

No. 621,359.

Patented Mar. 21, 1899.

E. E. MILLER.

WATER TANK HEATER AND FEED COOKER.

(Application filed Feb. 5, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

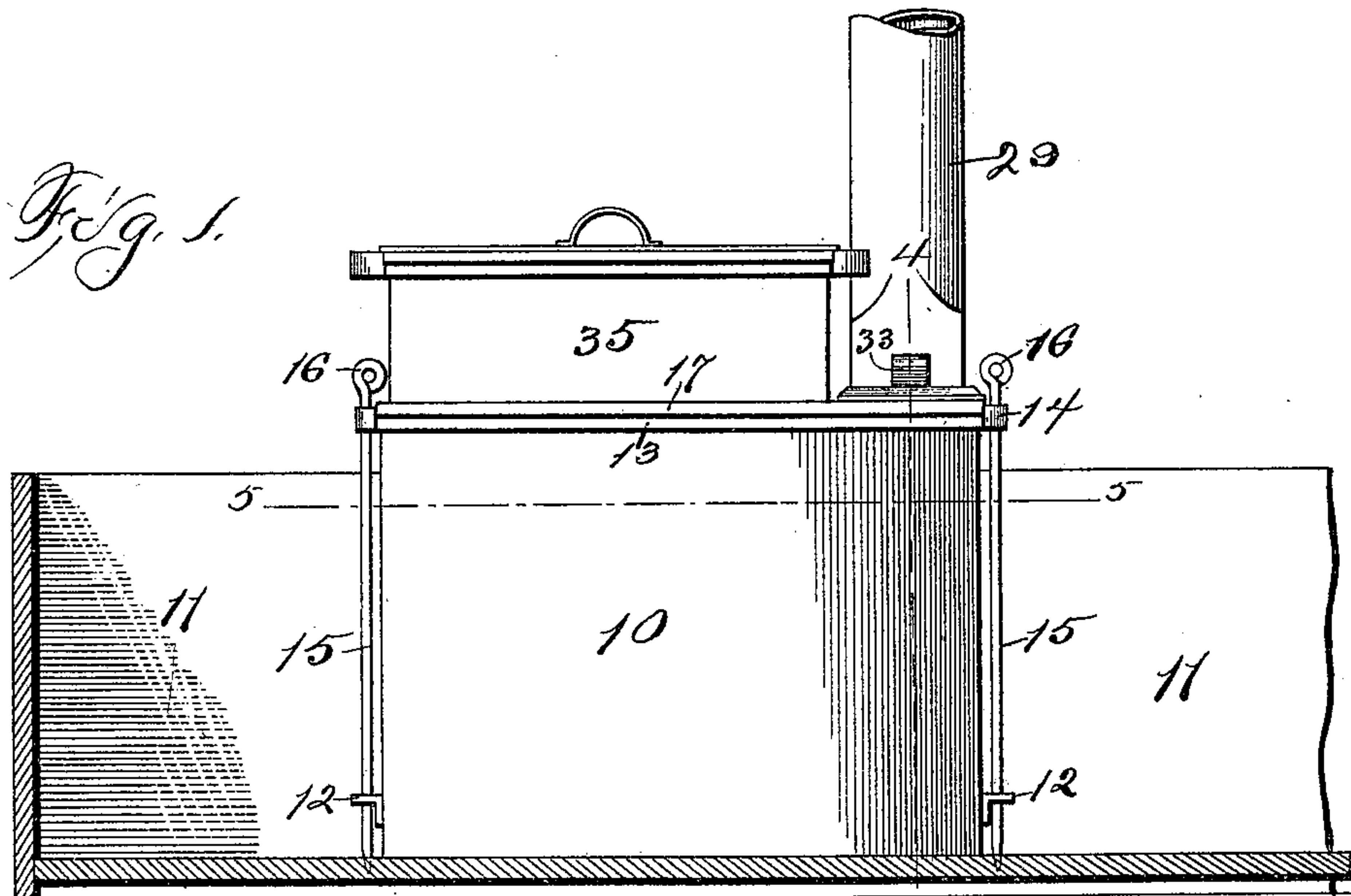


Fig. 2.

