

(No Model.)

J. A. CHANDLER.
VAPOR BURNER.

No. 515,423.

Patented Feb. 27, 1894.

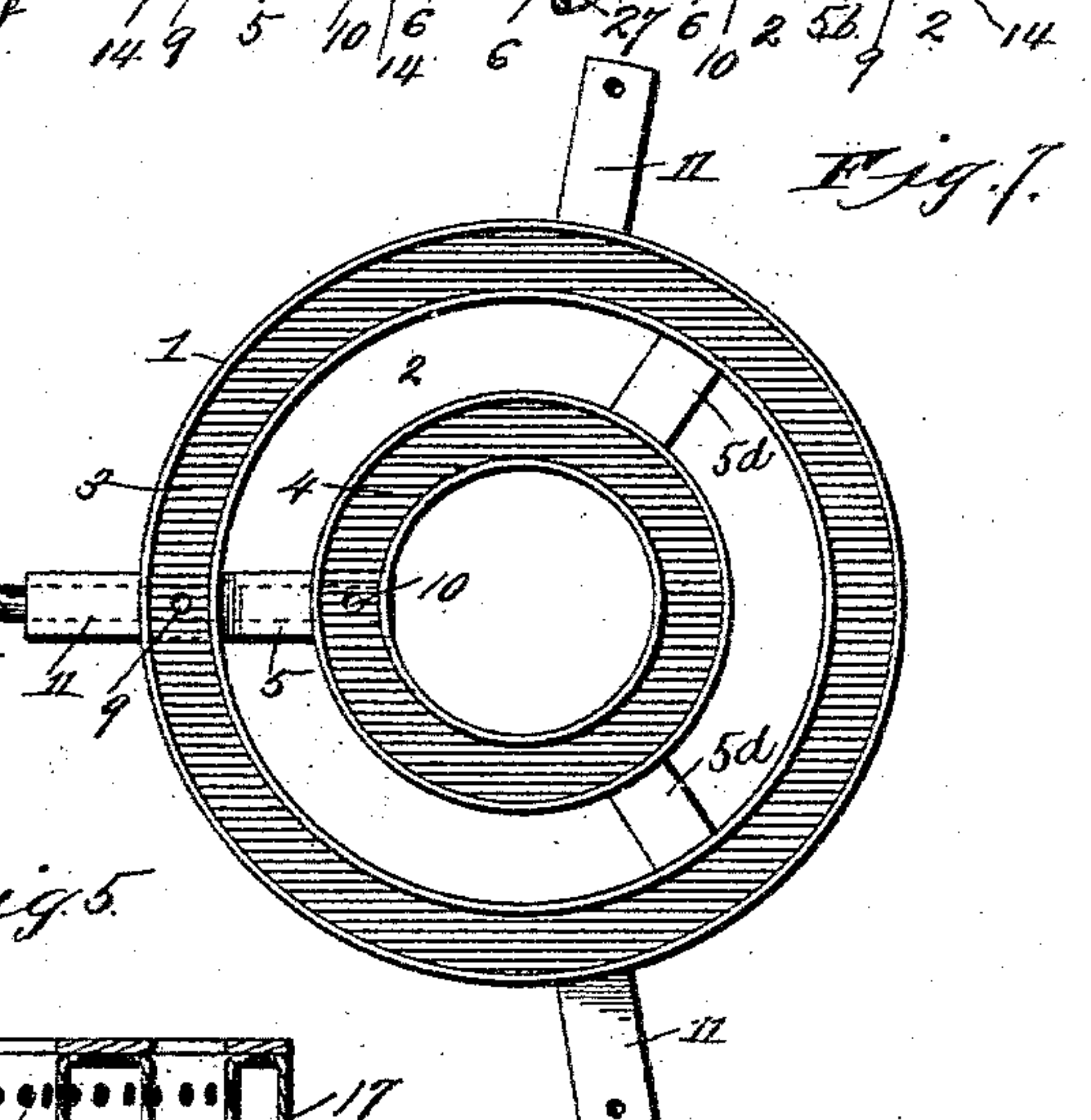
