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ELECTRIC HEATER.

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975,712.

Patented Nov. 15, 1910.

Fig. 1.

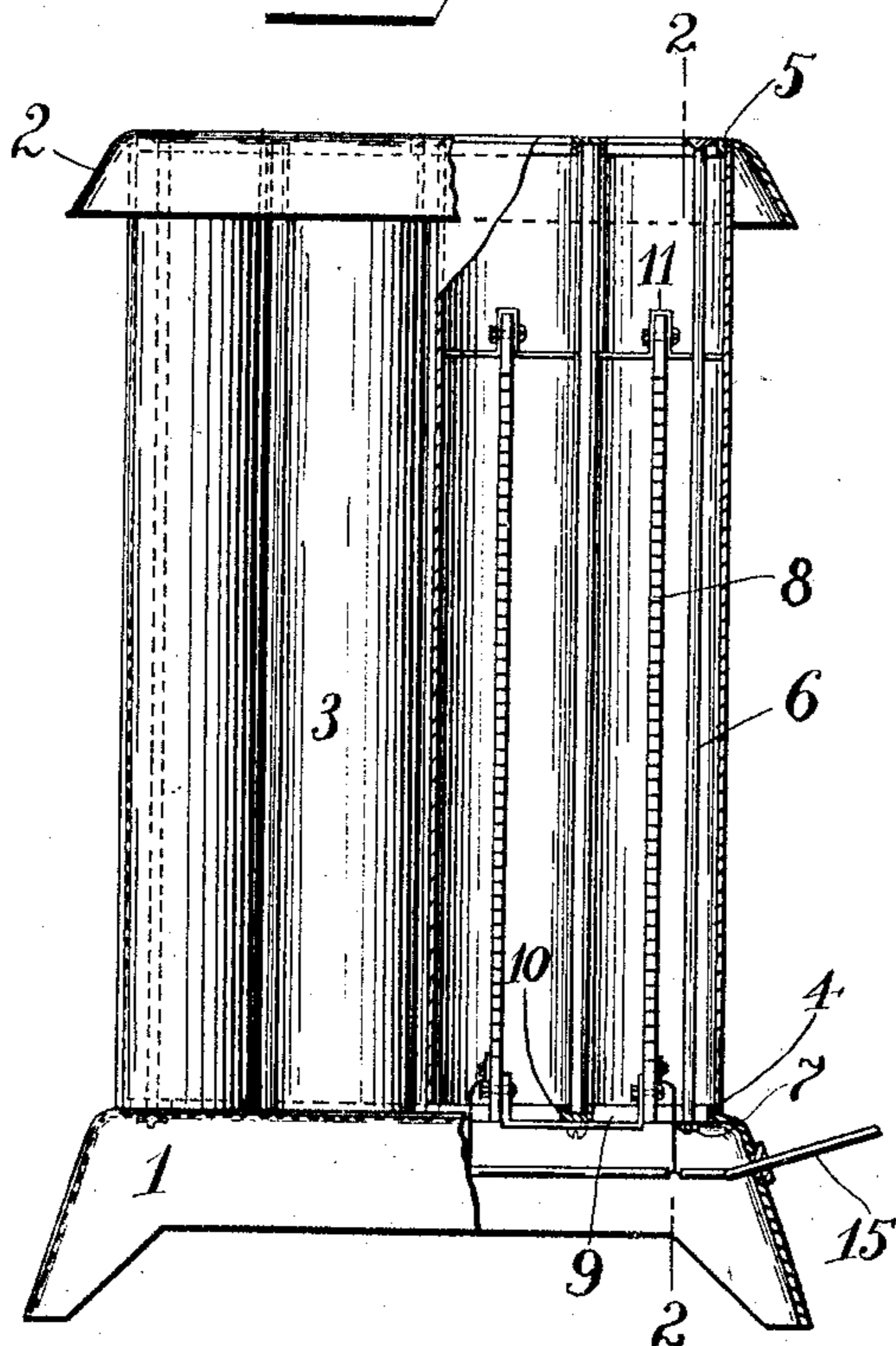


Fig. 2.

