

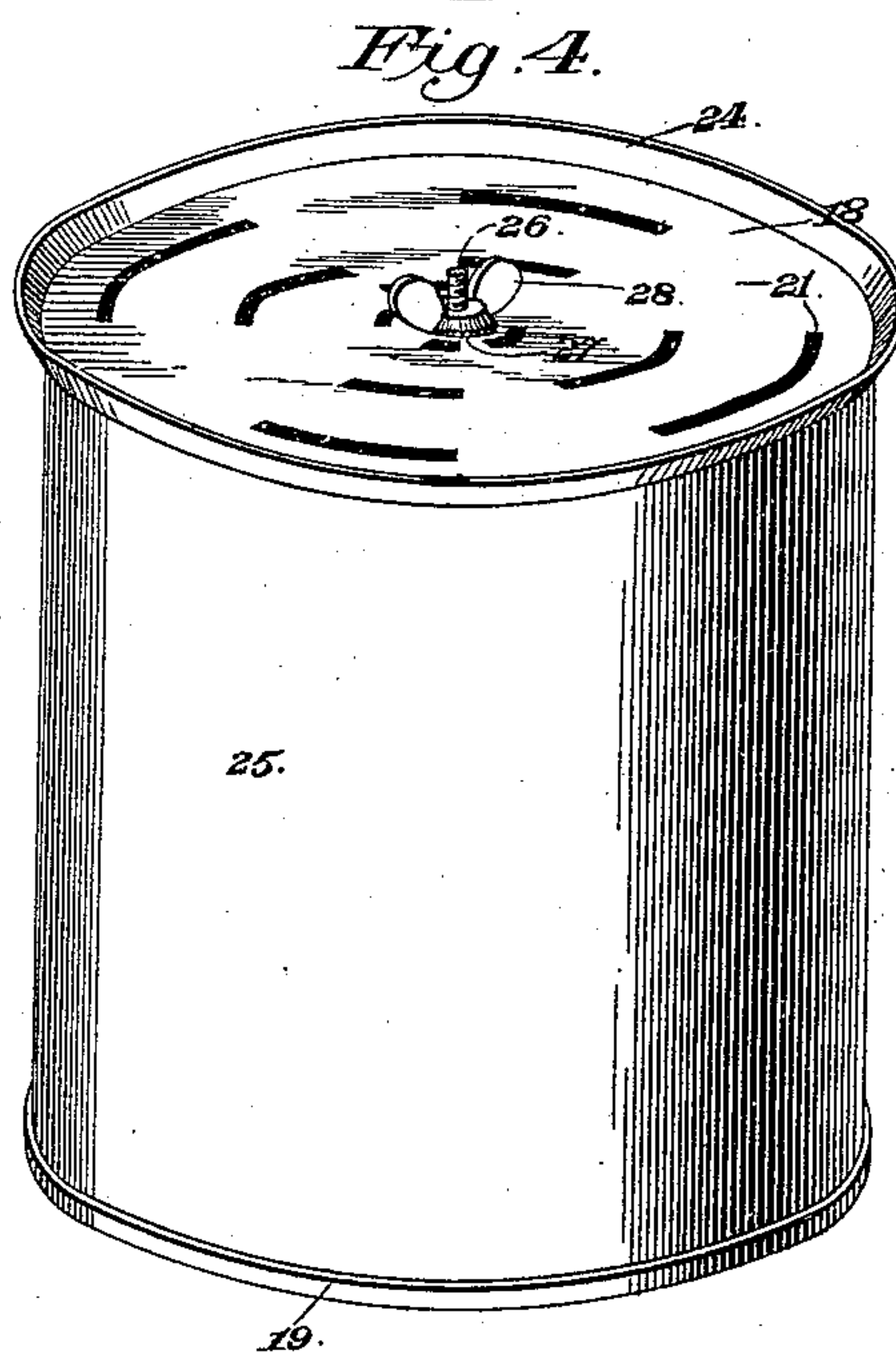
