

(No Model.)

3 Sheets—Sheet 1.

W. W. BATCHELDER.
OIL STOVE OR LAMP.

No. 420,221.

Patented Jan. 28, 1890

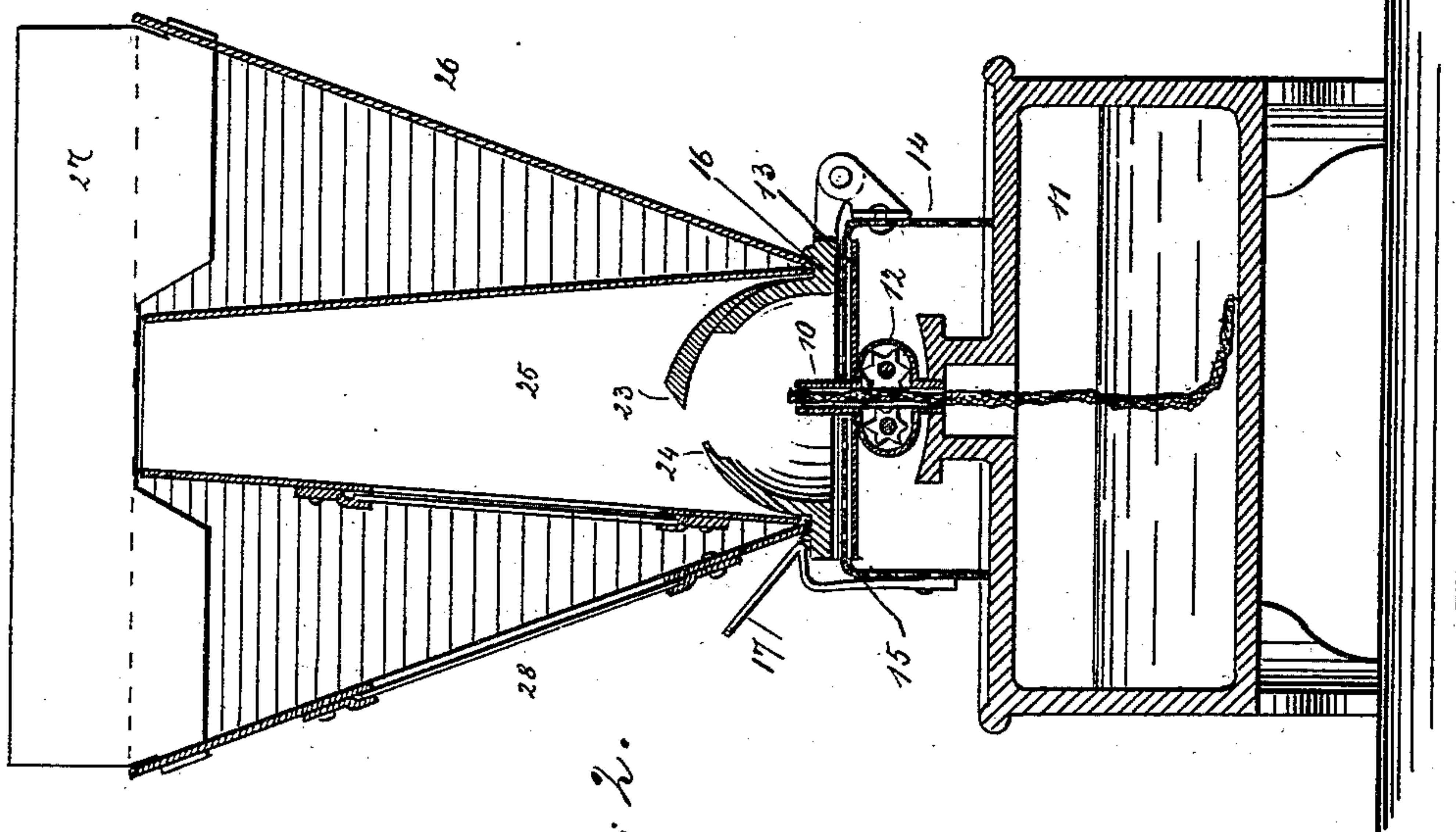
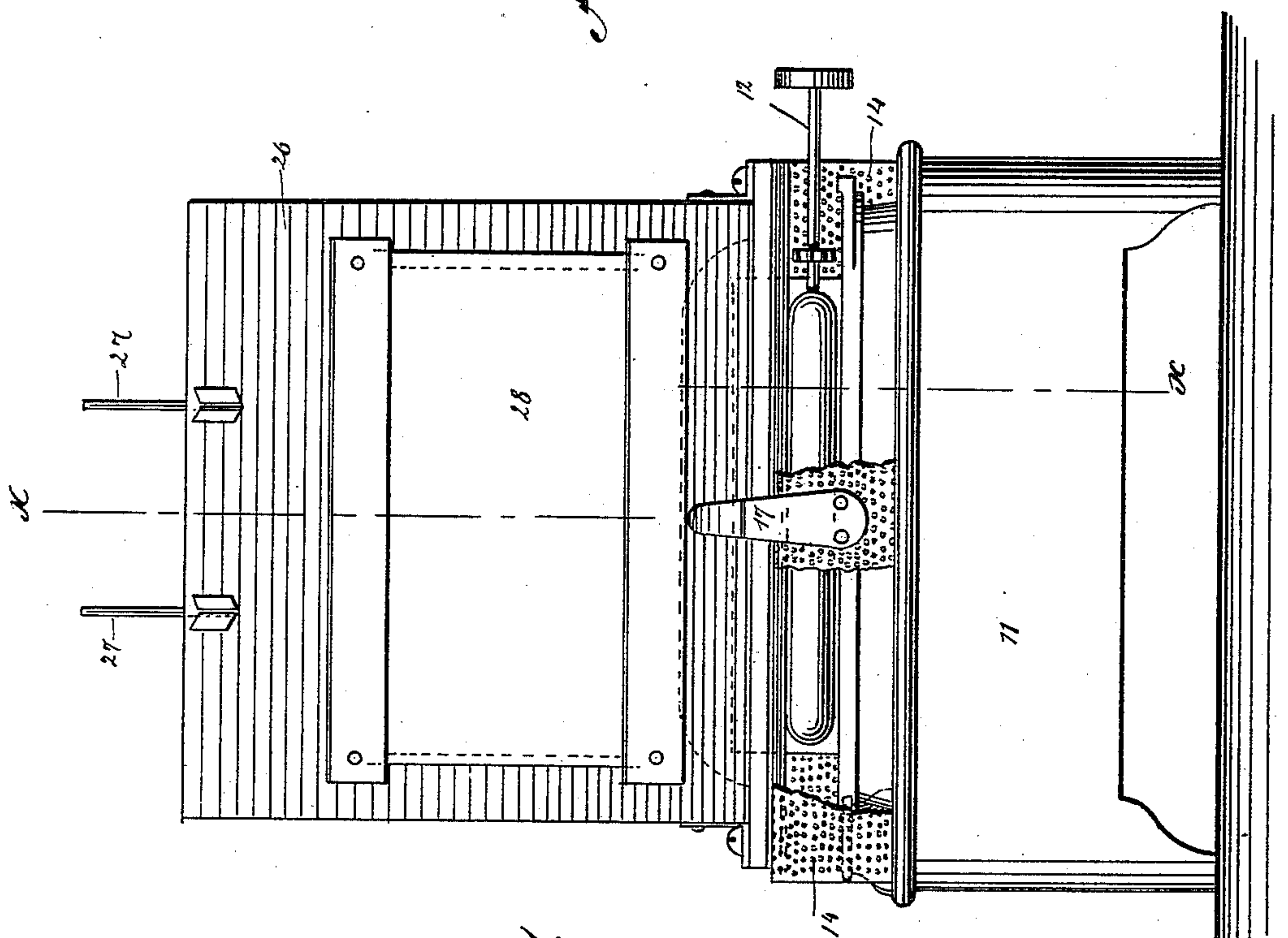


