

No. 872,242.

PATENTED NOV. 26, 1907.

W. F. LORENTZEN.
STEAM COOKING APPARATUS.

APPLICATION FILED JAN. 30, 1907.

Fig. 1

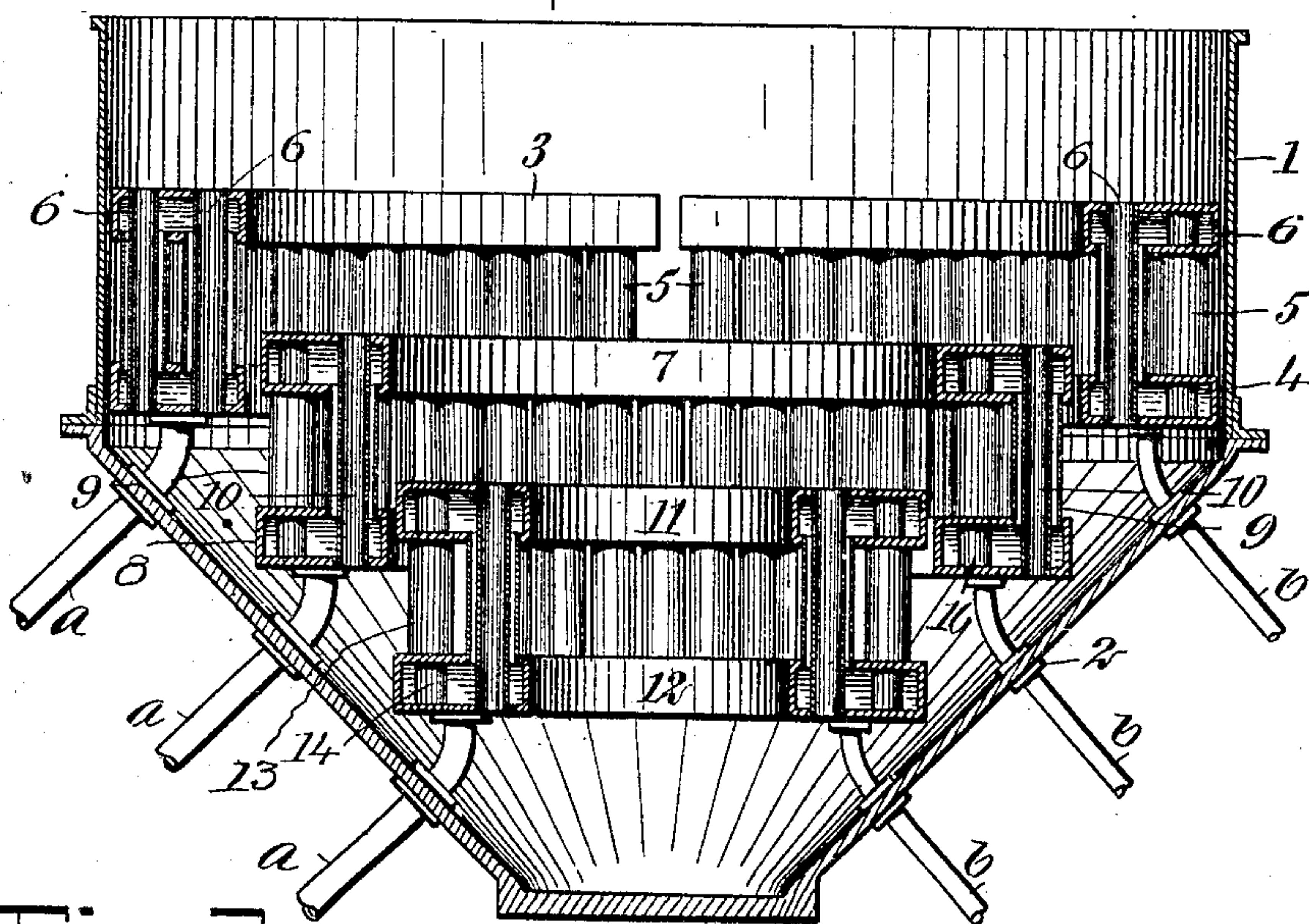
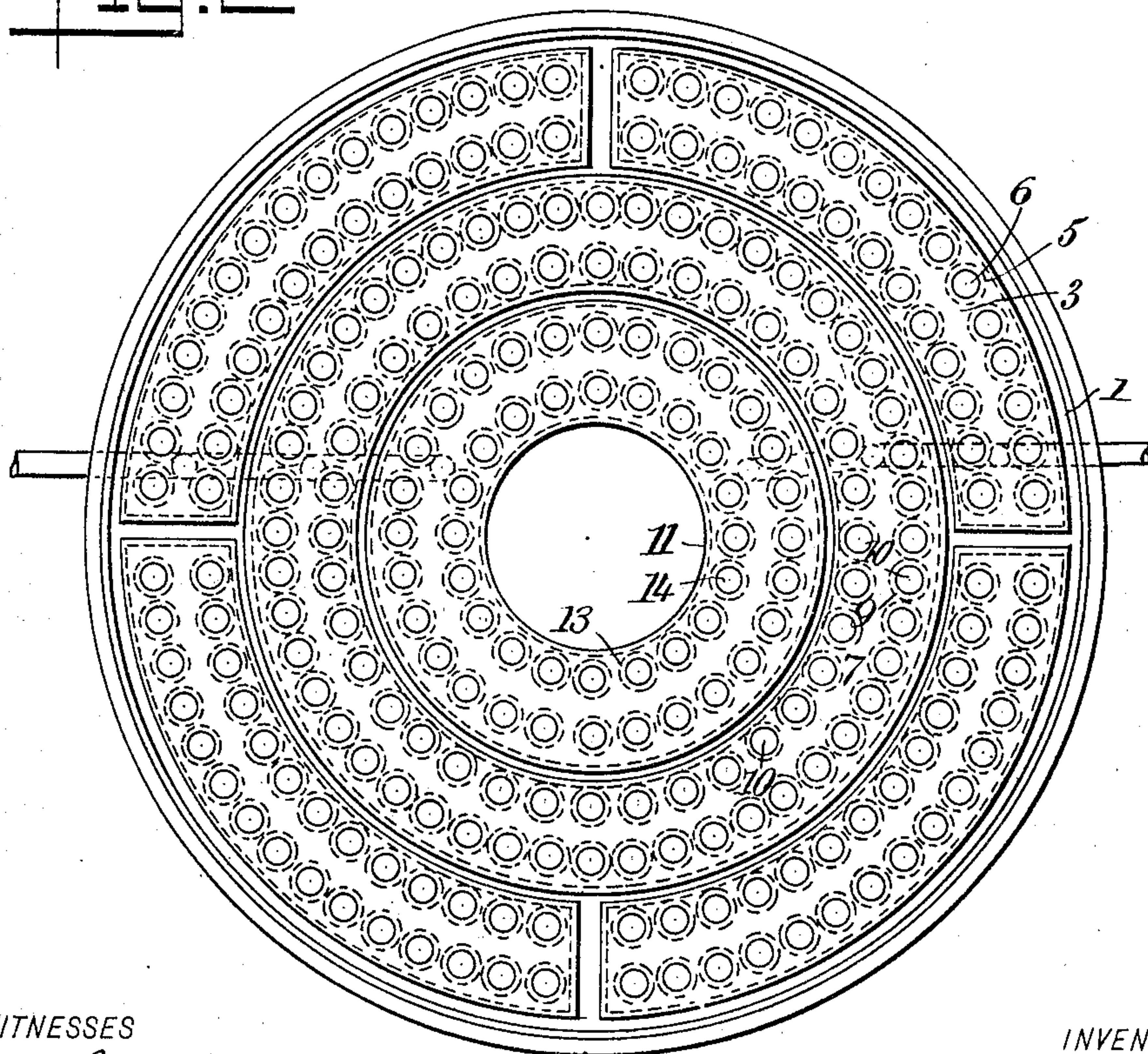


Fig. 2



WITNESSES

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STEAM COOKING APPARATUS.

No. 872,242.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed January 30, 1907. Serial No. 354,792.