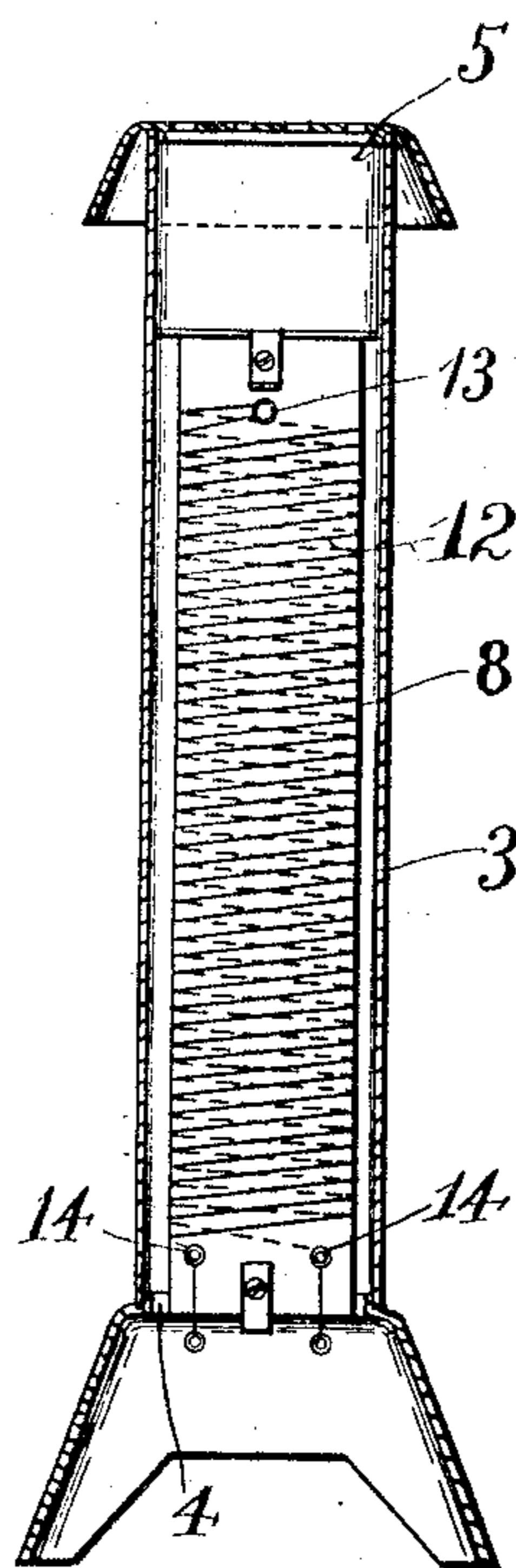


Fig. 3.