Fig: 2.



1897.

WITNESSES:

WITNESSES:
Chas. Viola.
C. Sedgwick.

INVENTOR:

W. W. Batchelder
BY Munn & Co

ATTORNEYS.

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Fig. 3.

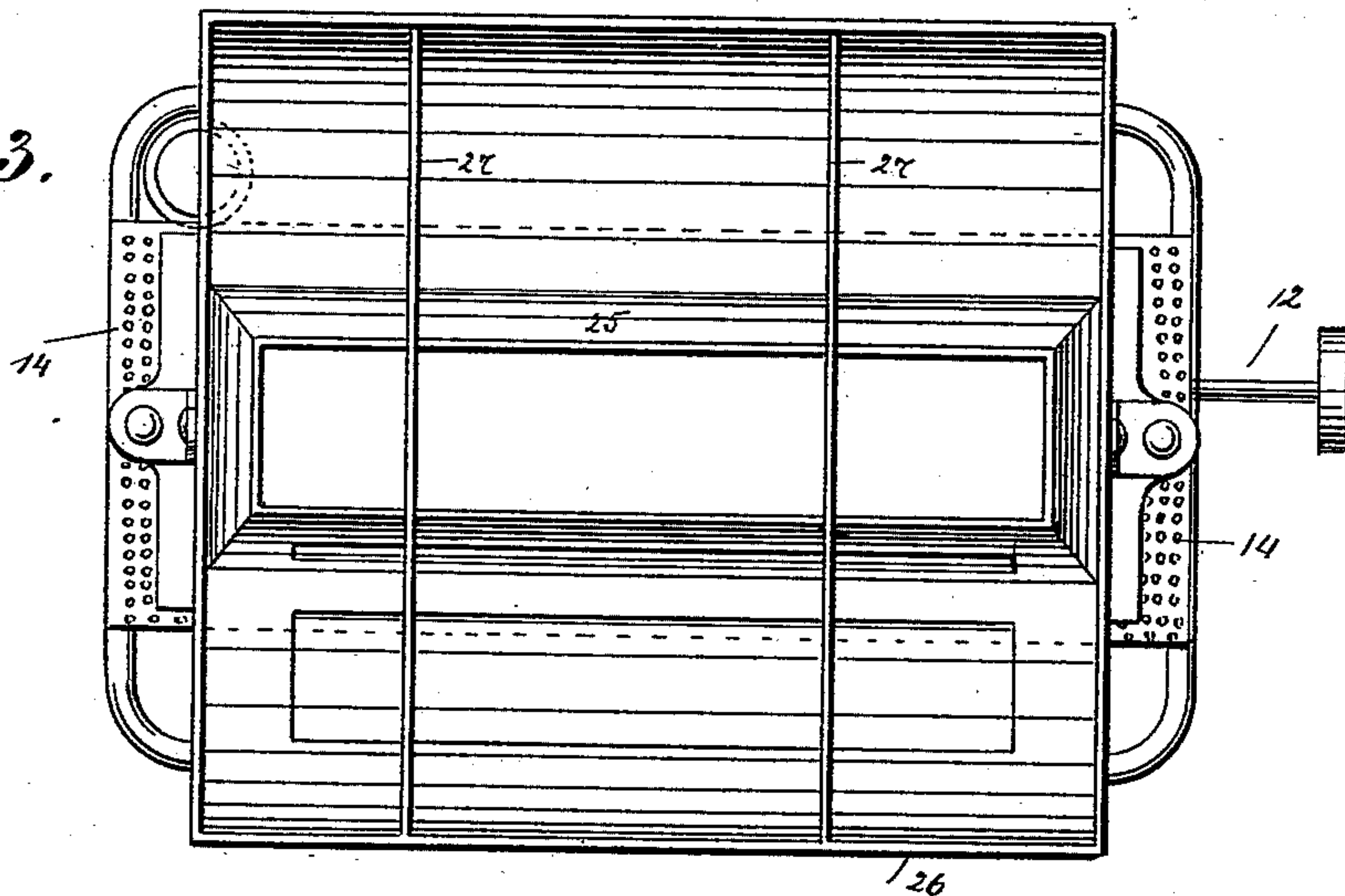


Fig. 4.