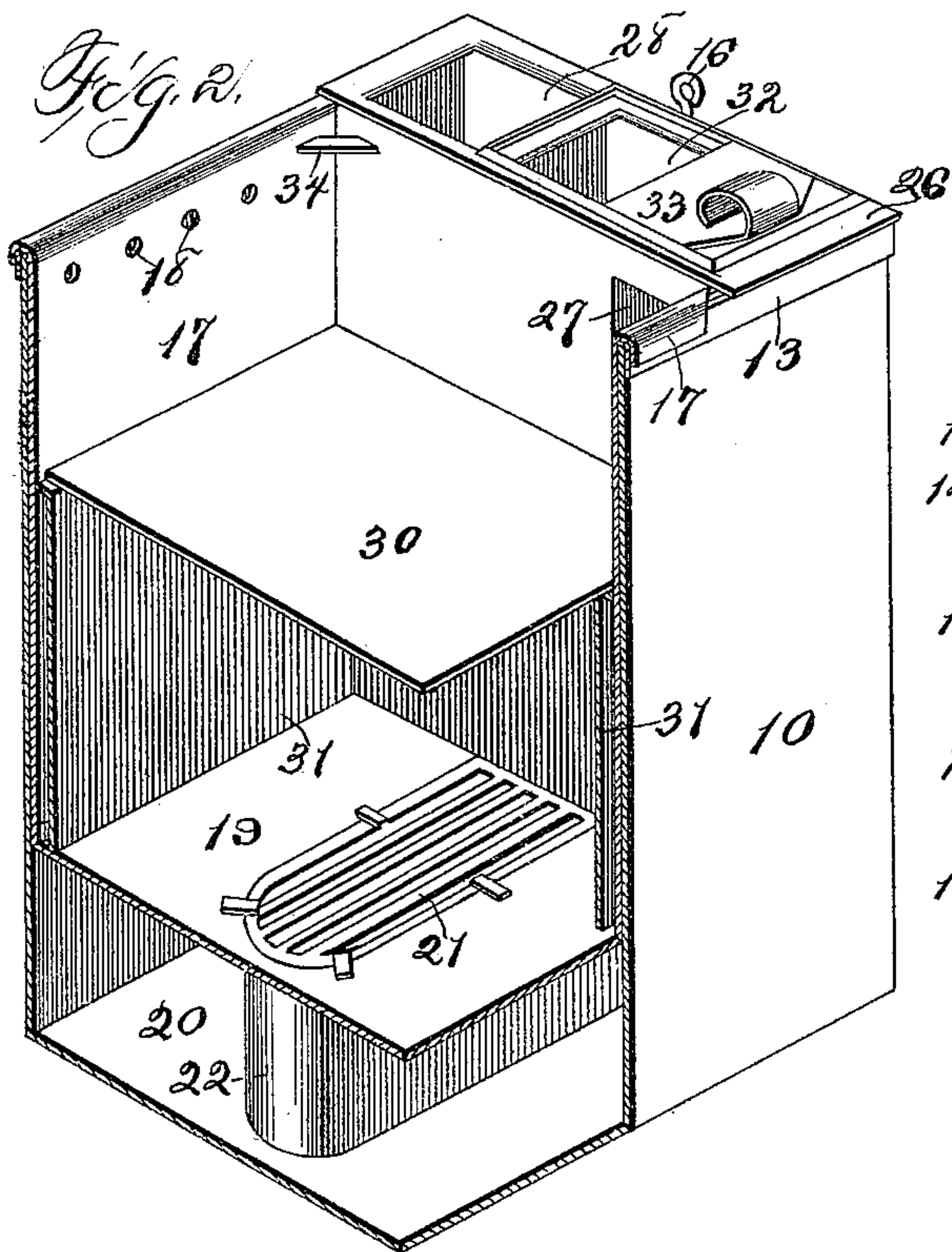
