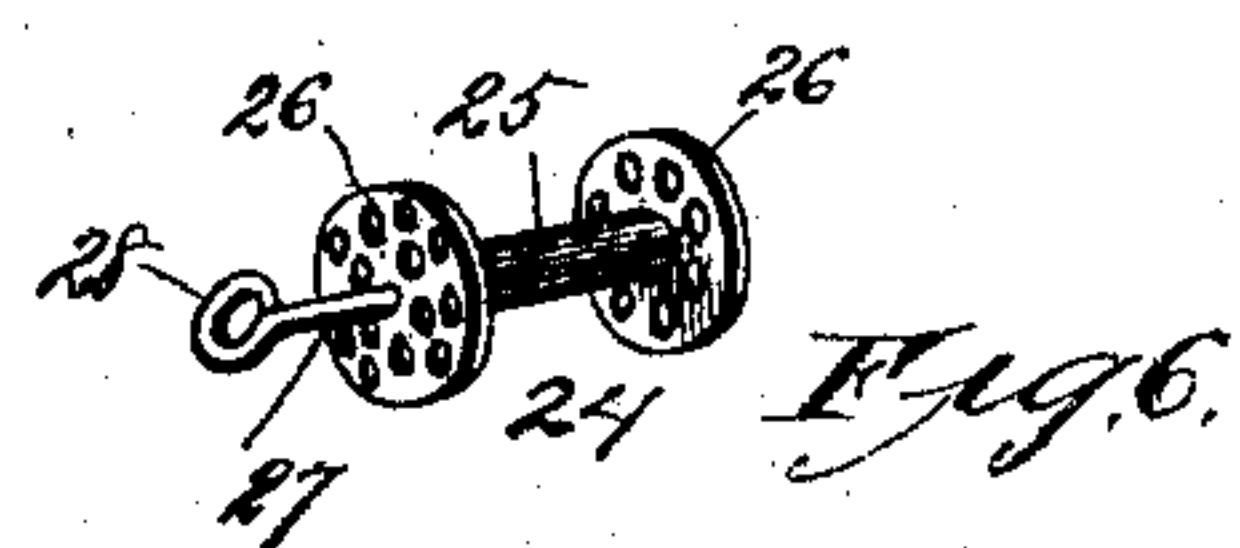