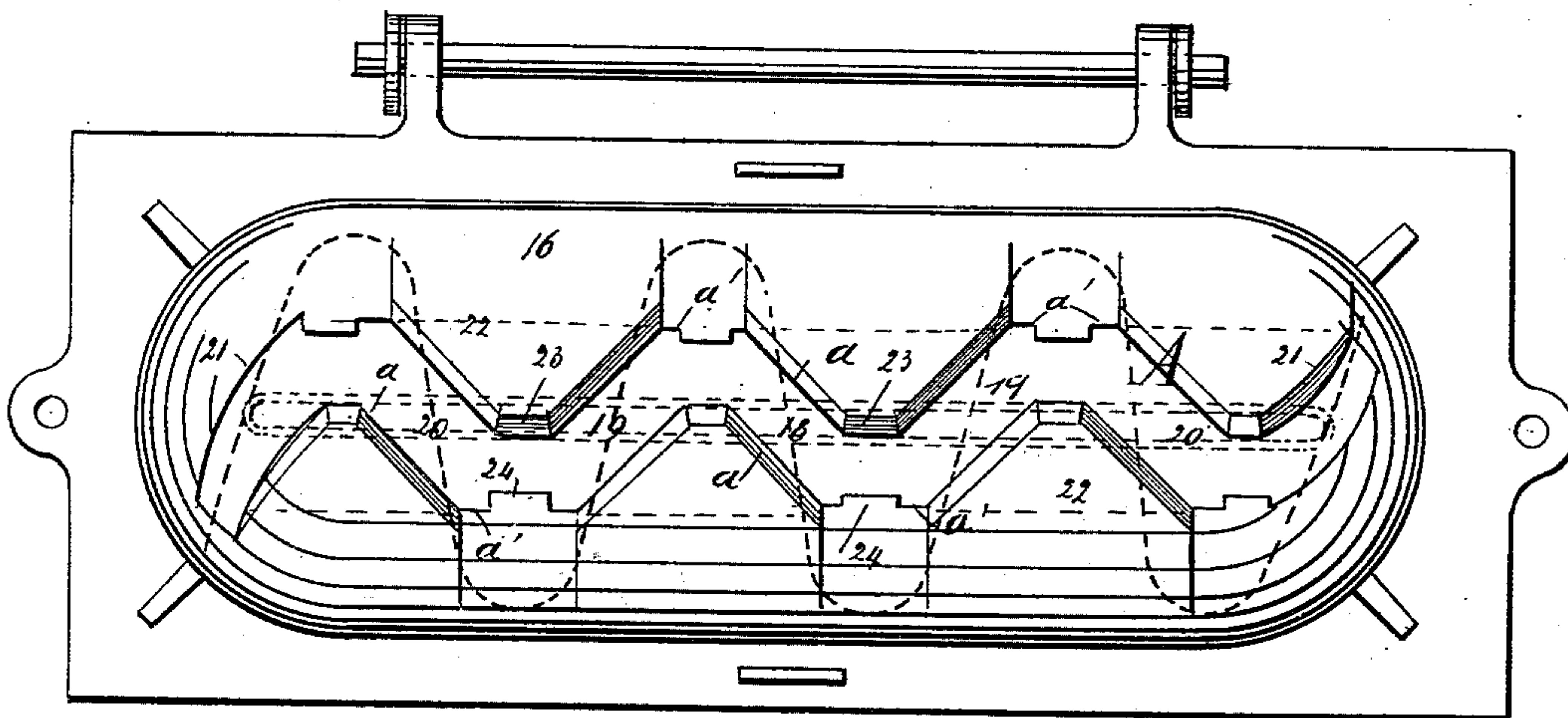