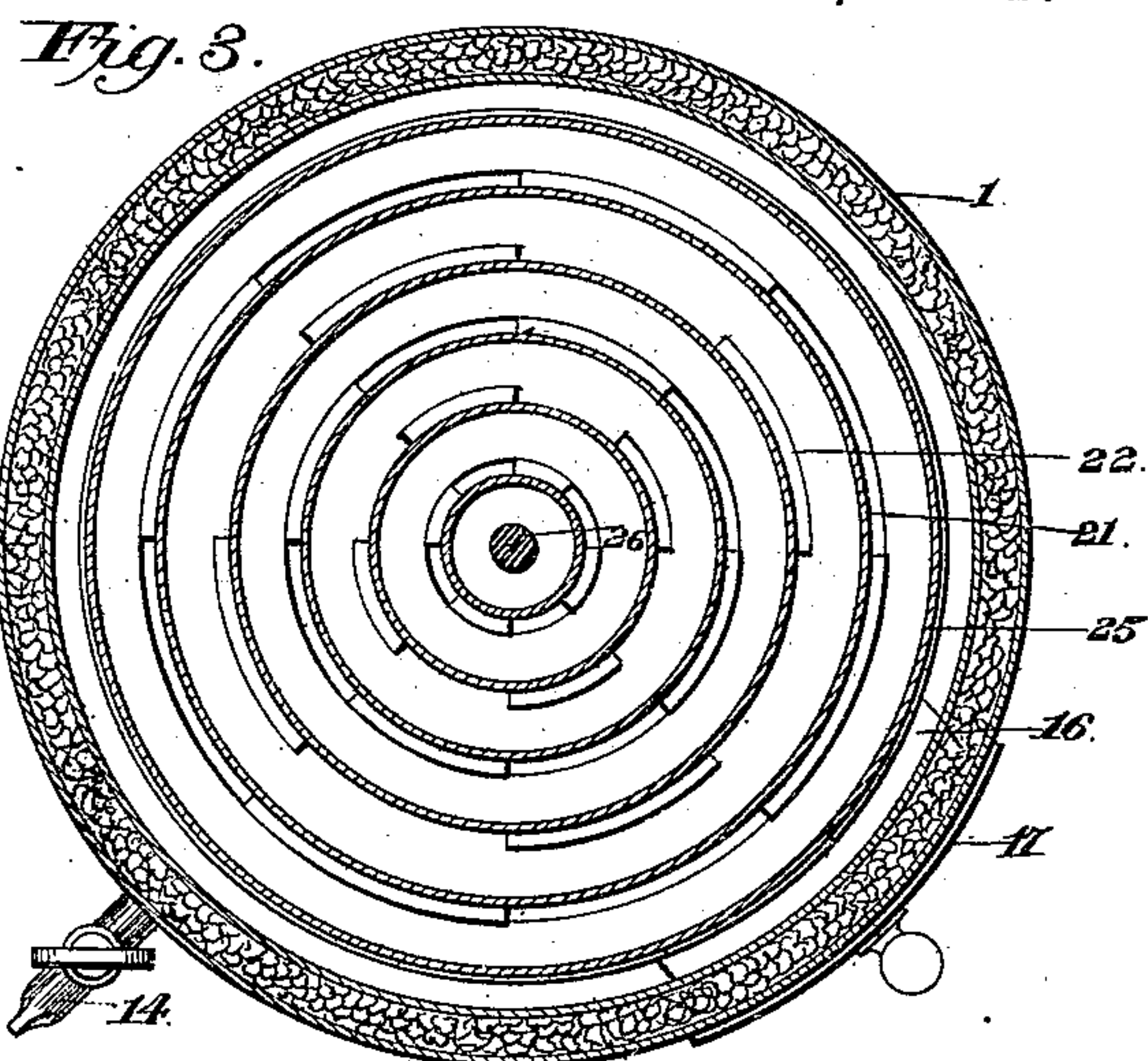