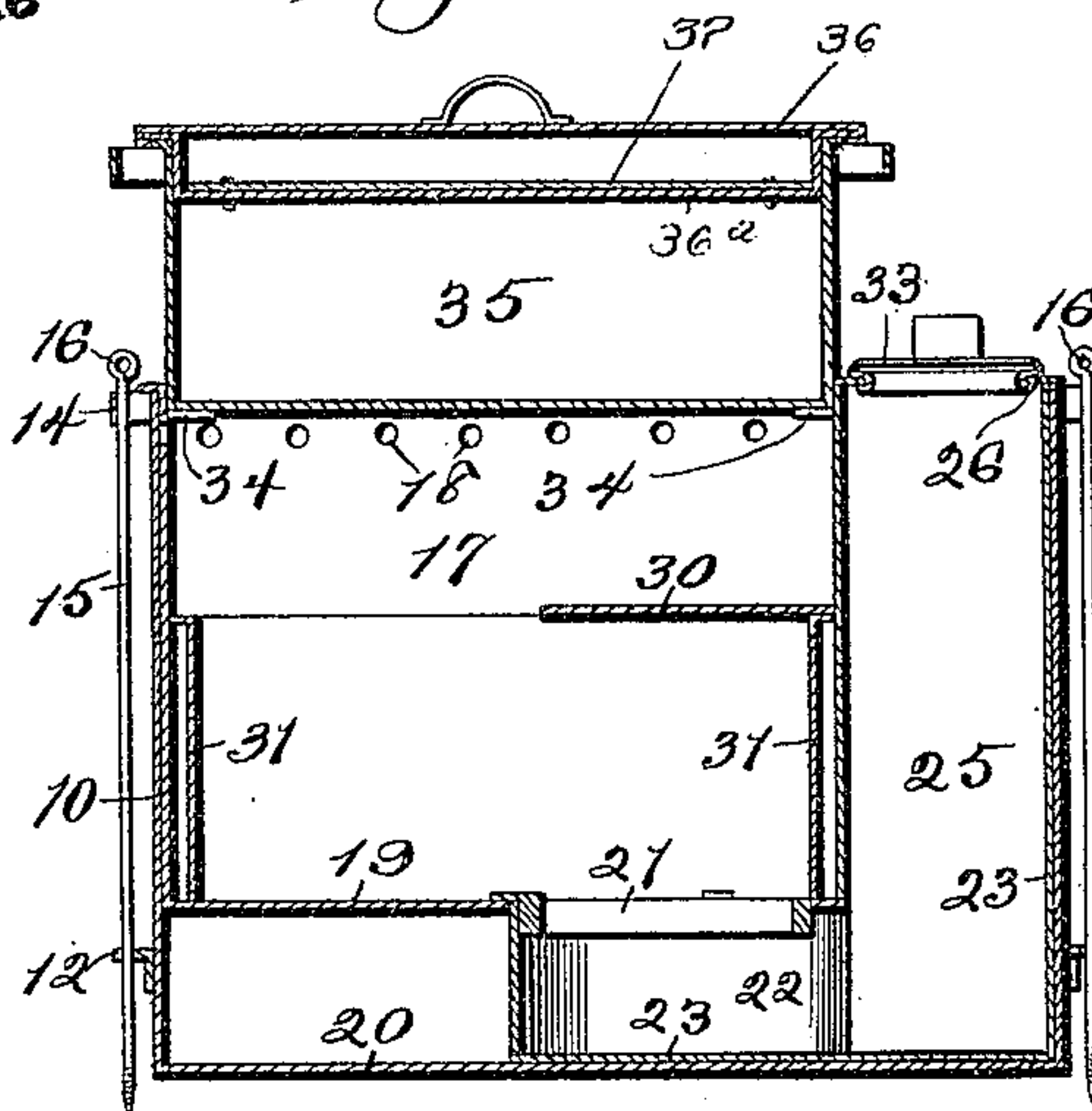