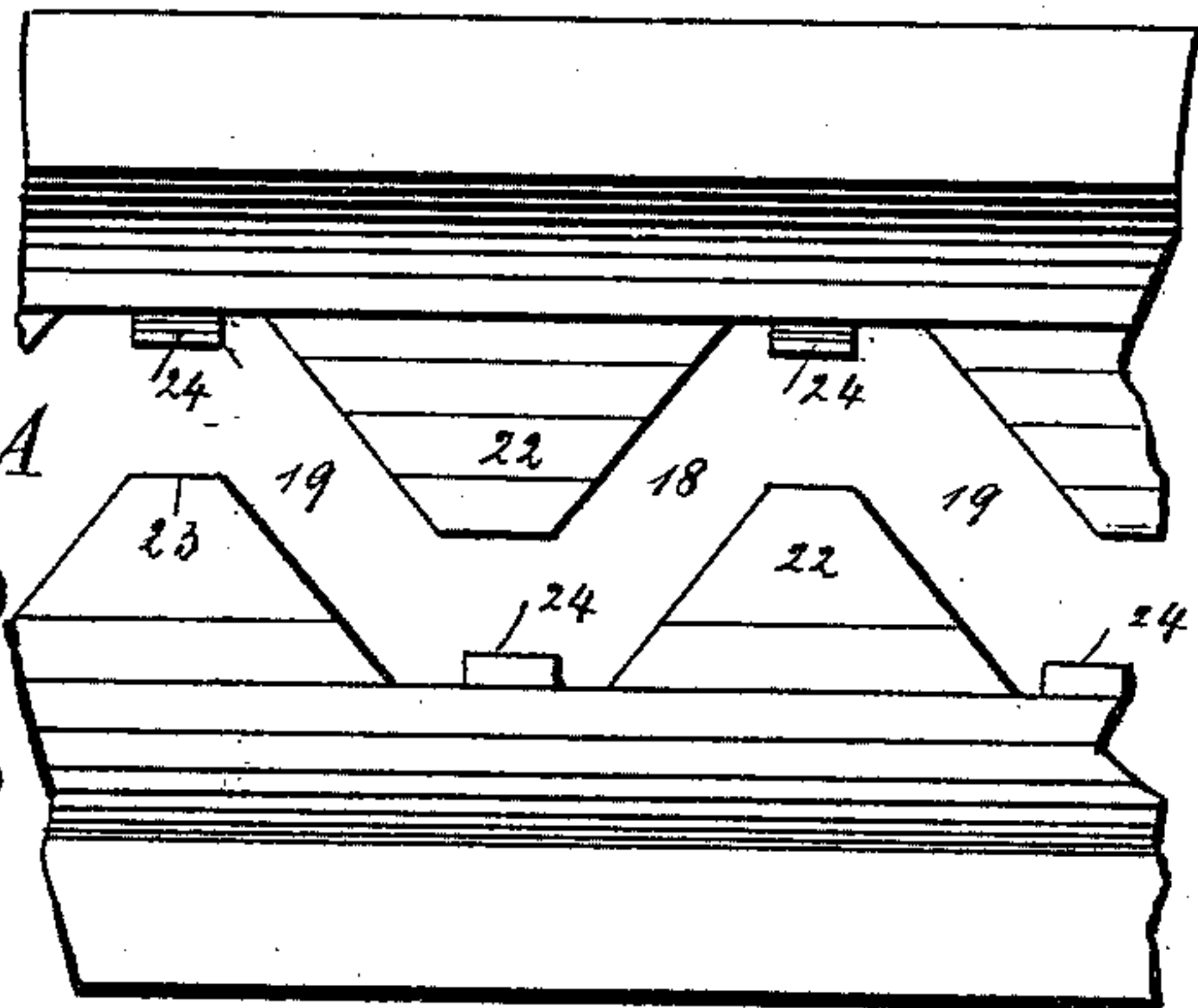