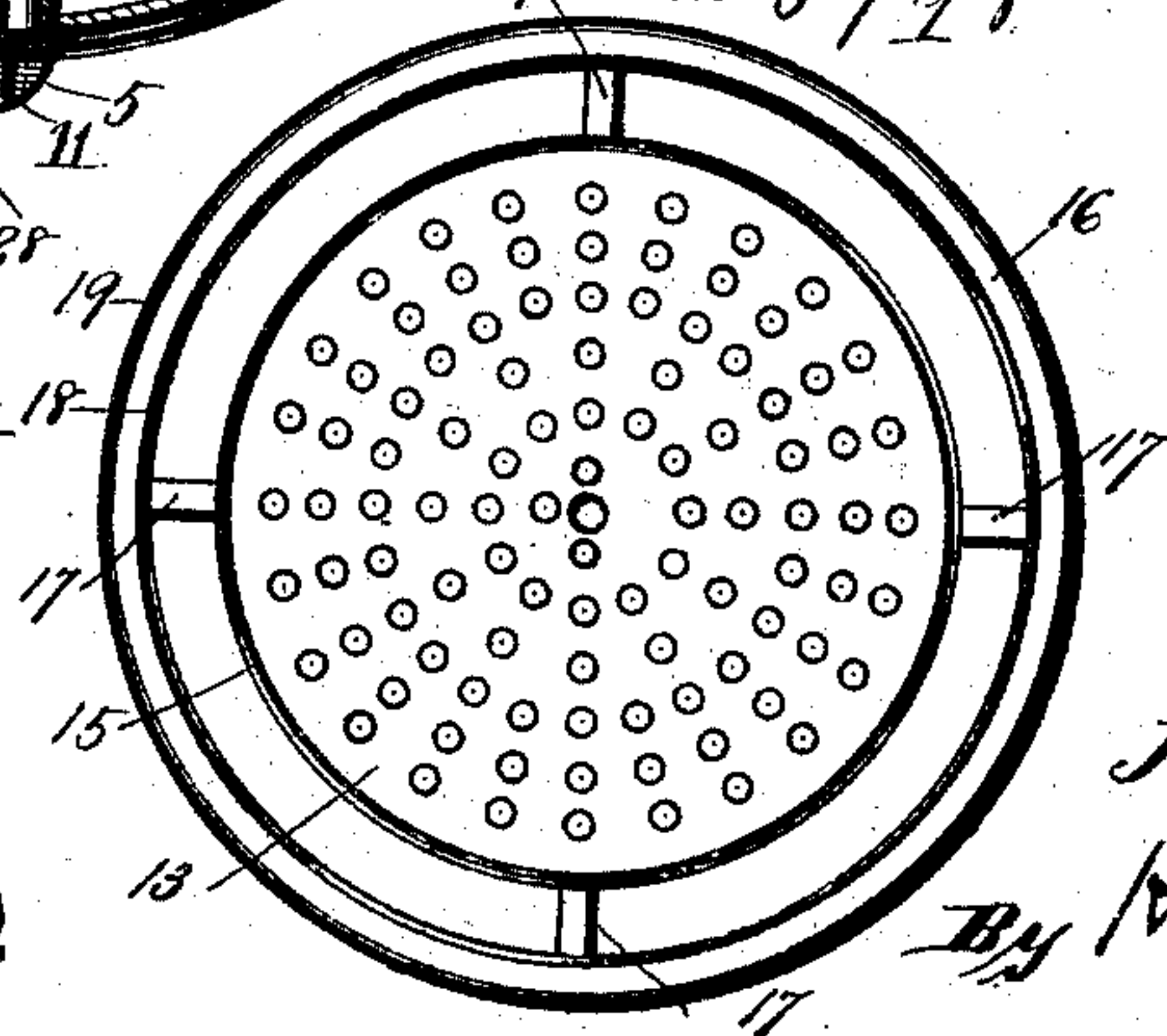