Fig. 3.



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S. C. Sweet.

Inventor: Edward E. Miller;
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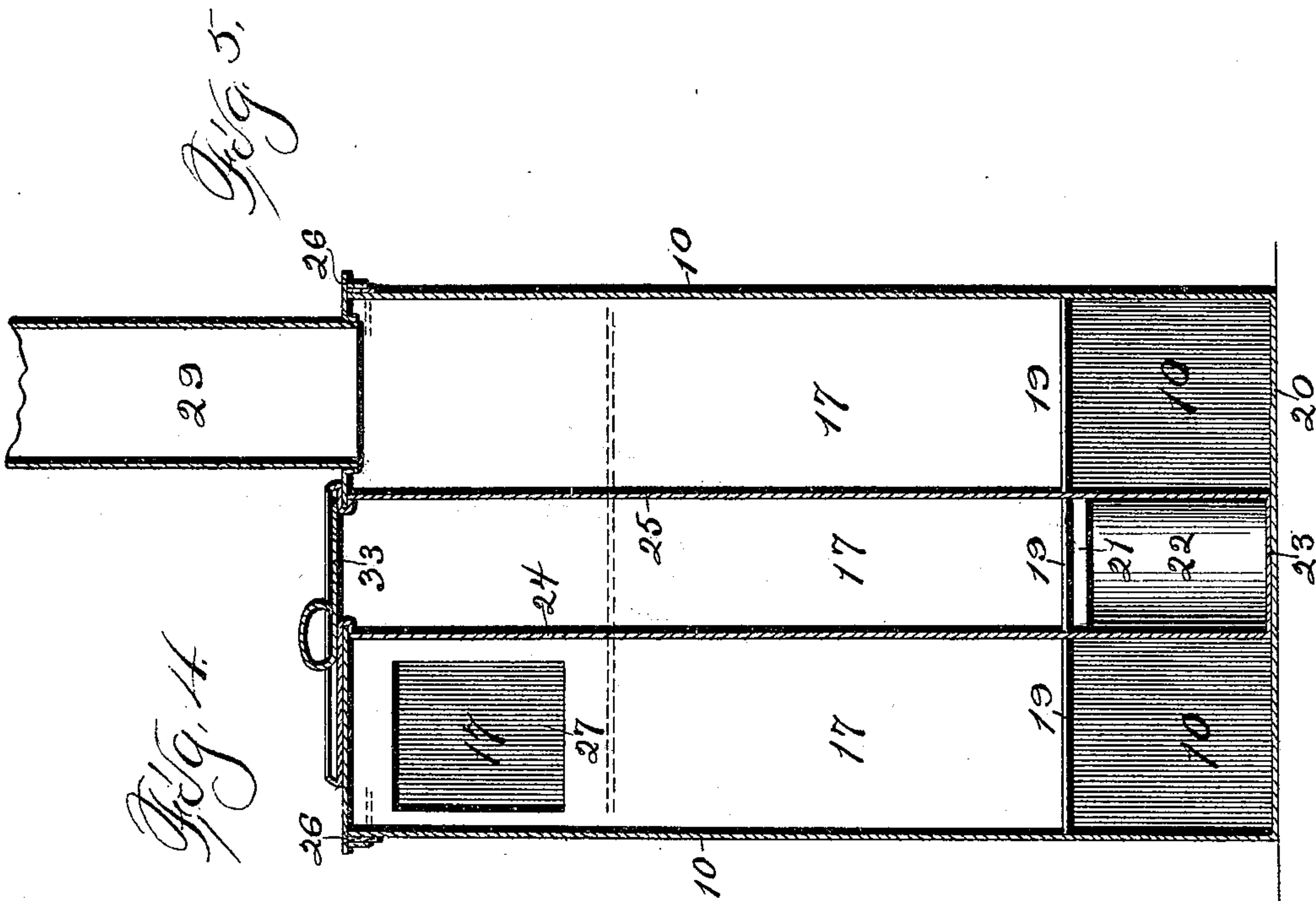
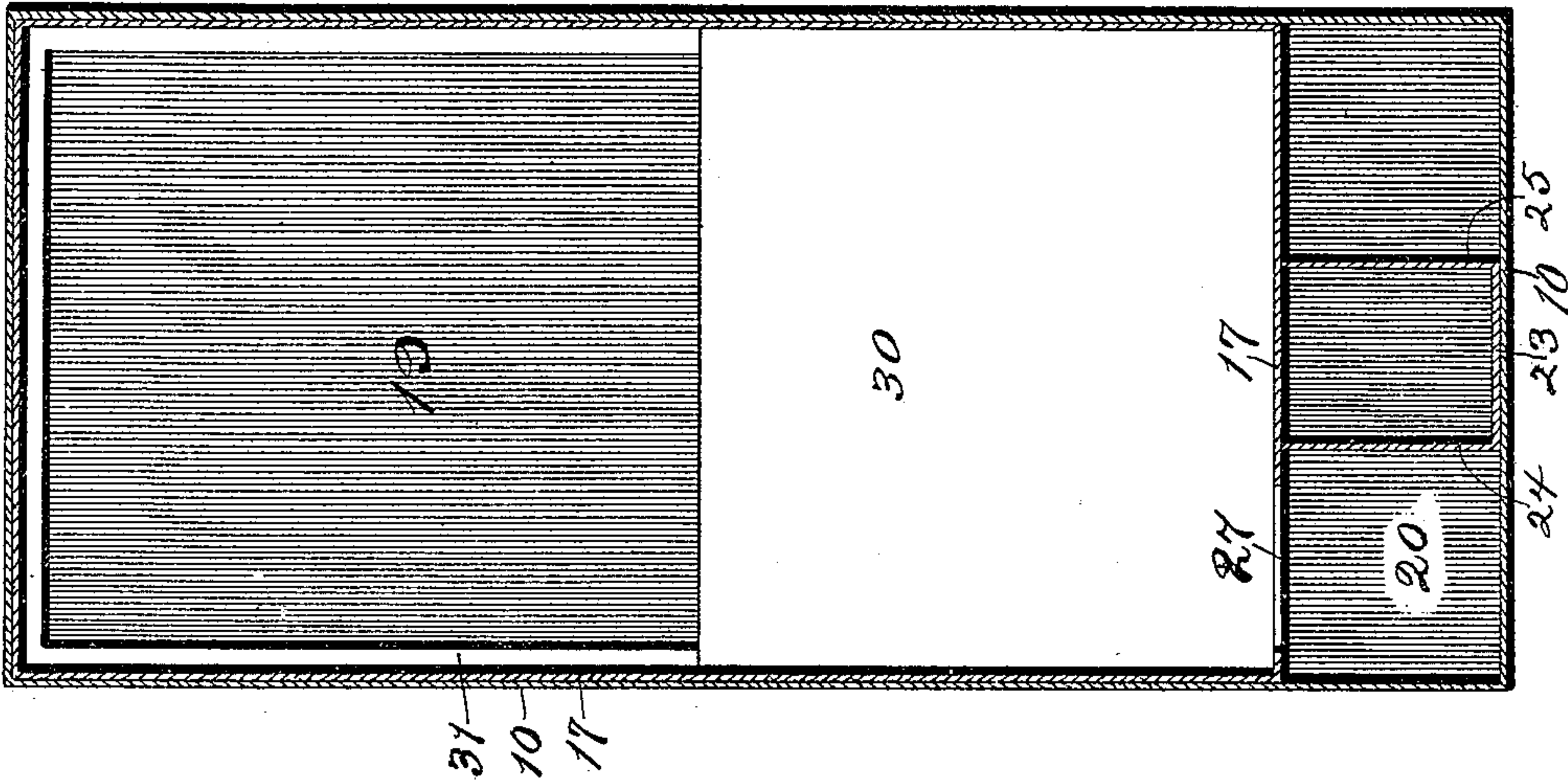
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WATER TANK HEATER AND FEED COOKER.