Fig. 5.



WITNESSES:

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C. Sedgwick

INVENTOR:

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(No Model.)

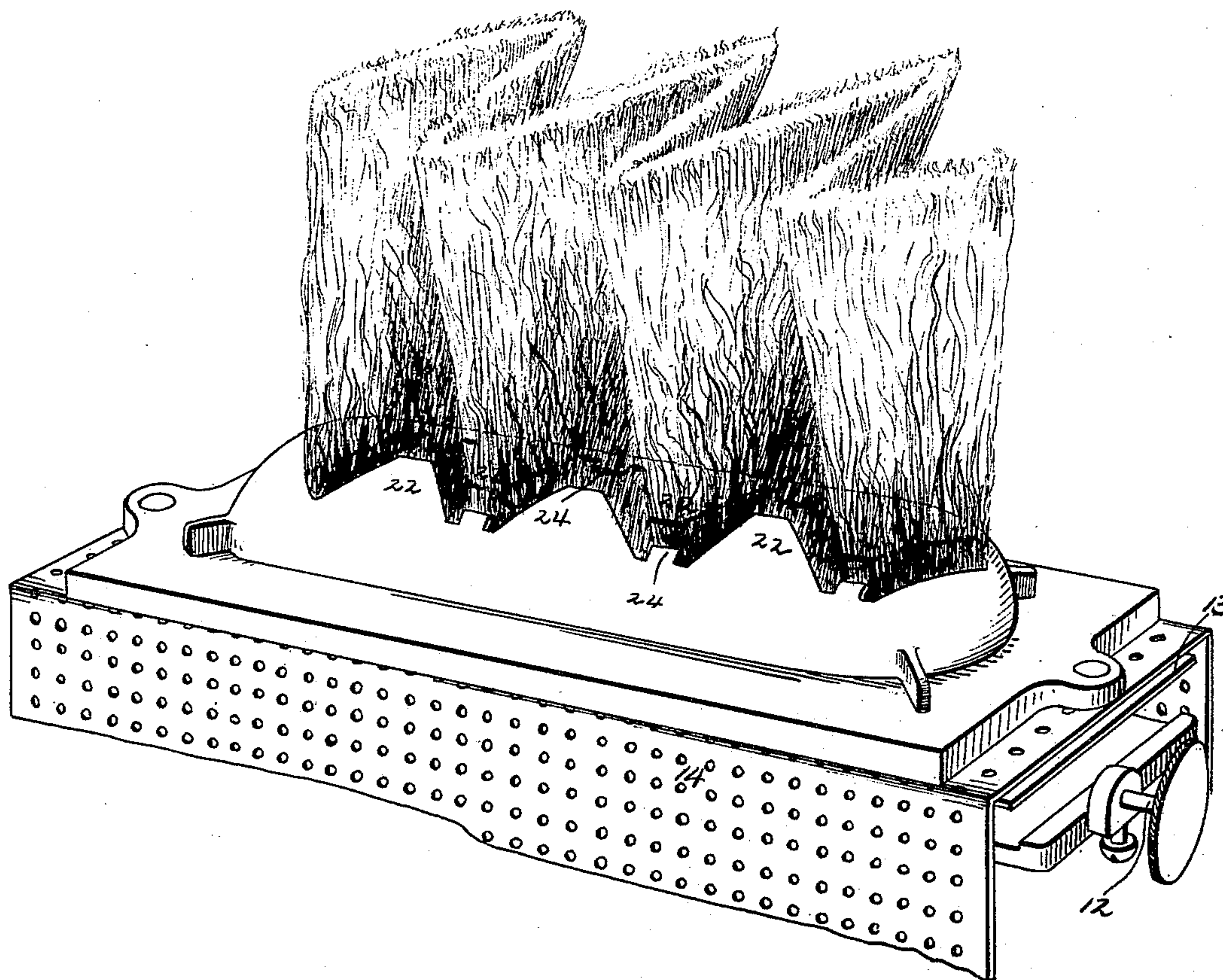
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Fig. 6.



WITNESSES:

Chas. Nida
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INVENTOR:

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UNITED STATES PATENT OFFICE.

WILLIAM W. BATCHELDER, OF NEW YORK, N. Y.

OIL STOVE OR LAMP.

SPECIFICATION forming part of Letters Patent No. 420,221, dated January 28, 1890.

Application filed August 2, 1889. Serial No. 319,504. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. BATCHELDER, of New York city, in the county and State of New York, have invented a new and
5 useful Improvement in Oil Stoves or Lamps, of which the following is a full, clear, and exact description.

My invention relates to an improvement in oil stoves or lamps, and has for its principal
10 object to provide a burner capable of producing the largest possible surface of flame by causing the said flame to burn in a zigzag, fluted, or ruffle shape, thereby obtaining a
15 flame-surface greatly in excess of the area which the width of the wick would otherwise afford and a maximum amount of light and heat from a minimum quantity of oil.

A further object of the invention is to provide a simple and effective means for preventing the flame from increasing or creeping
20 higher and smoking after the lamp has been well heated, and preventing the charring of the wick if the oil becomes exhausted; also, to lessen the liability of heating the oil-fount, all of which objectionable features are
25 completely or to a great extent remedied by the use of a heat conducting or radiating plate in connection with the wick-tube, which will be hereinafter fully described.