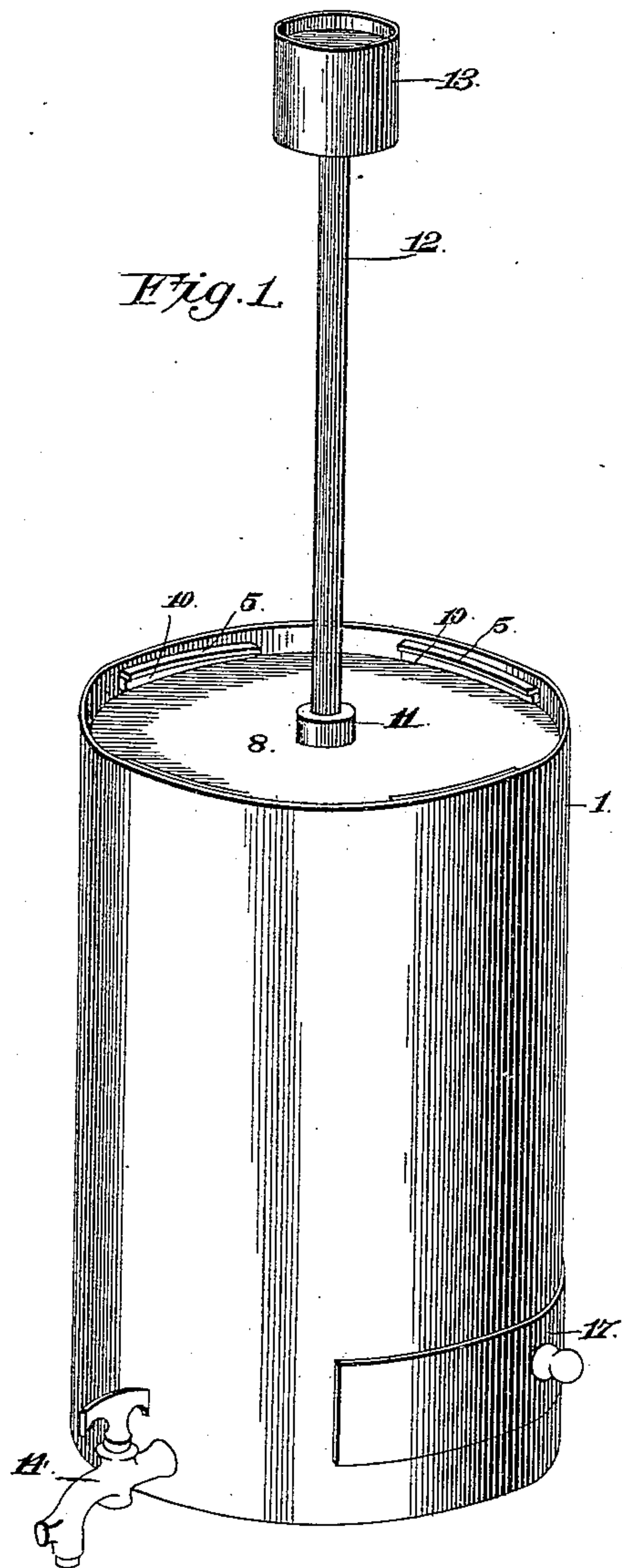
(No Model.)