To all whom it may concern:

Be it known that I, WILHELM FRIEDRICH LORENTZEN, a subject of Germany, and a resident of Habana, Cuba, have invented a new and Improved Steam Cooking Apparatus, of which the following is a full, clear, and exact description.

This invention relates to improvements in apparatus for steaming or cooking by steam sugar cane juice, or any other liquids, seeds, and other products, an object being to provide an apparatus of this character so constructed that there will be a very large heat-radiating surface which increases the heat to a much greater degree, with an economical use of steam, than is possible with the usual steam heater.

I will describe a steam cooking apparatus embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional view of a steam cooking apparatus embodying my invention; and Fig. 2 shows the device in plan.

The device comprises a casing having a cylindrical upper portion 1 and a funnel-shaped lower portion 2. Within this casing the heating elements are arranged. The upper heating element has an upper tubular ring 3 and a lower tubular ring 4 spaced from the upper ring, and communication is provided between the two rings by means of tubes 5, which open through the upper wall of the lower ring and through the bottom wall of the upper ring. Tubes 6 extend through the tubes 5 and open through the top of the upper ring and through the bottom of the lower ring, these tubes 6 being, of course, smaller than the tubes 5 so that a space is formed for the passage of steam. The upper ring, as indicated in Fig. 2, may be in the form of segments closed at the ends. Below the upper heating element, and concentric therewith is another heating element consisting of an upper tubular ring 7 and a lower tubular ring 8 which form steam chambers, and these tubular rings communicate one with the other, through a series of tubes 9, and smaller tubes 10 pass through said tubes 9 and discharge through the top of the ring 7 and through the bottom of the ring 8. Concentric with the last-named heater is an-

other heater which is of similar form; that is, it has an upper tubular ring 11 and a lower tubular ring 12, the chambers of these rings communicating through tubes 13, and smaller tubes 14 extend through the tubes 13 and discharge through the top of the ring 11 and through the bottom of the ring 12; and any number of heating-rings can be added.

In the operation steam will be admitted to the several heaters, and the casing is to be filled with the material to be treated, which will lie around the several larger tubes and a portion of the material will pass into the several smaller tubes. Thus, the material is not only subjected to heat radiated from the exterior of the several large tubes but the material within the smaller tubes is subjected to heat from the steam passing through the spaces between the smaller tubes and larger tubes. The water of condensation may be drawn off from the bottom by any desired means.

Special attention is called to the advantageous arrangement of the heating elements, which consists in arranging them so that heat may be produced at a low level and very near the bottom of the casing. In this way a very small quantity of juice may be treated if desired, while the steam is shut off in the upper elements or heating rings. Attention is also called to the fact that the heating elements are arranged so that they telescope with each other, the elements of smaller diameter being disposed within the outer ones and low down in the casing. From this arrangement it becomes possible to remove any of the elements without disturbing the others.

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

1. A heater comprising a plurality of independent heat elements having a plurality of jacketed heating tubes, and means for circulating a heating vapor between the jackets and tubes.

2. A heater for the purpose specified, comprising a casing, a heating element therein consisting of an upper tubular ring and a lower tubular ring, a plurality of tubes providing communication between the upper and lower rings, and opening through the lower wall of the upper ring and through the upper wall of the lower ring, and tubes extending through the first-named tubes and

opening through the bottom wall of the lower ring and the upper wall of the upper ring.

3. A heater for the purpose specified, comprising a casing, a plurality of heating elements arranged therein, concentrically one above the other and diminishing in circumference from the upper to the lower heater, each heater consisting of a tubular upper ring and a tubular lower ring, a plurality of tubes providing communication between the two rings, and opening through the lower wall of the upper ring and through the upper wall of the lower ring, and tubes extended through the first-named tubes, the last-named tubes opening through the upper wall of the upper ring and through the lower

wall of the lower ring, a space being provided between each inner tube and its outer tube.

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4. A heater of the class described, comprising a plurality of telescoping heat elements arranged at different levels, and consisting respectively of hollow rings connected by jacketed tubes, and means for circulating a heating fluid through said elements.

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In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM FRIEDRICH LORENTZEN.

Witnesses:

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