set my hand, before two subscribing witnesses, this 28th day of April, 1903.

JAMES F. McELROY.

Witnesses:

BEULAH CARLE,  
ERNEST D. JANSEN.