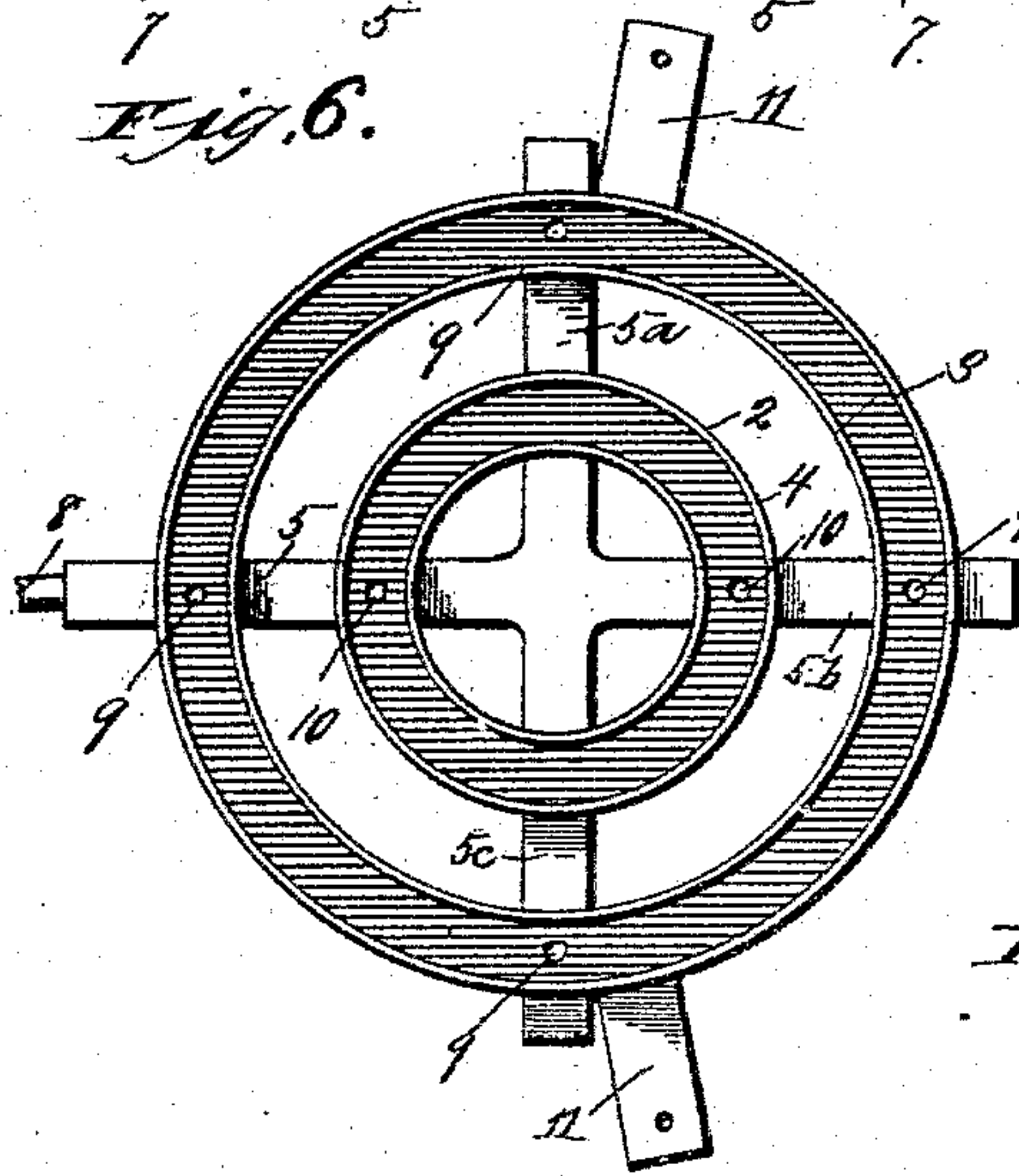