H. GOODACRE.
FILTER.

2 Sheets—Sheet 1.

No. 446,342.

Patented Feb. 10, 1891.



Witnesses:

M. Fowler
M. S. Duvall

Inventor

Henry Goodacre

By his Attorneys,

C. A. Snow & Co.

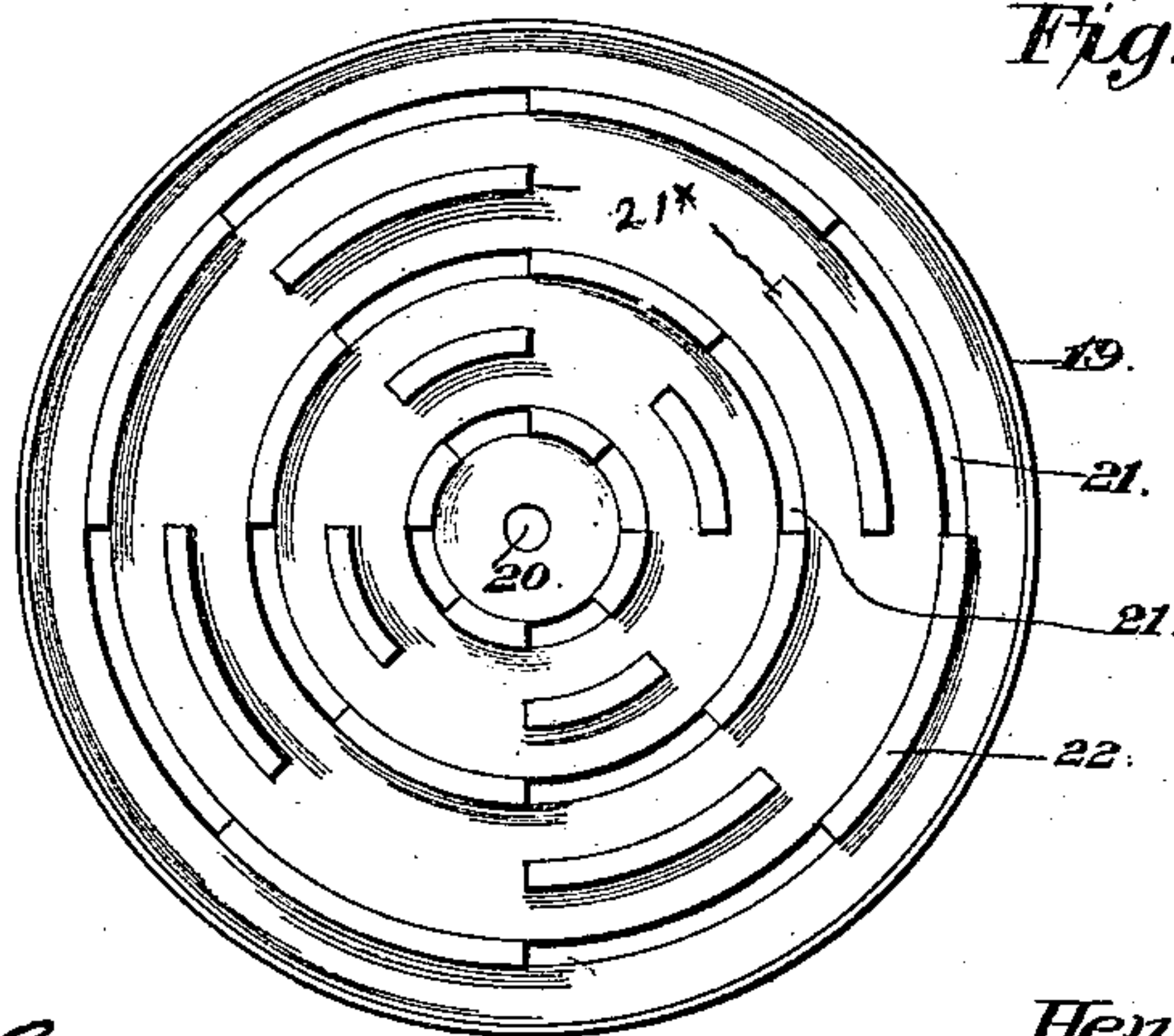
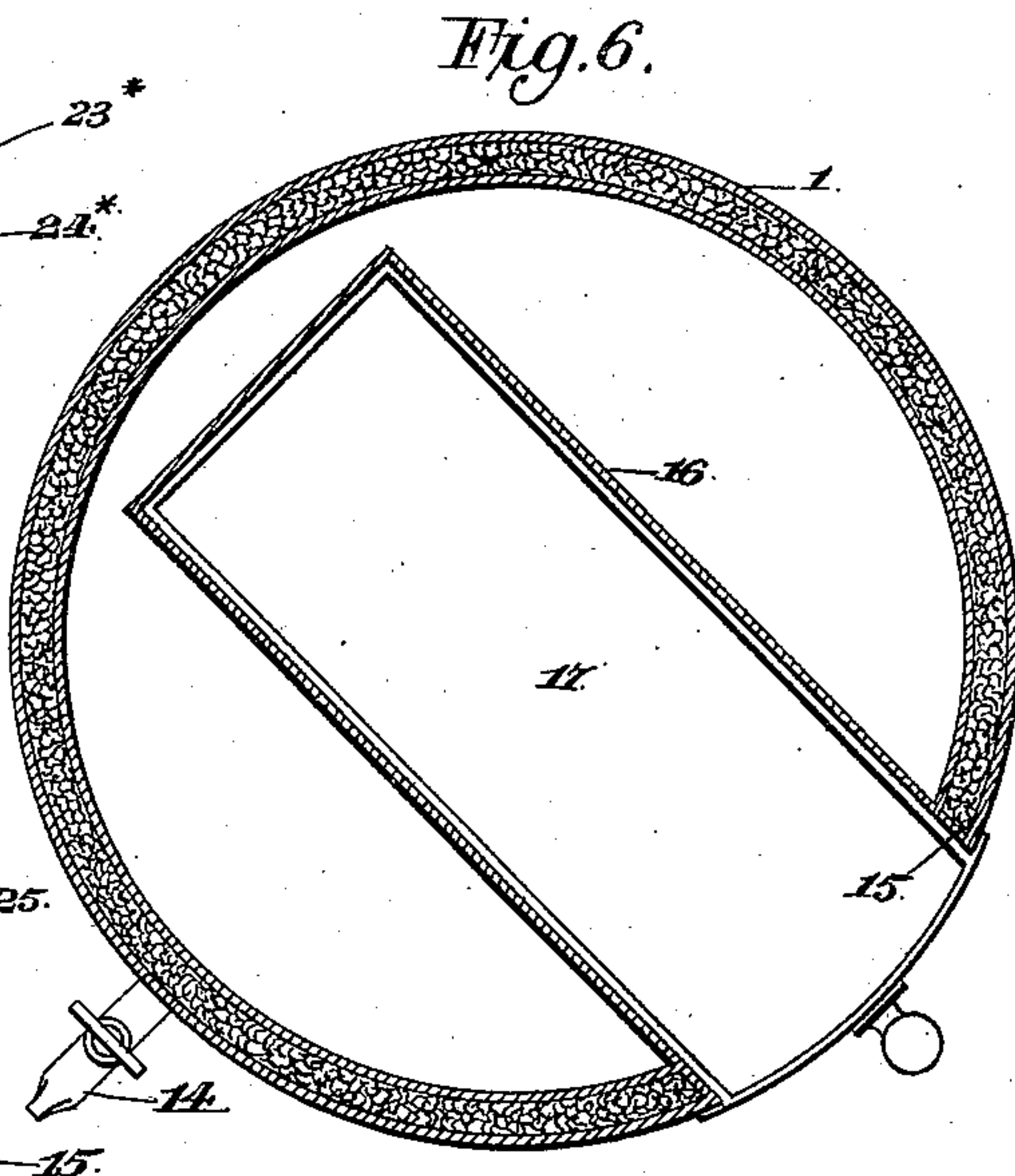