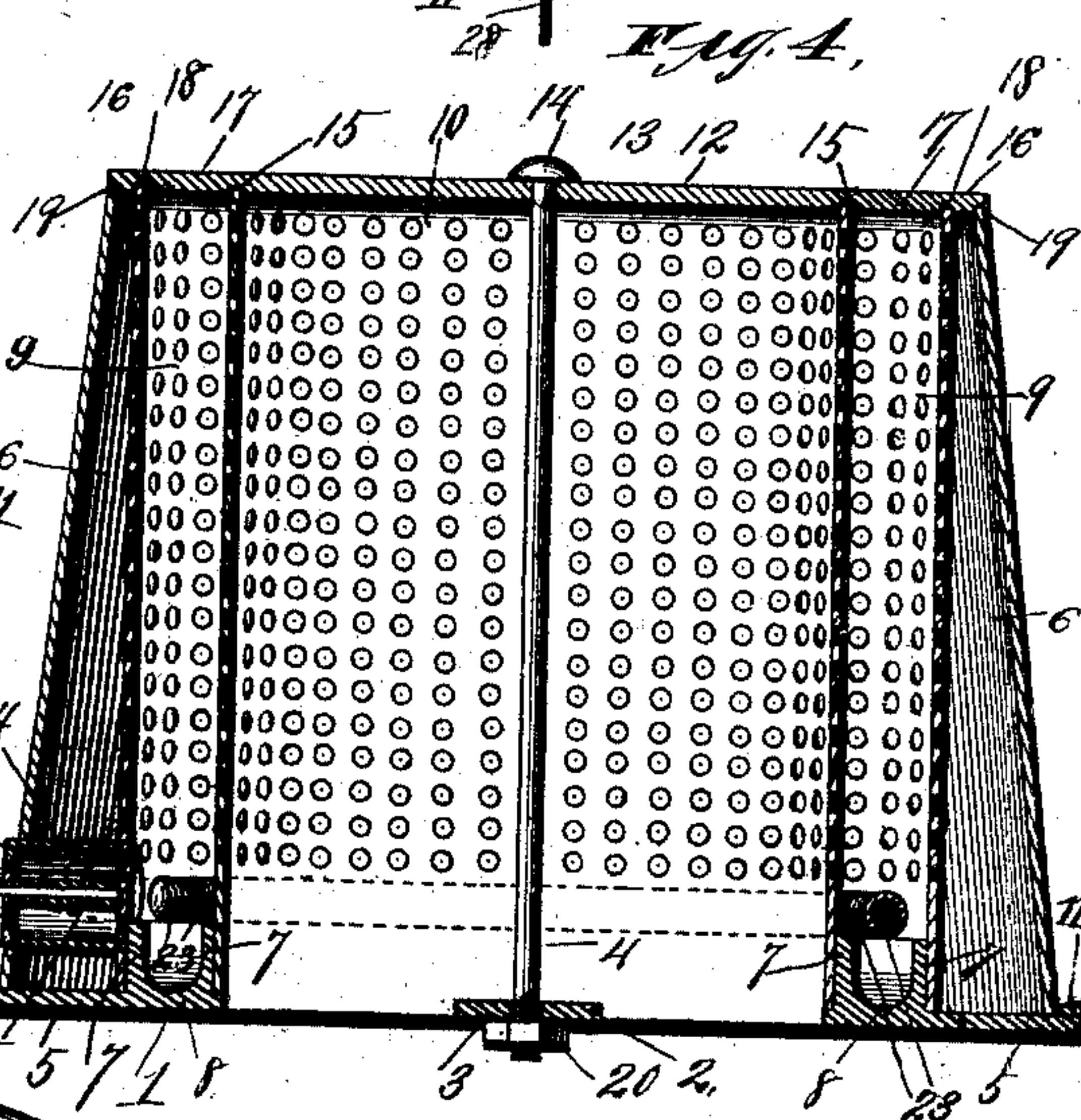
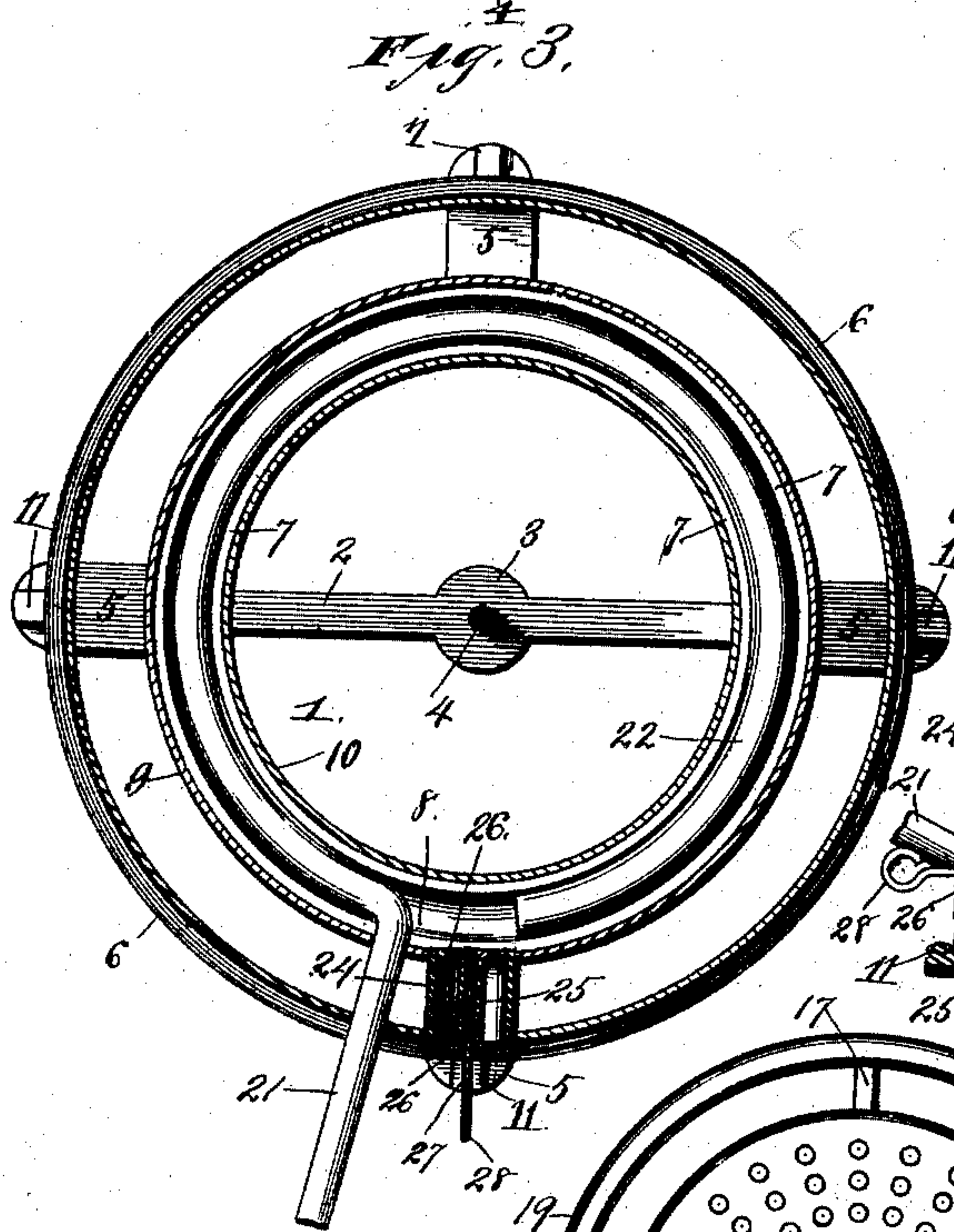