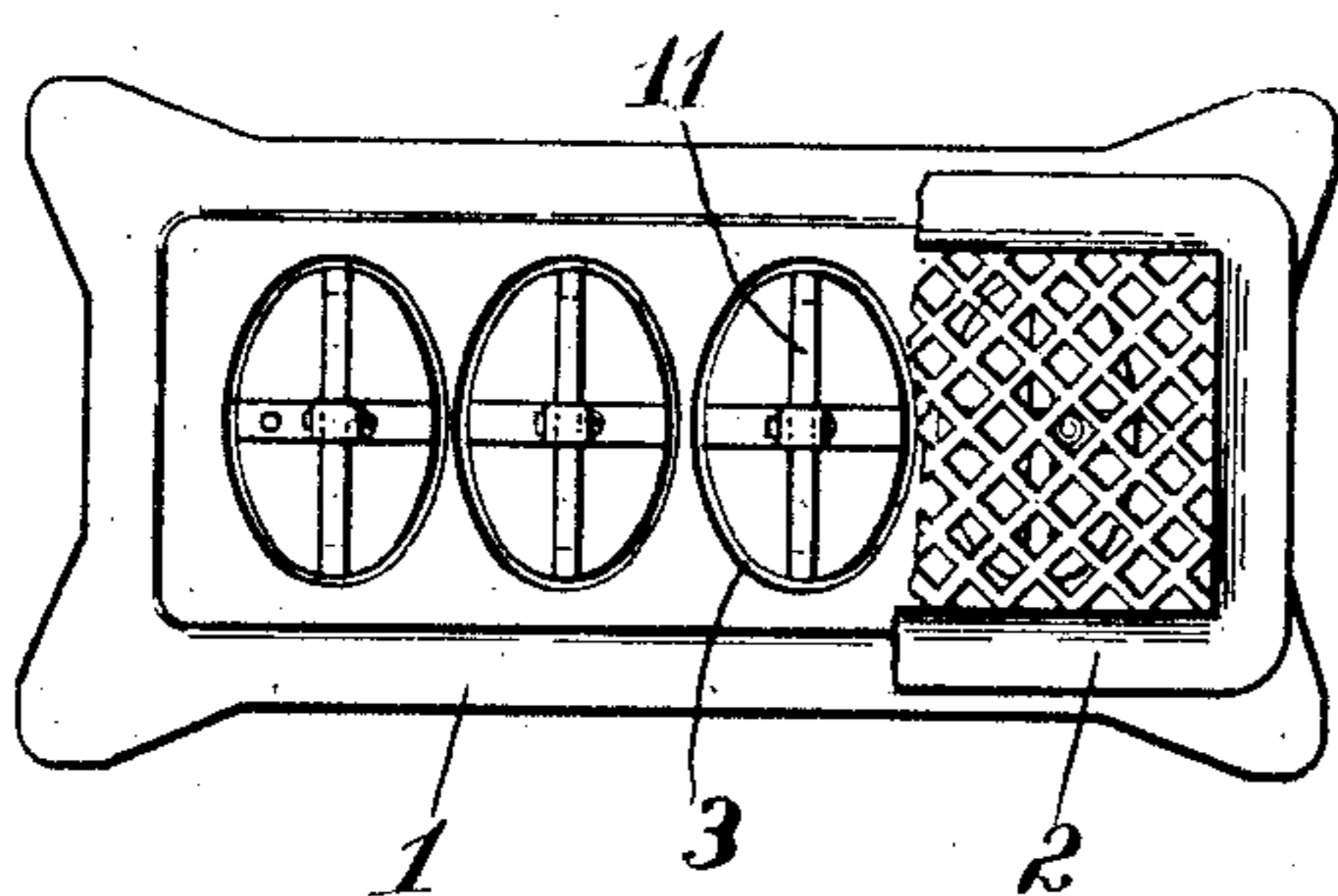
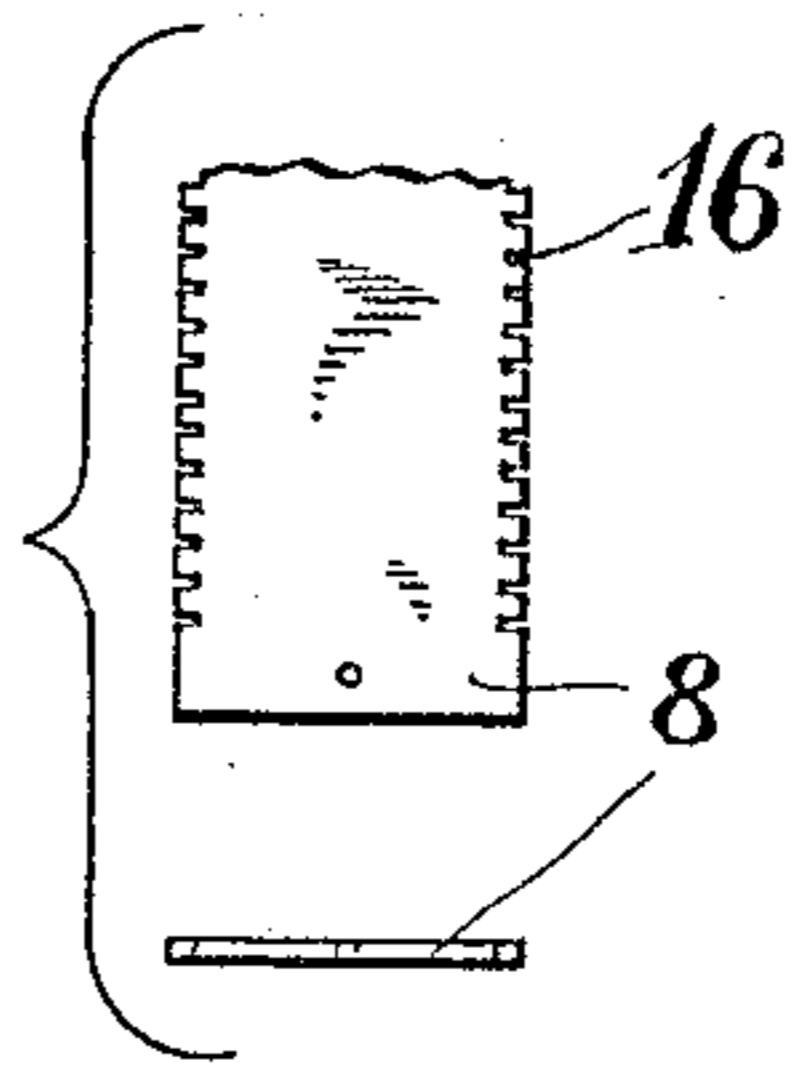


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRIC HEATER.