(Application filed Feb. 5, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWARD E. MILLER, OF ELMA, IOWA.

WATER-TANK HEATER AND FEED-COOKER.

SPECIFICATION forming part of Letters Patent No. 621,359, dated March 21, 1899.

Application filed February 5, 1898. Serial No. 669,199. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. MILLER, a citizen of the United States, residing at Elma, in the county of Howard and State of Iowa, have invented a new and useful Water-Tank Heater and Feed-Cooker, of which the following is a specification.

The object of this invention is to provide improved means for heating a water-tank and cooking feed.

My invention consists in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, illustrating the manner of mounting my device in a tank. Fig. 2 is a perspective, partly in section, illustrating the structure of my heater. Fig. 3 is a vertical longitudinal section of the heater. Fig. 4 is a vertical transverse section of the heater on the indicated line 4 4 of Fig. 1 and on an enlarged scale. Fig. 5 is a horizontal section of the heater on the indicated line 5 5 of Fig. 1 and on an enlarged scale.

In the construction of the heater, as shown, the numeral 10 designates a casing or shell having sides, ends, and bottom rigidly connected and hermetically sealed. The casing 10 is open at its top, and the upper margins of its sides and ends are straight and plane with the body portions thereof. The casing 10 is mounted in a water-tank or drinking-trough 11 and preferably is spaced apart from either the sides or ends of said tank.

Ears 12 are fixed to and project outwardly from the sides of the heater-casing 10 and are apertured vertically. A band or strap 13 is mounted on and surrounds the casing 10 at and on the outer surface of the upper margin of the sides and ends of said casing. The band or strap 13 is offset outwardly at intervals to form loops 14 or spaces between said band and the casing in vertical alinement with the ears 12. Screw-rods 14 are vertically positioned in and traverse the loops of the band 13 and the apertures of the ears 12. The screw-rods 15 are formed with eyes 16 on their upper ends and screw-threaded attenuated point portions opposite said eyes. The point portions of the screw-rods 15 are screw-

seated in the bottom of the tank or drinking-trough 11 and firmly secure the casing 10 in the desired position in said tank.

Within the casing 10 is mounted a fire-box 17 of such width and length as to fit snugly to the interior of the casing. The upper margins of the sides of the fire-box 17 are turned outwardly and downwardly over the upper margins of the casing 10 and the strap or band 13. Apertures 18 are formed in the sides of the fire-box, near the upper margins thereof, and in a horizontal row to permit the escape of air from the casing 10 when the fire-box is being moved downwardly to a proper position therein and also to prevent the condensation of moisture on the outside of the fire-box 17 and cause the escape of such moisture as emanates from the fuel through the smoke-flue. The bottom 19 of the fire-box 17 is spaced apart from the rear end of the casing. An opening is formed in the center of the rear end of the bottom 19, and a grate 21 is mounted on said bottom and depends through said opening. An ash-chamber 22 is formed beneath the grate 21 by vertically positioning a piece of sheet metal between the bottoms 19 20 and securing the upper margin thereof to the bottom 19 on the sides and front end of the grate-opening. The rear end of the ash-chamber is open to and communicates with the space between the rear end of the bottom 19 and the rear end wall of the casing 10. A bottom 23 is provided for the ash-chamber and extends rearwardly across the space to the rear wall of the casing 10, is bent or extended upwardly along said rear wall to the top of the casing, and forms the rear wall of a draft-flue. The front wall of the draft-flue is formed by the rear wall of the fire-box, and partitions 24 25 connect said rear wall of the fire-box and the margins or long sides of the rear wall of the draft-flue. A cover-plate 26 is mounted on the upper edges of the casing 10 and rear wall of the fire-box and covers the space between said rear wall of the fire-box and the rear wall of the casing. The vertical flue or space between the partition 24 and the nearest side wall of the casing 10 communicates at its upper end with the upper portion of the fire-box through an aperture 27 in the rear wall of the fire-box and forms one portion or leg of a smoke-flue, ex-