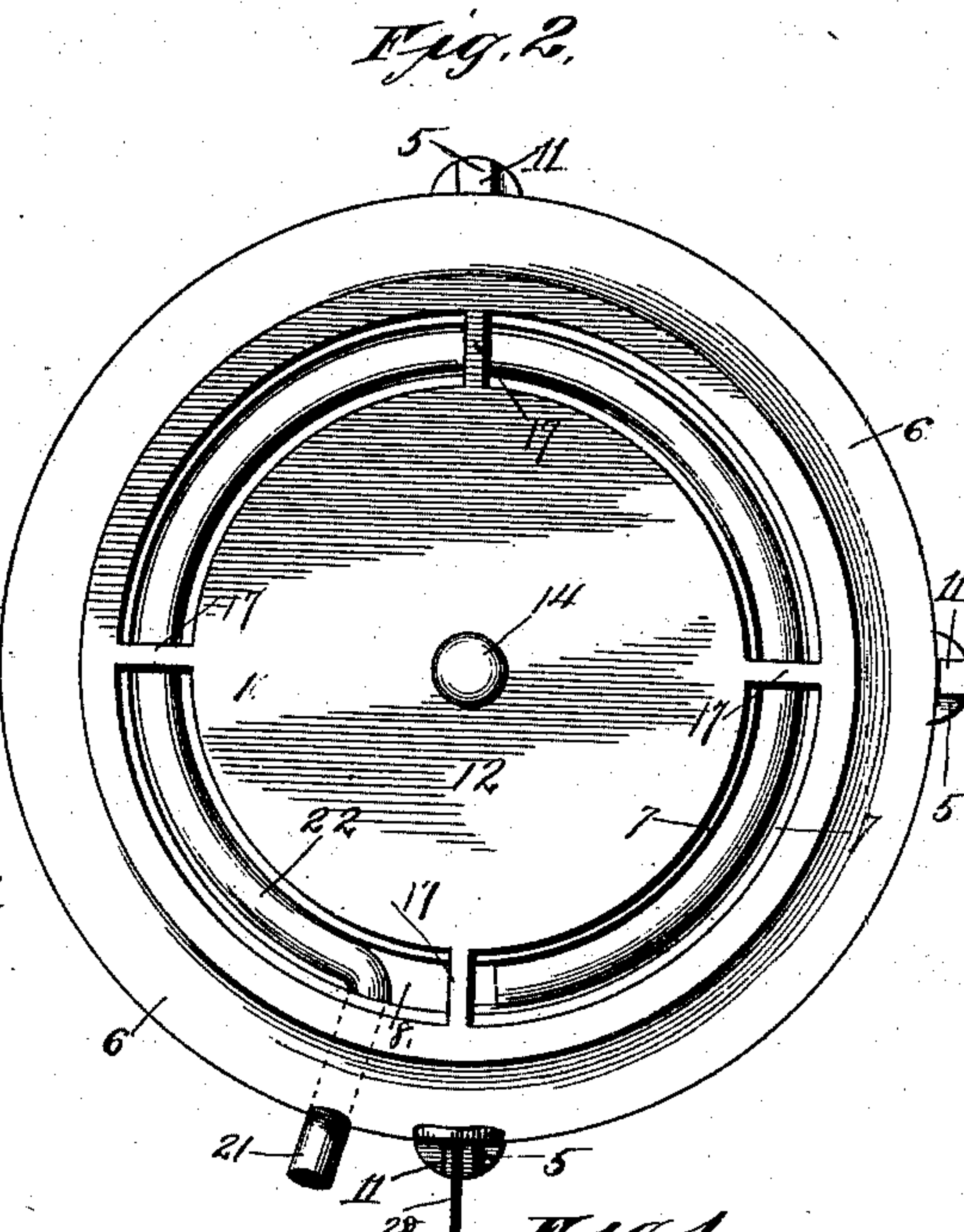