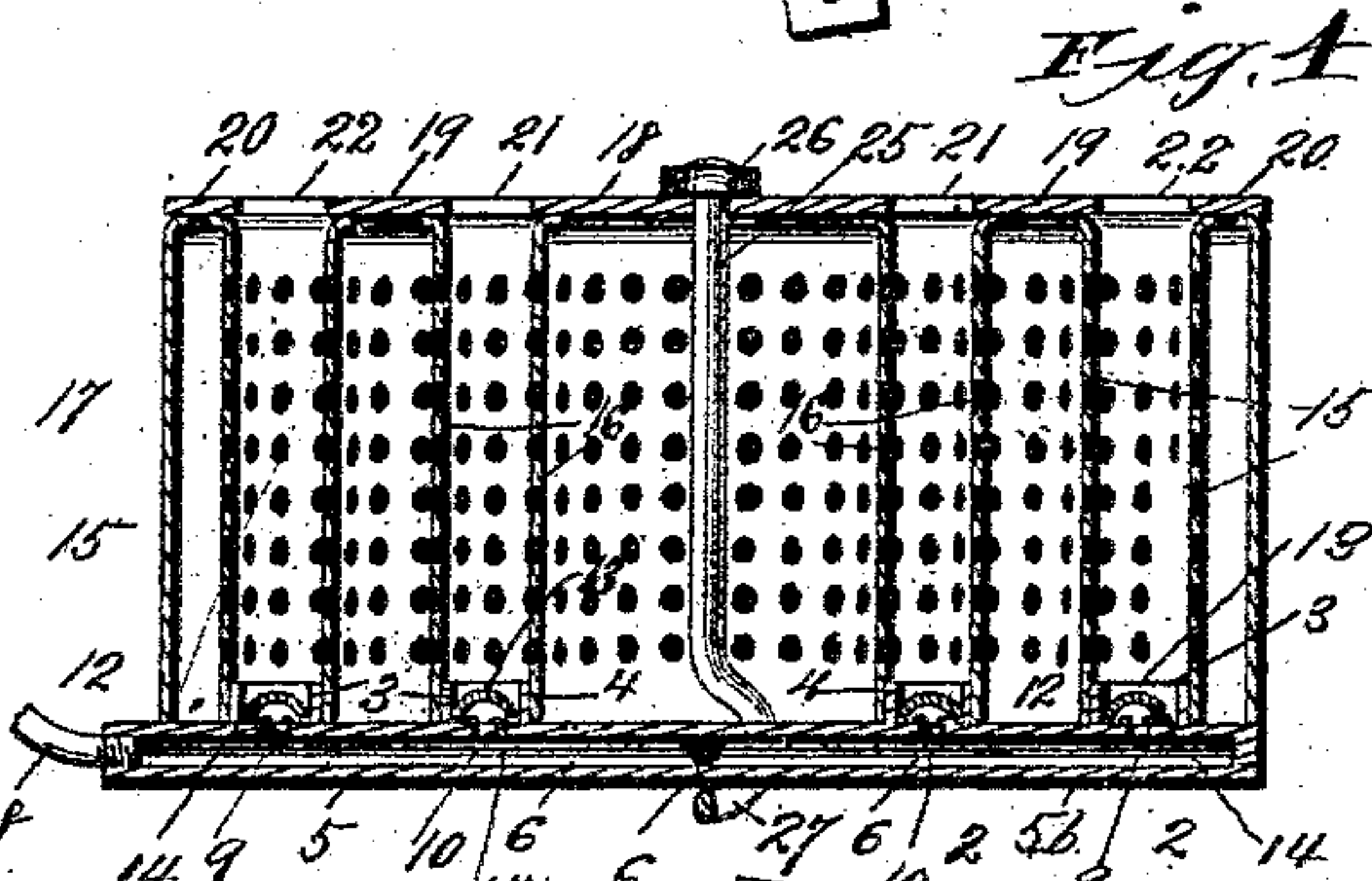
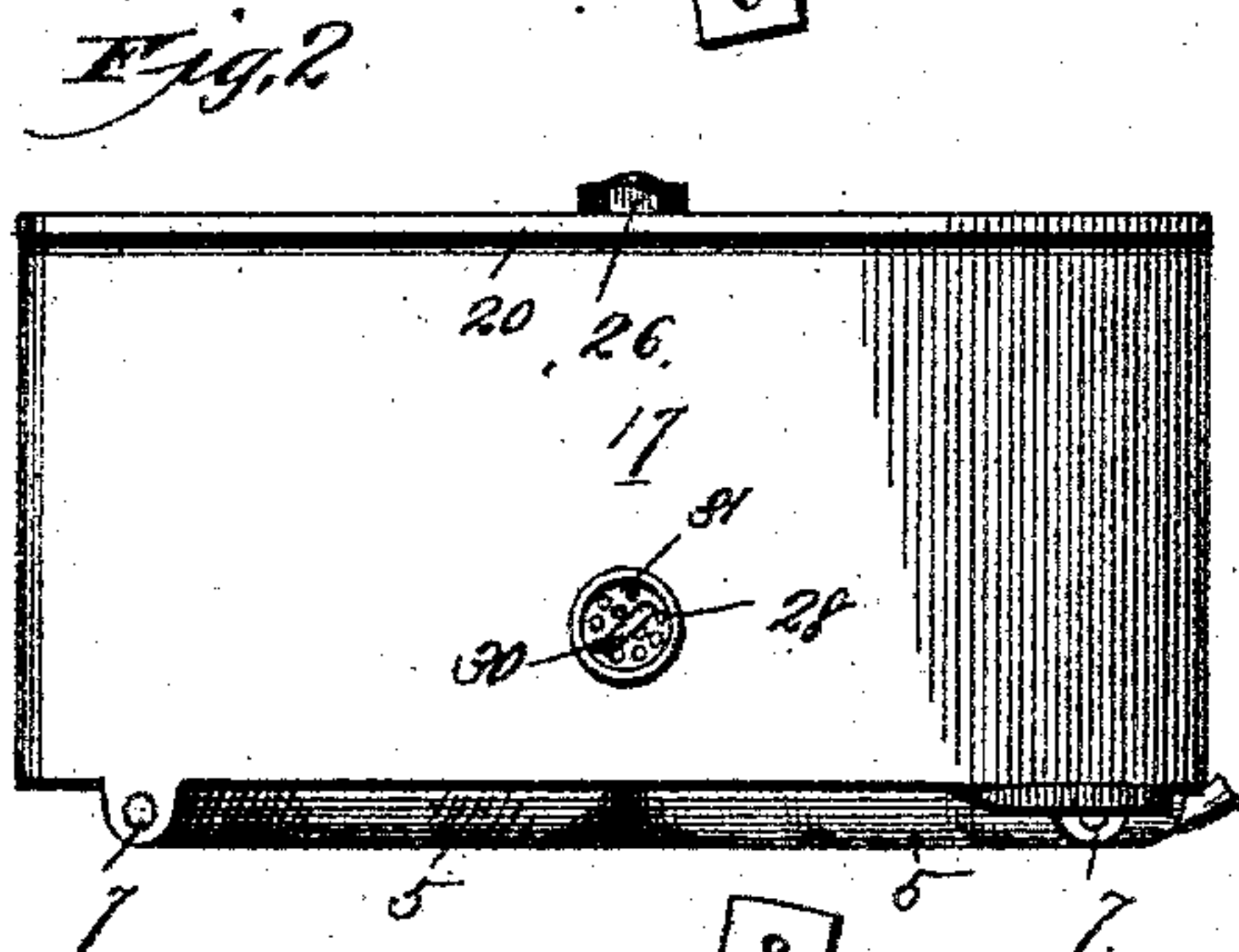
