

(No Model.)

A. C. EDWARDS.

HEAT RADIATOR APPARATUS.

No. 395,818.

Patented Jan. 8, 1889.

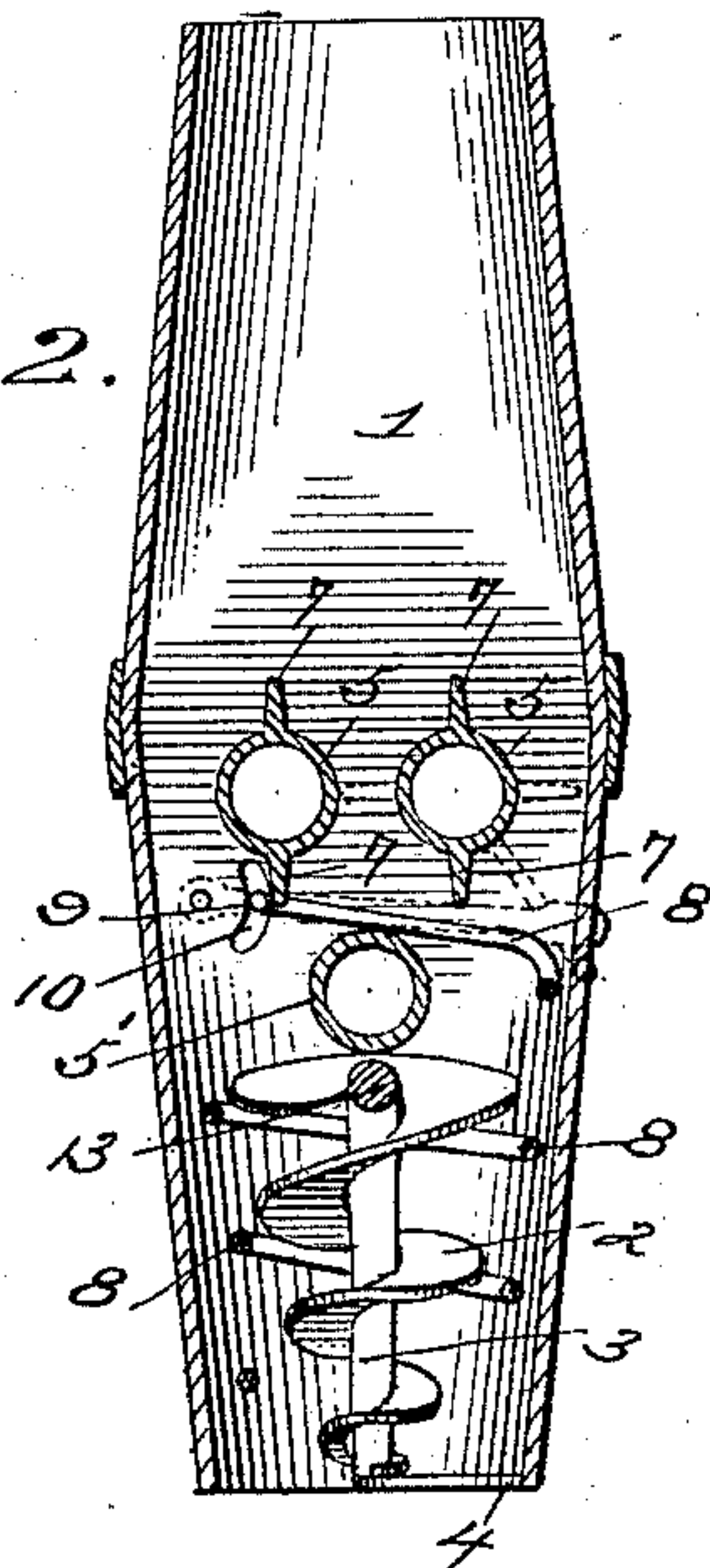
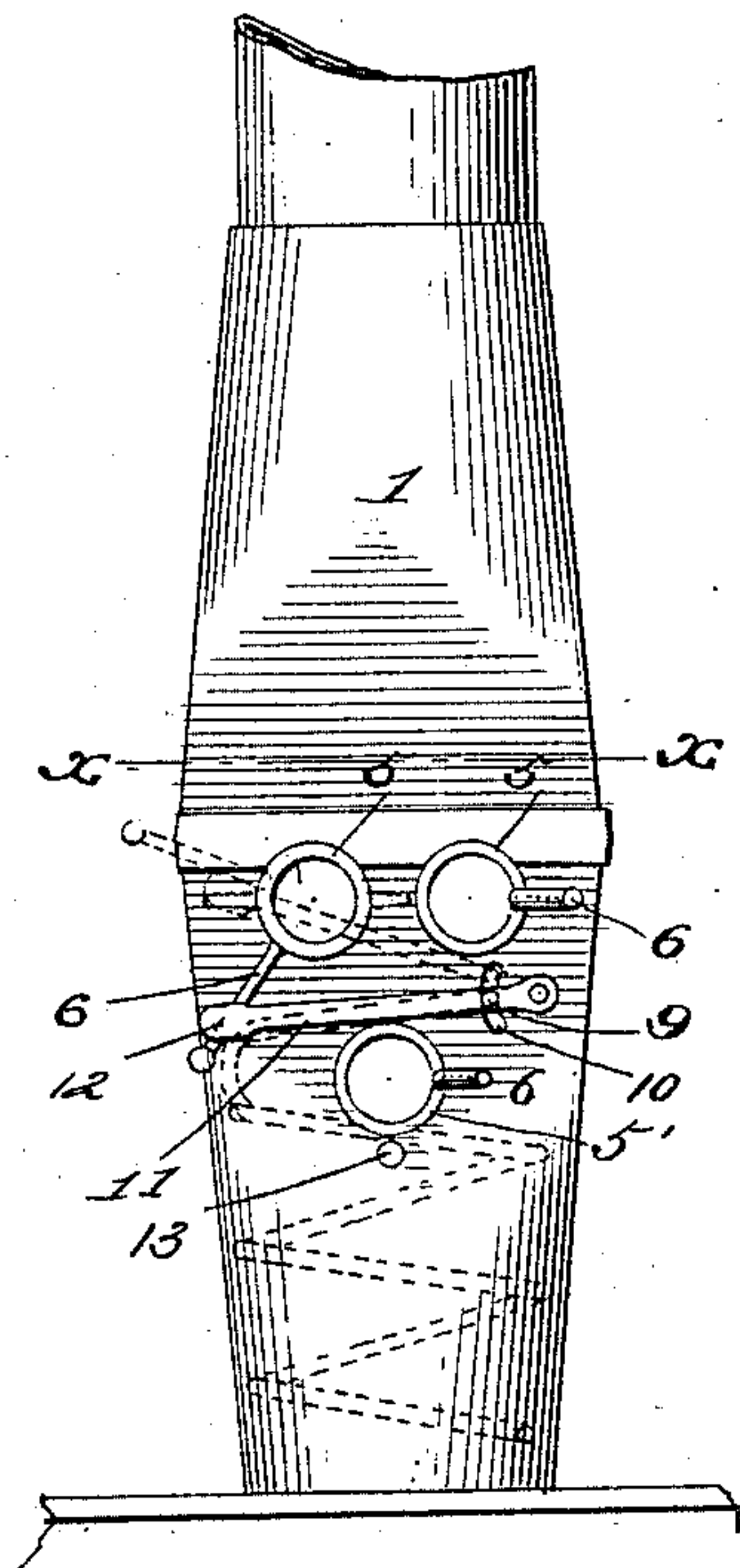
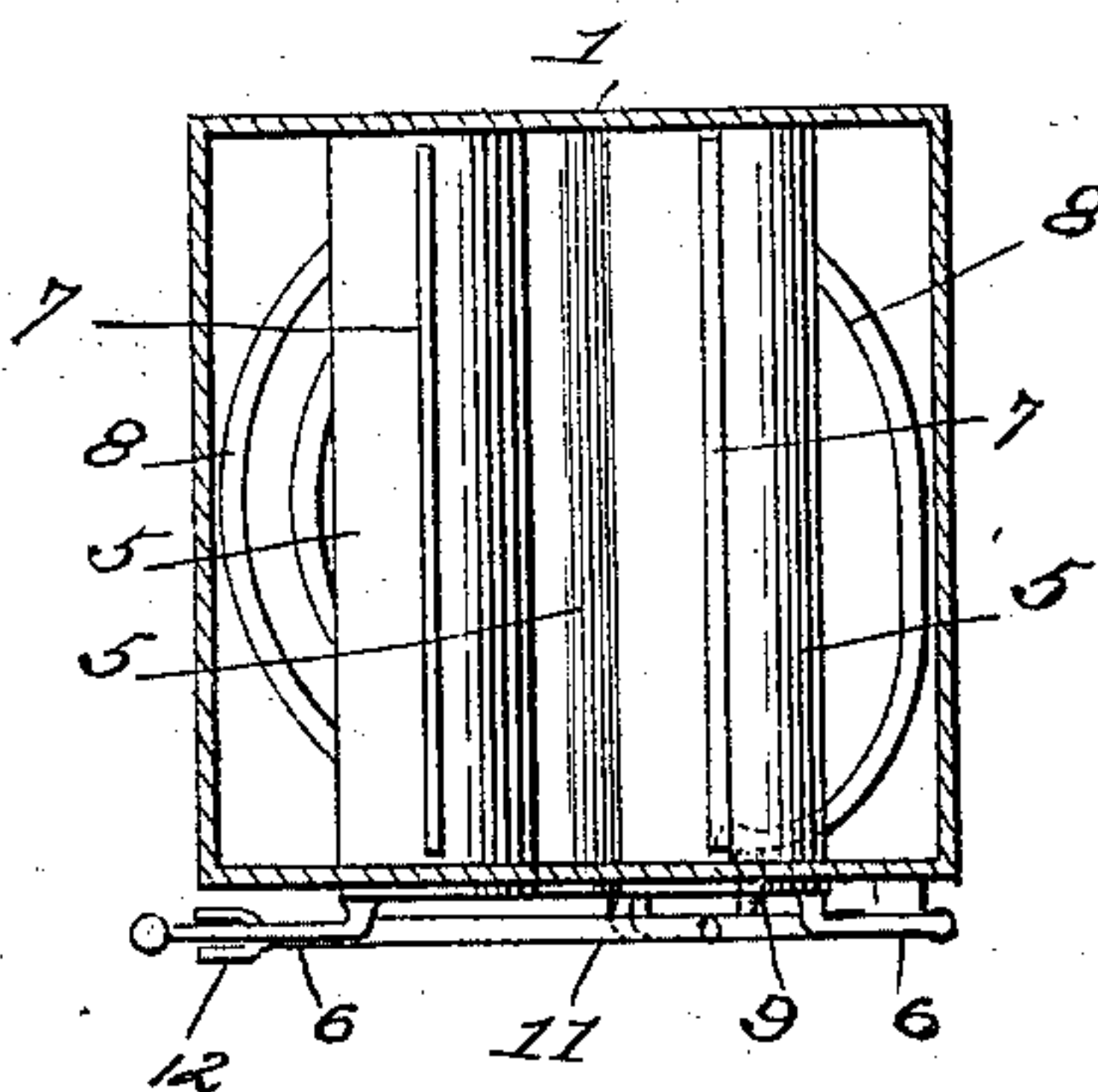