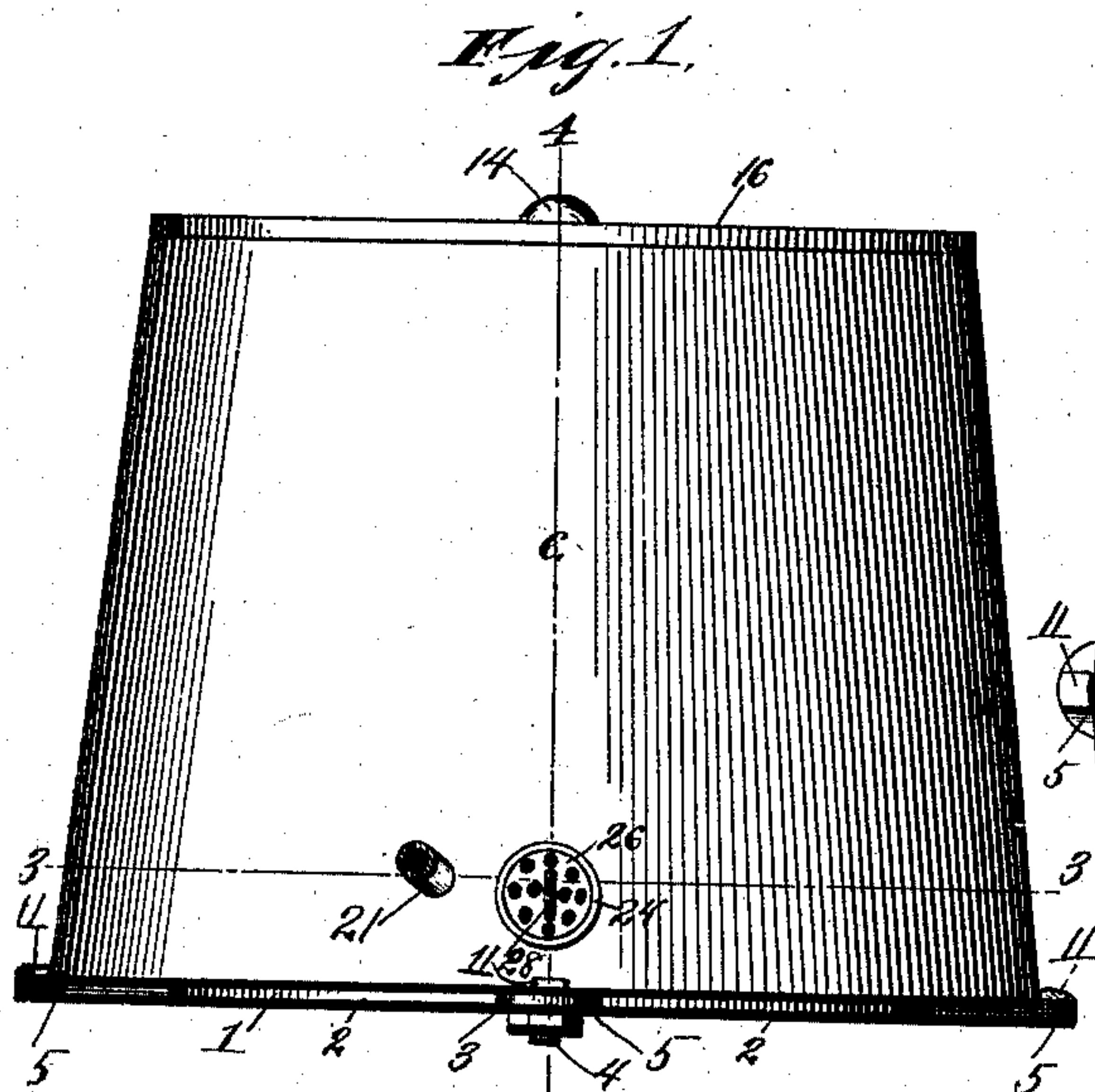