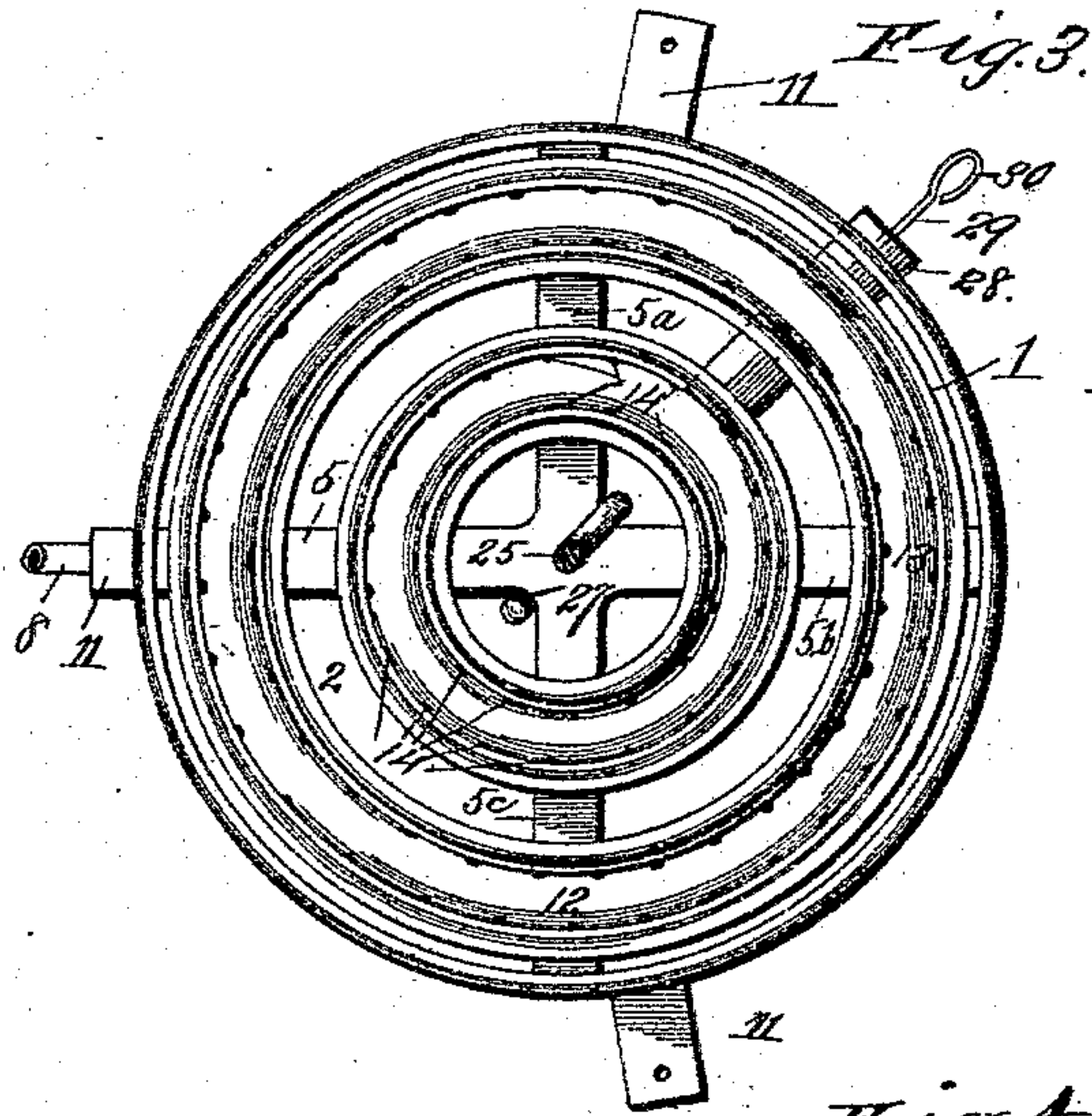
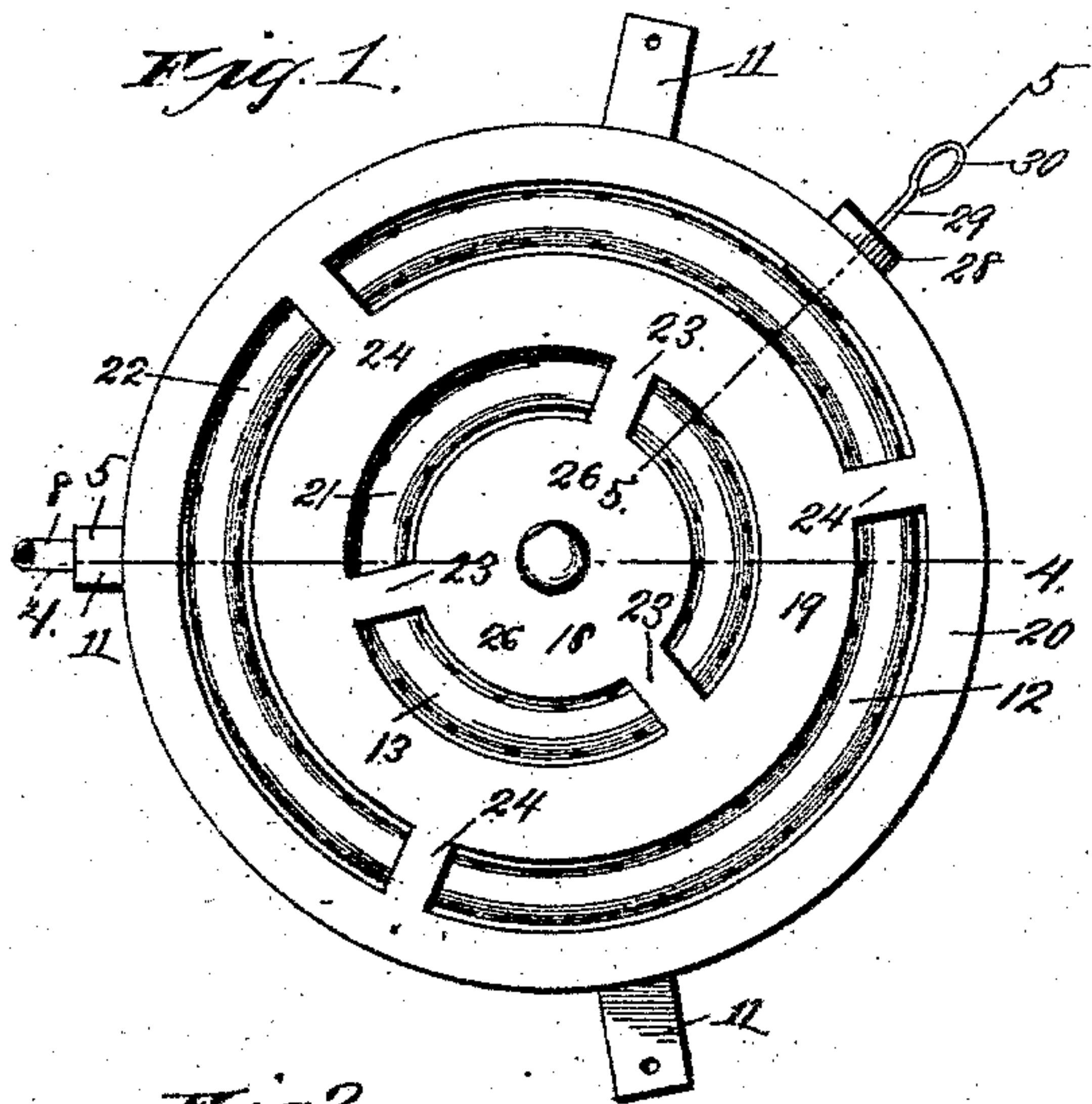