Fig. 3.



WITNESSES:

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HEAT-RADIATOR APPARATUS.

SPECIFICATION forming part of Letters Patent No. 395,818, dated January 8, 1889.

Application filed August 30, 1888. Serial No. 284,171. (No model.)

To all whom it may concern:

Be it known that I, ASA C. EDWARDS, of Westfield, in the county of Hampden and State of Massachusetts, have invented a new and
5 Improved Heat-Radiator Apparatus, of which the following is a full, clear, and exact description.

This invention relates to heat-radiators, and has for its object to provide a heat-radiator
10 apparatus by means of which the dampers of the radiator may be automatically opened and closed and the radiator-tubes be cleansed from soot.

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

Figure 1 is a view in elevation of a heat-radiator apparatus constructed in accordance
20 with this invention. Fig. 2 is a vertical section thereof, and Fig. 3 is a horizontal section on the line *x x* of Fig. 1.

In the construction of this invention 1 indicates a heating-drum or section of pipe connected with or leading from a stove, furnace,
25 or other heating apparatus. The drum 1 is provided in its lower portion with a spiral flange, 2, on a vertical rod, 3, mounted on a horizontal bracket-arm, 4, extending from the
30 side of the lower end of drum 1, by means of which spiral flange 2 the heat ascending in drum 1 is deflected.