(No Model.)

J. A. CHANDLER.  
VAPOR BURNER.

No. 505,508.

Patented Sept. 26, 1893.



Witnesses:  
G. Y. Thorpe,  
Jno. L. Condron.

Inventor,  
John A. Chandler,  
By Higdon, F. H. & Co.  
attys.



# 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. 505,508, dated September 26, 1893.

Application filed April 26, 1892. Serial No. 430,659. (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 Improvements 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 that class of burners which are designed to utilize gasoline, and other kindred liquid fuels, and which transform the same into inflammable vapors, and consume such vapors for various heating purposes.

The objects of my invention are to produce a vapor-burner which shall be simple, strong, compact and durable in construction, and very economical and uniform in its operation, and which shall be so constructed as to effect a complete vaporization of the liquid fuel and a complete combustion of the vapors so produced; furthermore, to produce a vapor-burner which, in addition to the advantages above enumerated, shall be under perfect and easy control of an attendant or operator.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter 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—

Figure 1 is a side elevation of a vapor-burner embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a horizontal section of the same, on the line 3—3 of Fig. 1. Fig. 4 is a transverse vertical section of the same, on the line 4—4 of Fig. 1. Fig. 5 is a detached inverted plan view of a modified form of cap-plate for the burner. Fig. 6 is a detached perspective view of the removable foraminous lighting-plug of the burner.

In the said drawings 1 designates the base of my improved burner, the said burner being a metal casting of circular form and of any suitable or preferred dimensions. At the under side of this base is formed, or suitably secured, a cross bar 2, which extends diametrically across the base 1 and the center or middle of which is formed with an enlarge-

ment or boss 3, through which extends the lower externally screw-threaded end of a vertical coupling-bolt 4, the purpose of which will be hereinafter explained. From the outer margin of the base 1 extend outwardly four or any other suitable or preferred number of radial lugs or ears 5 which are preferably cast integrally with the said base, and which serve to support the outer non-foraminous casing 6 of the burner. The upper side of the base 1 is formed with two vertical concentric walls 7 which are preferably formed integrally with the base 1, and which inclose a circular space the bottom 8 of which is preferably concave in form, and the top of which is open. Thus the base 1 is practically U-shaped in cross-section for a purpose to be hereinafter explained.