30 The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a side elevation of an oil-stove constructed in accordance with my improvement, a portion of the body of the casing being broken away. Fig. 2 is a transverse section on line $x x$ of Fig. 1. Fig. 3 is a plan view. Fig. 4 is an enlarged plan view of the burner or burner-cap, and Fig. 5 is a bottom
40 plan of a portion of the burner-cap; and Fig. 6 is a perspective view of a portion of the burner and a portion of the casing, the chimney and jacket being removed to better illustrate the zigzag, fluted, or ruffle form of the
50 flame.

The wick-tube 10 of the oil fountain or reservoir 11 is provided with the usual wick-

spindles 12, and between the casing for the spindles and the ratchet-wheels carried by the latter and the upper end of the wick-
55 tube a heat conducting or radiating slotted plate 13 is rigidly secured to the said tube by soldering the walls of the slot to the tube; or said conducting or radiating plate may be connected with the wick-tube by any other
60 permanent metallic union known to the art that will constitute a good heat-conducting connection with the wick-tube. When this metallic union of the radiator and the wick-tube is effected, the heat drawn or conducted from
65 the wick-tube by the heat conducting and radiating plate or plates (as a number of the plates may be used one above the other, with an air-space between) is radiated by the said
70 plate, carried upward and utilized, and the wick-tube and plate are cooled by the ascending current of air which feeds the flame, thereby preventing the wick-tube from attaining a high degree of temperature, with
75 its attendant detrimental and extremely objectionable effects or results. The plate 13 is preferably made of about No. 19 metal gage in thickness, or a number of thin sheets may be united to form essentially that thickness and weight of metal. The plate 13 is
80 preferably perforated, as heretofore stated; but it may be made solid, if a sufficient space is provided for the circulation of air over or around it. The plate is of sufficient width and length to extend horizontally beyond the
85 sides and ends of the wick-tube.

A perforated casing 14, open at the bottom and ends and provided with the usual central slot in the back, is slid over the upper end of the wick-tube to a contact with the oil-
90 fount 11, as best shown in Fig. 2, and between the conducting-plate 13, which is within the casing, and the top and sides of the latter a space 15 is made to intervene for purposes of ventilation.

95 To one side of the casing the burner-cap 16 is hinged, being horizontally held upon the casing by a catch 17, attached to the other side of the said casing; but I desire it to be distinctly understood that I do not confine
100 myself to this mode of attachment.

The burner-cap is provided with a longitudinal serpentine flame and air passage or opening A, having preferably straight and

angular sides a and a' , as shown in Fig. 4, and the width of the angular or diagonal portion of the slot or opening at each side of the central diagonal portion 18 is increased in the ratio of one thirty-second of an inch. Thus the diagonal portions 19 are one thirty-second of an inch wider than the central portion 18 and the next diagonal portions 20 are one-sixteenth wider than the central portion.

While I prefer the width of the diagonal portions of the slot or flame and air passage or opening to be graduated as above set forth, I desire it to be understood that the proportions may be varied, or the diagonal portions of the slot may be made the same width throughout its length. The latter plan, however, is very undesirable, as the flame will not present a straight flat top, which is obtained when the preferred construction is employed.

The walls at the extremities of the flame and air passage or opening are preferably curved, as shown at 21 in Fig. 4. The under face of the cap is concaved, and the ends of the diagonal tongues or deflecting-points 22, which impart to the flame and air opening its serpentine form and extend over and beyond the wick-tube, are square, as shown at 23. The square ends of the tongues are immediately opposite the center of the straight walls a' of the flame and air passage or opening, as illustrated in Fig. 4, and from the center of each straight section of the wall a rectangular lip 24 is projected in the direction of the center of the cap, the said lips being of equal width with the square ends of the tongues. The tongues 22 are not in the same plane with the opposed lips 24, the altitude of the former being greater than that of the latter to insure the greatest possible deflection of the flame and to cause the flame to spread as much as possible. The lips 24 project to prevent the deflected points of the flame from streaming up and smoking, and the space upon either side of the said lips causes the flame to spread more and burn more even and level at the top. By this formation of the flame passage or opening the flame is deflected in opposite directions and its area greatly increased over the area which the width of the wick would otherwise afford. Thus a great increase of heat and light is obtained.