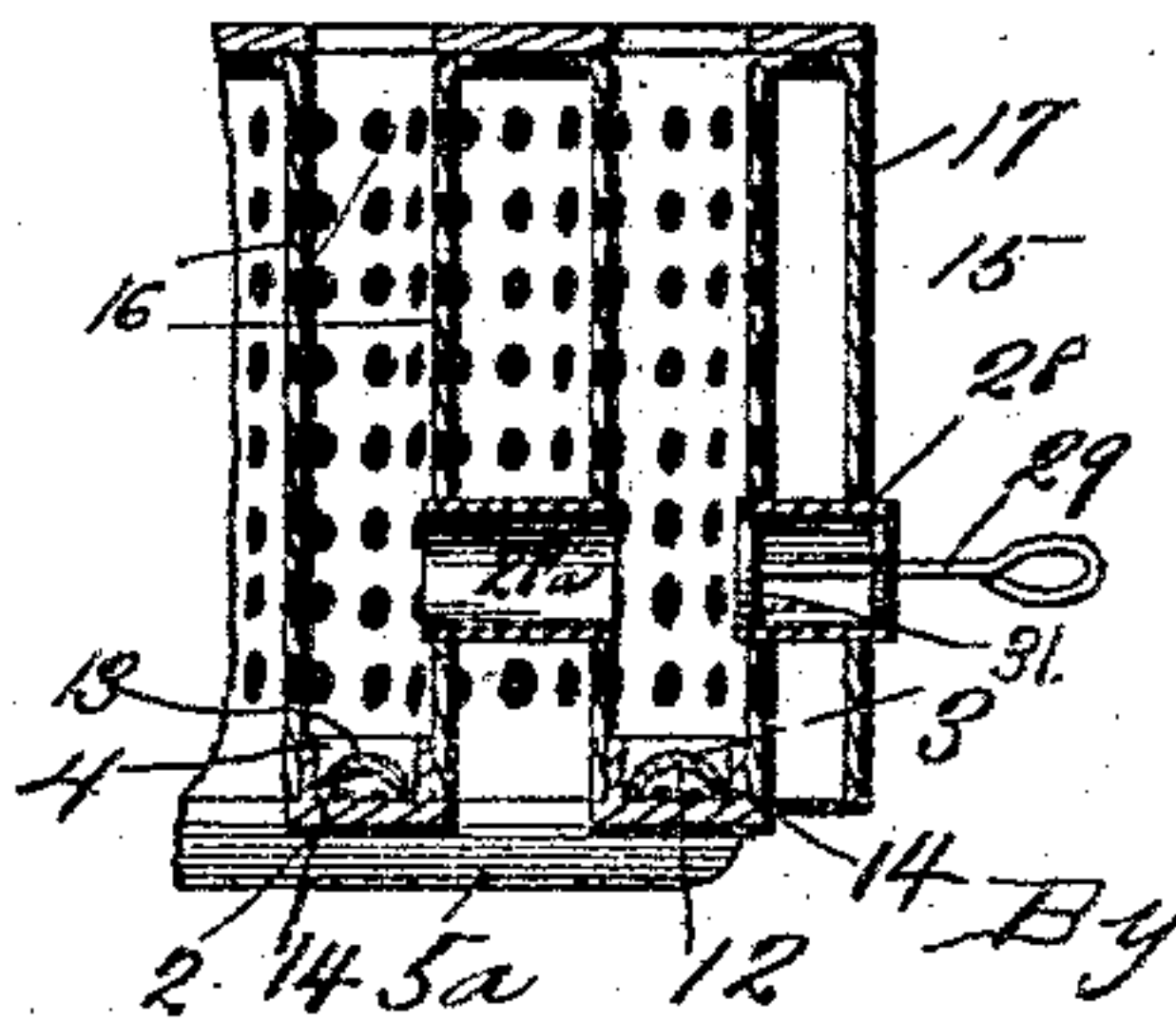