9 and 10 designate two cylindrical foraminous and vertical walls, which are preferably of perforated sheet metal, but which may also be of any other suitable non-combustible foraminous material; the openings or perforations of said walls being at a slight distance above the lower margins of the walls and continuing to the upper margins of the same, as shown. The lower margin of the outer foraminous wall 9 surrounds the outer wall 7 of the base 1 and abuts closely against the outer side of said wall 7, while the lower margin of the inner wall 10 is surrounded by the inner wall 7 of the base 1 and abuts closely against the inner side of said wall 7. These foraminous walls 9 and 10 are of equal height and of about the proportionate height, relative to the base-walls 7, as shown. The outer wall or casing 6 of the burner is of sheet-metal, or other suitable non-combustible material, and is also non-foraminous in its character; said outer casing corresponding in height with the height of the inner and outer foraminous walls 9 and 10, as shown. Moreover, this wall 6 is preferably frusto-conical in form, so as to incline obliquely upward and inward, as shown. At its lower margin, this wall or casing 6 rests upon the upper sides of the lugs or ears 5, outside of the outer base-wall 7; a considerable circular space intervening between the outer side of the outer wall 7 and the inner side of the casing 6. In order to prevent all possibility of



lateral displacement of the lower end of the outer casing 6, the lugs or ears 5 may be formed upon their upper sides with lugs, or equivalent projection 11, which abut against the outer side of the lower margin of the casing 6, and thus prevent lateral displacement of this part of the casing.

The top of the burner is formed by a horizontal cap-plate 12 which corresponds in diameter with the diameter of the inner vertical foraminous wall 10, and through the center of which extends the upper end of the coupling-bolt 4; the head 14 of said bolt resting upon the upper side of the said cap. At the under side of its circular margin, the cap-plate 12 is formed with a circular groove 15 into which enters the upper margin of the inner wall 10 of the burner, the said groove preventing lateral displacement of the inner foraminous wall 10. The top-plate 12 is surrounded concentrically by a ring 16 which is connected, preferably integrally with the top-plate, by a number of radial arms 17 which project horizontally outward from the cap-plate 12. The circular space between the outer margin of the cap-plate 12 and the inner margin of the ring 16 is equal in width to the width of the space which intervenes between the foraminous walls 9 and 10; the upper end of the said space between the foraminous walls being thus left open. The underside of the ring 16 is formed with two circular marginal grooves 18 and 19; the groove 18 being at the inner and the groove 19 at the outer margin of the ring. The upper margin of the outer foraminous wall 9 enters the inner groove 18, and the upper margin of the outer casing 6 entering the outer groove 19 of the ring 16. The coupling-bolt 4 passes vertically downward through the center of the plate 12 and also through the enlargement or boss 3 of the cross-bar 2, as before stated, and upon the lower end of this bolt is secured a nut 20 which retains the parts in position. It will thus be seen that the downward strain upon the bolt 4, produced by the nut 20, prevents all possibility of lateral displacement of the foraminous walls 9 and 10 and also of the outer non-foraminous casing 6.

In Fig. 5 I have shown a modified construction of the top or cap plate 12; the said plate being, in this instance shown as of foraminous material, or in other words, as provided with numerous openings or holes, instead of being entirely closed, as before. In form and operation, the plate 12 is alike in both cases.

21 designates the feed-pipe of the burner; said pipe being designed for connection at its outer end with a suitable tank or reservoir for gasoline, or other liquid fuel. This pipe passes inward through the lower part of the casing 6, and also through the adjacent part of the outer foraminous wall 9. The inner portion 22 of this feed-pipe is bent into circular form, as shown, and is provided with a number of perforations 23 which are formed, preferably, through the under side of the pipe

as shown, but which may be formed completely or otherwise partially around the circumference of the pipe. The circular inner portion 22 of this feed-pipe extends horizontally within the lower part of the space inclosed by the foraminous walls 9 and 10 of the burner, and a slight distance above the vertical base-walls 7. The inner end of this feed pipe is closed. This is done in order to check the flow of the oil, if the discharge from the reservoir should at any time be greater than the capacity of the perforations in the feed pipe to discharge it into the U-shaped cavity, and thus prevent uneven distribution of the oil into the said cavity.