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To all whom it may concern:

Be it known that we, LEON F. PARKHURST and HARRY G. WEEKS, citizens of the United States, residing at Binghamton, county of Broome, State of New York, have invented certain new and useful Improvements in Electric Heaters, of which the following is a full, clear, and exact description.

Our invention relates to improvements in electric heaters and particularly though not exclusively to such heaters as applied to and in combination with radiators to be employed in the heating of apartments and the like.

The object of the invention is to provide a construction of the fewest number of parts of such simplicity of arrangement as to be susceptible of ready assembling and disassembling for repairs and the like.

A further object of the invention is to provide in such radiator electric heating elements which shall be non-inductive in character and in which the windings of the elements will be so arranged as to facilitate connection with the source of current.

Other objects, and advantages of the invention will appear from the following description of a preferred form of our invention which has been selected for illustration and which is illustrated in the accompanying drawings.

Figure 1 is an elevation of a radiator embodying our invention, parts being broken away for clear illustration. Fig. 2 is a vertical section on the line 2—2, Fig. 1. Fig. 3 is a plan view, parts being broken away for illustration, and Fig. 4 is a detailed view of one of the supports upon which the resistance element is wound.

In the embodiment of our invention herein selected for illustration, the apparatus comprises a base 1, a top 2 and a plurality of interposed flues 3, which are suitably supported on flanges 4, formed on the base and likewise engage flanges 5 in the top 2, said parts being held together by means of binding rods 6, which pass through suitable apertures in the top and base and are secured in place by nuts 7. Within each flue is arranged a heating element comprising a flat slab or plate 8 of any suitable insulating and refractory material which are supported at the bottom within the flues by means of metal straps 9 secured to the base 1 and at the top by means of spiders 11,

having arms preferably at right angles to each other, as shown clearly in Fig. 3, and contacting with the sides of the flues 3. Upon each of said insulating supports is wound a resistance element 12, which, in the embodiment of our invention here illustrated, is shown as a double winding secured at the top of each support as by a screw 13 around which the resistance winding is passed, while the ends of said double winding are secured to screws 14 in said support, which screws may also serve as binding posts for connection with the leading-in wires or cables 15. For the secure holding and proper spacing of the winding of the resistance element on the insulating support 8 the latter is provided at its opposite edges with notches 16, Fig. 4, within which the several windings of the resistance element are seated.

By the above construction it will be seen that both terminals of each resistance element are located at the lower ends of said heating elements adjacent to the leading-in wires and consequently may be more easily connected to said wires as distinguished from constructions in which a single winding of the resistance element on its support is employed, whereby it is necessary to extend one of the terminals from the top to the bottom, thus involving greater expense of construction and additional liability to the grounding of the resistance element. And, furthermore, in the case of an air heater involving additional resistance to air draft through the flues.

In some instances it may be desirable to employ metal supports covered with insulating material for the resistance element. In such cases this double winding of the resistance element results in the further advantage of being non-inductive especially when alternating currents are used, and prevents the humming of metal parts.

While we have herein described a particular embodiment of our invention, it is to be understood that the same may be altered in details and in relative arrangement of parts without departing from the spirit and scope thereof.

What we claim is:

1. An electric heater comprising a base, a top, a plurality of open flues supported on said base and supporting said top, supporting brackets in each flue an electric heating element supported in each flue by said

brackets and insulated therefrom, said element comprising a flat slab of non-insulating and refractory material having an electric resistance conductor spirally wound thereon in double length whereby the terminals of said resistance conductors are brought to the same end of said heating element.

2. A portable electric heater comprising a base, a top, a plurality of open flues mounted on said base and supporting said top, supporting brackets in each flue an electric heating element supported within said flue or flues on said brackets and insulated

therefrom and comprising a flat slab of insulating and refractory material and an electric resistance element spirally wound thereon from one end to the other and returning from the second to the first end in a similar spiral whereby the terminals of said element are brought to the same end of said support.

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