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN A. CHANDLER, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF
TO NELLIE D. WATERS, OF SAME PLACE.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 515,423, dated February 27, 1894.

Application filed June 6, 1892. Serial No. 435,732. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. CHANDLER, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improve-
5 ments in Vapor-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to burners for trans-
10 forming inflammable oils into vapors, and for consuming said vapors by combustion, for heating, cooking, and other analogous purposes.

The objects of my invention are to produce
15 a vapor burner which shall be simple, strong, durable and inexpensive, and compact in construction and automatic, safe and reliable in operation, and which shall possess the maximum vapor-generating and heat-produc-
20 ing capacity together with the most economical degree of fuel-consumption.

To the above purposes, my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter
25 described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

30 Figure 1 is a plan view of a vapor-burner embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the same with its top-piece or cap removed; the center-bolt being shown in horizontal section. Fig. 4 is a transverse vertical section
35 of the burner, on the line 4—4 of Fig. 1. Fig. 5 is a transverse vertical section of the same, on the line 5—5 of Fig. 1. Fig. 6 is a plan view of the base of the burner in detached
40 condition. Fig. 7 is a detached plan view of a modified form of the burner-base.

Referring first to the constructions shown in Figs. 1 to 6, both inclusive, the base of the burner is preferably of circular form, as
45 shown, and its several parts, to be presently described, are preferably constructed in the form of a single integral casting. 1 designates the outer portion of the base, this outer portion being preferably of continuous circular form, and of any suitable or preferred di-
50 ameter or size, according to the size of the

burner to which it is applied. 2 designates the inner portion of the base, this inner portion being also preferably of continuous circular form, and placed concentrically within 55 the outer base-portion 1; a circular space intervening between the base-portions 1 and 2. The outer base-portion is formed on its upper side with a continuous circular trough 3, while the inner base-portion 2 is formed with 60 a similar continuous circular trough 4; the troughs 3 and 4 being preferably rectangular in cross-section, as shown. These inner and outer base-portions are connected together by four channel-arms 5, 5^a, 5^b, and 5^c; these four 65 arms being formed integrally with each other, and with the base-portions 1 and 2, and being also arranged in the form of a Greek cross, or in other words, extending at right angles from each other. Each of these arms is formed 70 with a longitudinal channel 6 which extends throughout the length of the arms, and which meet and intersect each other at the center of the base of the burner. The outer extremities of three of these channels 6 are 75 closed by suitable plugs 7, while into the open outer end of the remaining channel 6 of the arm 5 is screwed one end of a feed-pipe 8; this pipe being connected in any suitable or 80 preferred manner with a suitable tank or reservoir for gasoline, or similar liquid fuel. At the point of the juncture of the arms 5 5^a, 5^b and 5^c, the outer base-portion is formed with a vertical discharge opening 9 which establishes communication between the channel 85 and the interior of the trough 3. At the points of juncture of the channel-arms 5 and 5^b with the inner base-portion 2, said base-portion is formed with two vertical discharge-openings 10 which establish communication 90 between the channels of the arms 5 and 5^b and the trough 4, at points precisely opposite from the openings 9 of the arms 5 and 5^b. It is to be understood that similar openings to the openings 10 may be formed through the inner 95 base-portion 2 at the points of juncture of the arms 5^a and 5^c with said base portion, if preferred, but the construction shown is that which is preferred, inasmuch as the area which is included being one-half of the cir- 100 cumference of the inner base-portion 2 is practically no greater than the area of one-

fourth of the circumference of the outer base-portion 1, and the vapor generated fills both of these spaces readily. The burner, as a whole, is supported in proper position within the stove or heater, by a suitable number of radial bracket-arms 11 the lower ends of which are riveted or otherwise secured to the under side of the outer base-portion 1, and the outer ends of which are designed to be similarly secured to the under side of the top-plate of the stove or heater. Within the troughs 3 and 4, are placed respectively two covering-pieces or rings 12 and 13 each of which is preferably of concavo-convex form in cross-section, and the concave side of which is presented downward, as shown. At their margins, these covering-plates or rings 12 and 13 are formed with notches or recesses 14 through which the vapor escapes from the troughs, as hereinafter more fully described. 15 designates two concentric circular vertical and foraminous walls the lower edges or margins of which embrace the sides of the outer trough 3, and which are preferably of about the proportional height shown. 16 designates two circular, concentric, vertical, and foraminous walls the lower edges or margins of which embrace the sides of the inner trough 4, and which are of the same height as the walls 15, just referred to; the said walls 15 and 16 thus inclosing two vertical circular and concentric spaces which constitute the combustion-spaces of the burner. 17 designates the outer wall or casing of the burner, this wall or casing being of non-foraminous material, and of circular form, and also of the same height as the foraminous walls 15 and 16, above described. This outer wall or casing rests at its lower margin upon the ends of the cross-arms 5, 5^a, 5^b, 5^c, of the burner, as shown and a circular vertical space intervenes between this outer wall or casing and the outer foraminous wall 15. Upon these vertical walls 15, 16, and 17, rests the horizontal top-piece or cap of the burner, the said top-piece or cap consisting of a central disk-shaped portion 18, a circular intermediate portion 19, and an outer circular portion 20. A circular space 21 intervenes between the outer margin of the center-piece 18 and the inner margin of the intermediate portion 19 of the cap, and a circular space 22 intervenes between the outer margin of the intermediate portion 19 and the inner margin of the outer circular portion 20 of the cap; the space 21 registering with the space inclosed between the inner foraminous walls 16, and the space 22 registering with the space inclosed between the outer foraminous walls 15. The center portion 18, the intermediate portion 19, and the outer portion 20 of the cap are connected integrally by a suitable number of radial arms 23 and 24, so that the cap is in the form of a single integral casting. This cap is retained in its required position by a center bolt 25, which extends vertically downward through the burner. The lower end of