tending downwardly from said aperture to the bottom 20, along said bottom on one side of the ash-chamber, around the front end of the ash-chamber, and along the opposite side 5 of said ash-chamber to the lower end of the other vertical leg of the smoke-flue formed by the space between the partition 25 and the side wall of the casing 10 nearest thereto.

The second or discharge leg of the smoke- 10 flue communicates, through an aperture 28 in the cover-plate 26, with the lower end of a smoke stack or pipe 29, mounted thereon.

A deflector-plate 30 is mounted horizon- 15 tally across the fire-box approximately mid-way of the height of said fire-box. One end of the deflector-plate 30 is in contact with rear wall of the fire-box, and said plate extends forwardly approximately one-half the length of the box, thereby positioning the 20 plate directly over the grate 21. The portions of walls of the fire-box below the horizontal plane of the deflector-plate 30 are provided with a lining 31, spaced apart and set inwardly from the walls, the upper margins 25 of the lining being turned outwardly against the walls to form a tight joint therewith and also provide a seat for the deflector-plate. The upper end of the draft-flue communicates with the atmosphere exterior of the heater 30 through an aperture 32 in the cover-plate 26, and a damper 33 is slidably mounted on the cover-plate and arranged for manual adjustment to control the draft-flue and regulate and determine the flow of air through the 35 heater. The deflector-plate 30 is shown by dotted lines in Fig. 4.

Supporting-lugs 34 are mounted within and at the angles of the walls of the fire-box adjacent to the upper margins of said walls, and 40 a receptacle or boiler 35 is mounted in the upper portion of the fire-box and is carried by the supporting-lugs, the lower face of the receptacle being in a plane just above the apertures 18 and 27, thereby forming a smooth 45 roof for the fire-box. The boiler or receptacle 35 may be supplied with material to be cooked for stock-food and heated by the heat rising

from the grate in the front portion of the fire-box and traveling rearwardly above the deflector-plate 30.

The boiler 35 is provided with a cover or lid 50 36, of hollow construction, formed with flanges at its margins to overlap the sides of the boiler and sustain the cover, and a depressed portion or bottom 36^a so shaped and arranged 55 as to depend within the boiler. The bottom 36^a of the boiler-cover 36 is lined with a sheet 37 of asbestos mounted on the upper or inner face thereof and riveted or otherwise secured thereto. The asbestos lining 37 limits and 60 minimizes the radiation of heat from the boiler and adds materially to the usefulness of the cover. The cover 36 may be employed directly upon the fire-box when it is desirable not to use the boiler and will form a smooth 65 non-radiating roof for the fire-box.

The casing 10 is surrounded by water in the tank or trough 11, and the heat radiated later- 70 ally from the fire-box through said casing is sufficient to produce and maintain a desirable temperature in the tank.

One of the valuable features of my invention is to be found in the separable characteristics of the heater, whereby the fire-box 75 may be removed and the flues, passages, and chambers readily and conveniently cleaned.

I claim as my invention—

1. A tank 10 having a fixed band 13 and integral loops 14 in said band at its top and fixed perforated ears 12 at its lower portion 80 and rods having screws on their lower ends extended through said loops and ears as shown and described for the purposes stated.

2. A heater comprising a casing, a fire-box in said casing, a boiler in the fire-box, a de- 85 flector-plate between the grate of the fire-box and the boiler, draft-passages through the fire-box and traversing the space between the deflector-plate and boiler, and a damper controlling said draft-passages.

EDWARD E. MILLER.

Witnesses:

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