Above the spiral flange 2 are located a series of horizontal tubes, 5 5', extending across
35 the drum 1, and having their ends open to the air surrounding the drum. The tubes are mounted in the drum so as to turn, and are provided with suitable operating crank-handles, 6. The tubes 5 are constructed with longitudinal
40 flanges 7, and are so arranged in the drum with relation to each other that the flanges 7 not only serve as dampers, but also act to scrape the exterior of the adjacent tube and clean it from soot. The tubes 5 may be
45 rotated by the handles 6 to open and close the dampers formed by the flanges 7 or to clean them of soot. One of the tubes 5 is also automatically rotated to regulate the damper by the following device: In the lower part of
50 drum 1 is located a spiral rod, 8, secured at its lower end to the drum and connected at

its upper end by a pin, 9, thereon extending through a curved slot, 10, in the side of the drum, with a lever-arm, 11, pivoted at one end on the outside of the drum and having
55 its other forked end, 12, engaging a crank-handle, 6, of one of the tubes 5. The spiral rod 8 may be made of metal or a mineral—such as iron, copper, brass, bismuth, &c.—which will expand and contract, so as to ef-
60 ficiently act to operate the lever-arm 11 and rotate the tube 5, connected therewith. By means of this construction the spiral rod 8 will be so affected by the heat as to expand and automatically regulate the damper. Upon
65 the fire in the stove or furnace attaining a certain heat the spiral rod 8 will be lengthened sufficiently to raise the lever 11 and handle 6 and rotate the tube 5. The flanges 7 on tube 5 being vertical, upon the tube being
70 rotated, as just described, the flanges 7 will be brought to a horizontal position with their edges against the wall of the drum and the adjacent tube, 5, thereby partly closing and regulating the draft.
75

In addition to the flanges 7 for scraping off the soot from the adjacent tubes, the lowest tube, 5', at the top of the spiral flange 2 has adjacent to and parallel with it a rod, 13, by means of which, on rotating the tube 5', the
80 soot is scraped off therefrom. With the tubes 5 arranged across the heater the air surrounding the drum and passing through the tubes 5 will be thoroughly heated, the tubes 5 receiving the full effect of the hot air ascend-
85 ing in drum 1 by the radiation of heat over spiral flange 2 and between the irregularly-placed tubes.

By means of a heat-radiator apparatus constructed in accordance with this invention
90 the heat may be effectively radiated and automatically checked and the soot readily removed.

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

1. A heat-radiator consisting of a heating-drum having a series of rotary tubes with open ends, longitudinal flanges, and handles for operating the tubes, the latter being ar-
100 ranged across the drum and their flanges of a depth equal to the distance between the

tubes, substantially as shown and described.

2. A heat-radiator consisting of a heating-drum having transverse rotary tubes with open ends, longitudinal flanges, and operating-
5 handles, the flanges on one side being equal to the distance between the tubes and the walls of the drum, the flanges thereby serving as soot-scrapers and dampers, substantially as shown and described.

10 3. A heat-radiator consisting of a heating-drum having transverse rotary tubes with open ends, soot-scraper and damper-flanges and operating-handles, and a vertical spiral flange located beneath the tubes, substantially
15 as shown and described.

4. A heat-radiator consisting of a heating-drum having transverse rotary tubes with open ends, soot-scraper and damper-flanges and operating-handles, and a spiral expansi-
20 ble rod having one end connected by a lever to one of the tube-operating handles, substantially as shown and described.

5. In a heat-radiator, a transverse rotary tube with operating-handle, and a soot-scraper rod adjacent to and parallel with the rotary
25 tube, substantially as shown and described.

6. A heat-radiator consisting of drum 1, having the vertical spiral flange 2 mounted in its lower end, the transverse rotary tubes
5, located above the spiral flange 2 with open
30 ends, soot-scraper and damper-flanges 7 and operating-handles 6, and the expansible spiral rod 8, secured in the lower part of drum, a lever pivoted on the outside of the drum and pivotally connected to the upper end of rod 8,
35 and having a forked end, 12, engaging one of the lever-handles 6, substantially as shown and described.

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Witnesses:

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