I desire it to be understood that the lips 24 may be omitted if desired, as they are not absolutely essential in producing the zigzag contour of the flame.

It will be understood that to produce the zigzag flame the ascending currents of air at opposite sides of the flame passage or opening must impinge upon the flame at an angle to each other or upon different radial lines, and in order to accomplish this result the tongues 23 at their inner ends, or that portion projecting over the cap-opening, are of greater altitude than the immediately oppo-

site wall. It will also be noticed that the tongues extend beyond a longitudinal central line drawn through the cap-opening, thereby imparting to the flame-passage or opening of the cap a positively zigzag course. By reason of the zigzag course of the flame-passage or opening the rays of light and heat are made to cross each other, and upon the principle of a corrugated reflector the radiation of the light and heat is greatly increased over the possible capacity of a straight or circular flame.

The upper edge of the walls of the flame passage or opening may be beveled, as illustrated in Fig. 4, if so desired, to facilitate the withdrawal of the cap from the sand in casting the same.

To obviate the loss of heat and to utilize the same to the best advantage, the chimney 25 is surrounded by a jacket or casing 26, secured thereto at the bottom, the sides of which jacket are preferably V-shaped or flared outward, as shown in Fig. 2.

In the drawings I have shown supporting-strips 27 as attached transversely to the jacket at the top and crossing the chimney, upon which supporting-strips the vessel to be heated is placed; but this arrangement for supporting the vessel or vessels to be heated forms no portion of the invention and may be varied at will.

The casing and chimney are each provided with a sheet of mica 28, or other transparent material, in order that the stove may emit light, and to enable the operator to see the flame, and thereby facilitate the regulation of the same.

In Fig. 6 I have illustrated the burner in perspective and also the flame, from which it will be observed that the flame is not only of a fluted, zigzag, or ruffle shape, but that the flare of the deflected portion of the flame is considerably greater at the top than at the burner, whereby I am enabled to essentially fill a chimney with a flame of a maximum heat-radiating capacity. The dimensions of the flare of the flame at its top is to some extent indicated by dotted lines in Fig. 4.

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

1. An oil-burner provided with a zigzag flame passage or opening wherewith a fluted or ruffle-shaped flame is provided, substantially as set forth.

2. An oil-burner cap provided with a zigzag flame passage or opening whereby a fluted or ruffle-shaped flame is obtained, substantially as set forth.

3. An oil-burner cap having its flame passage or opening provided on its longitudinal walls with deflecting points or tongues, those on one wall being diagonally arranged with respect to those on the other wall and all extending beyond a central longitudinal line drawn through the said opening, whereby a well-defined zigzag contour is imparted to the

walls of the said opening, as and for the purpose specified.

4. An oil-burner cap having its flame passage or opening provided with deflecting points or tongues on its longitudinal walls, those on one wall being diagonally arranged with respect to those on the other wall, the inner ends of the said tongues being at a greater altitude than the immediately-opposed wall, substantially as specified.

5. An oil-burner cap provided with a serpentine flame passage or opening having straight and diagonal or angular side walls forming a series of tongues, the inner ends whereof being of greater altitude than the immediately-opposite wall, the lower faces of said tongues being inclined or curved upwardly and inwardly, substantially as specified.

6. An oil-burner cap provided with a flame passage or opening and essentially triangular

tongues projected from its side walls, the width of the spaces intervening between the opposed side edges of the tongues being gradually increased at each side of the central space, substantially as described, whereby a zigzag flame is obtained and an even height preserved throughout the width of the flame, as specified.

7. In an oil-burner, the combination, with the wick-tube, of a radiator in the path of the ascending air-currents, and having metallic union with and constituting, essentially, an integral portion of the wick-tube, substantially as shown and described, whereby a positive connection is obtained between the wick-tube and radiator and the heat conducted by the latter from the former, as set forth.

WILLIAM W. BATCHELDER.

Witnesses:

J. T. ACKER, Jr.,

C. SEDGWICK.