this bolt is formed with a hook 27 which embraces the base of the burner at the point of union of its cross-arms 5, 5^a, 5^b, and 5^c. The upper end of this bolt 25 passes through the middle of the center-piece 18 of the cap, and is externally screw-threaded to receive a nut 26 which impinges upon the upper side of said center-piece. Thus, in putting the parts of the burner together, the hooked lower end 27 of the bolt 25 is engaged beneath the middle of the base of the burner, and its upper end is passed through the center-piece of the cap; the nut 26 being then screwed upon the upper end of the bolt, and retaining all of the parts of the burner in their required relative positions. 28 designates the horizontal lighting-tube of the burner, this tube extending radially through the outer wall or casing 17 of the burner and also into the outer foraminous wall 15, at points near their lower edges or margins; corresponding openings being formed in the walls 17 and 15 of the burner to receive the ends of said tube. 28^a designates a horizontal extension of the lighting-tube, this extension extending in axial alignment with the tube 28, and through the inner foraminous walls 16. Into the tube 28 is inserted a removable plug which is composed of a horizontal stem, 29, having an eye or ring 30 at its outer end, to facilitate manipulation of the stem, and a foraminous disk 31 at its inner end, to fit removably within the tube 28. The operation of this plug will be presently explained.

In Fig. 7 I have shown a modified form of the channel arm of the burner. In this instance the arms 5^a, 5^b, and 5^c, are dispensed with, and the channel-arm 5 only is employed; this arm extends radially from the inner base-portion 2 to and beyond the outer base-portion 1, as shown, and the channel of said arm communicating with the troughs 3 and 4 through the openings 9 and 10, as before. I desire it to be fully understood that the base may be either composed of two portions 1 and 2, as shown, or of any desired number of inner portions, as circumstances may suggest, and also that while the burner is shown and has been described as of general circular or cylindrical form, it may be of square, poly-angular, elliptical, oval, spiral, or of any other shapes, without departing from the essential spirit of my invention; the outer wall 17, inner walls 15 and 16, and the cap and base, being of corresponding form. Now, when the burner is to be lighted, the plug is removed from the lighting-tube, and a small quantity of the liquid fuel is allowed to flow into the channels 6 and troughs 3 and 4. A lighted match, or a flame from any other suitable source, is now thrust into the lighting-tube 28 and its extension 28^a, and the fluid is ignited. This heats the base of the burner, and causes the fluid in the channels 6 to become vaporized; such vapors flowing into the troughs 3 and 4, and becoming mingled with air which flows upward through the open

base of the burner, and through the foraminous walls 15 and 16, becomes ignited, and issues through the openings 21 and 22 in the cap of the burner. As soon as the burner
5 has become well started in action, the plug is replaced; the foraminous disk 31 of said plug permitting the required influx of air.

From the above description it will be seen that I have produced a vapor-burner which is
10 simple, strong, durable, and compact in construction, and automatic and safe in its operation, and which attains the maximum of generating and heating capacity with the minimum of fuel-consumption.

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

20 A vapor burner, comprising a base, composed of a number of concentric sections having vapor-receiving channels in their upper sides, and a number of cross arms located beneath the base, and having longitudinal channels communicating with the channels of the

base, a ring or annulus, concavo-convex in cross section and provided with serrations or
25 notches in its margin, located in each channel of the base, and having its concave side downward, a number of concentric foraminous walls resting upon the base, a pair of
30 said foraminous walls inclosing each channel of the base, and an external non-foraminous wall also resting upon the base and inclosing the outermost foraminous wall, and a cap
35 resting upon said foraminous and non-foraminous walls, and having elongated and curved openings registering with the curved spaces between each pair of foraminous walls
40 inclosing a channel of the base, and means to hold said cap in position, substantially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN A. CHANDLER.

Witnesses:

HARRIET E. PRICE,
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