24 designates the lighting-tube of the burner, said tube extending horizontally through an opening in the lower part of the casing 6, and also through a similar opening in the lower part of the outer foraminous wall 9 of the burner. Within this lighting-tube 24 is mounted a removable plug which consists of a hollow cylindrical body-portion 25 at each end of which is a foraminous disk 26. Through the body-portion 25 extends a stem 27, the outer end of which is preferably formed with a suitable hook 28, or an eye, or an equivalent attachment.

From the above description, it will be seen that when the burner is to be used, a quantity of oil is first allowed to flow through the feed-pipe, and run through the openings 23 into the cavity inclosed by the side-walls 7 of the base 1. The lighting-plug is now removed from the burner and a flame from a match, or from any other suitable source, is introduced into the lighting-opening, so as to ignite the oil in the cavity, and heat the inner part 22 of the feed-pipe; thus starting vaporization. As soon as vaporization has been fully started the lighting-plug is replaced, and owing to the foraminous character of the disk 26, sufficient air is admitted through the plug to support combustion. Owing to the position of the feed-openings 23, the flames heat the base 1 and its walls 7, and thus assist in the vaporizing action, and sufficient air to support combustion flows inward through the openings of the foraminous walls 9 and 10, so that the space between said walls is filled with flame. Air to support combustion flows upward through the middle of the base 1 and also through the space intervening between the outer margin of the base 1 and the lower margin of the casing 6; such air thence flowing through the openings of the foraminous walls 9 and 10, as just stated. The outer casing 6 prevents ineffective outward lateral dissemination of the heat, while the cap 12 also prevents inward lateral dissemination of such heat; the heat being thus projected in concentrated manner at the top of the space inclosed between the foraminous walls 9 and 10 of the burner.

From the above description it will be seen that I have produced a vapor-burner which is simple, strong, durable, and inexpensive in



construction, automatic, reliable, and economical in its action, and which is completely under the control of an attendant.

5 It is to be understood, that while I have shown and described the burner as of general circular form, it may be oval, elliptical, square, or polyangular, without departing from the essential spirit of my invention.

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

15 1. A vapor-burner, comprising a base of open continuous form and having an annular cavity of V-shaped cross-section, a number of outwardly extending radial projections integral therewith, and also a cross-bar, two concentric foraminous walls rising from the base, a cap-piece resting upon said walls, an outer non-foraminous casing surrounding said 20 walls, a ring carried by the cap-piece and closing the upper part of the space between the casing and the outer foraminous wall, and a coupling-bolt extending through the center of the cap-plate and also similarly through the 25 cross-bar, substantially as set forth.

30 2. A vapor-burner, comprising a number of concentric foraminous walls, a non-foraminous inclosing casing, registering-lighting openings formed in the lower parts of said casing and the outer wall, and a lighting-plug composed of a number of connected forami-

nous disks and a carrying-stem, substantially as set forth.

3. A vapor burner, comprising two concentric foraminous walls, a non-foraminous inclosing casing, registering lighting openings 35 formed in the lower parts of said casing and the outer wall, a lighting tube secured to said casings and connecting said openings, and a lighting plug, composed of two connected 40 disks, and a carrying stem, substantially as described.

4. A vapor burner, comprising a continuous base with a number of radial lugs extending therefrom, two concentric foraminous 45 walls resting over the walls of a U-shaped cavity formed within the base; a feed pipe passing through the outer or non-foraminous casing and one of the foraminous walls, the extreme inner end of which is closed, said pipe 50 within the walls being formed into a continuous horizontal coil, the under portion thereof perforated and resting over the U-shaped cavity formed within the base, as fully set forth and described. 55

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

JOHN A. CHANDLER.

Witnesses:

JNO. L. CONDRON,  
H. E. PRICE.