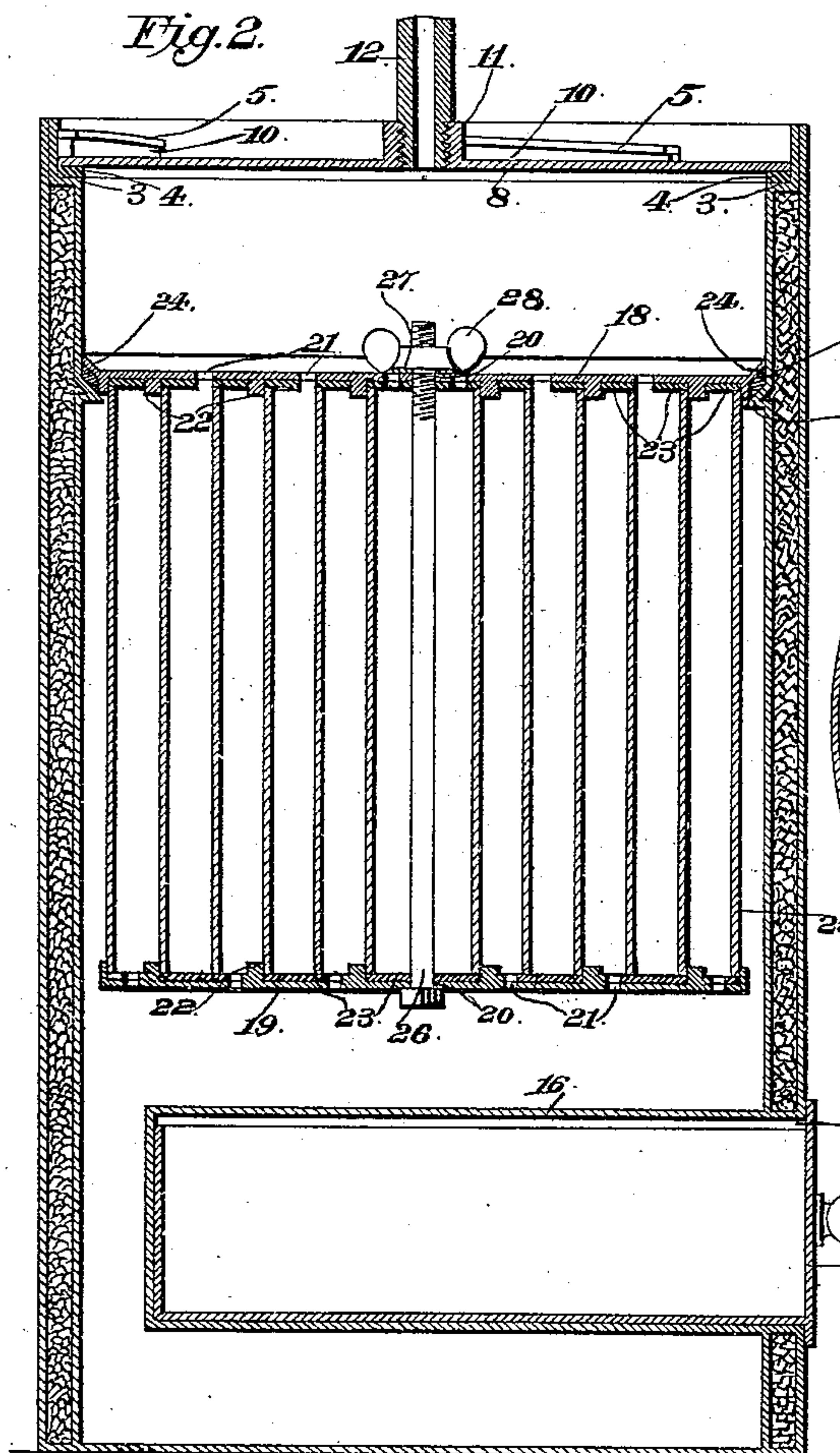
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2 Sheets—Sheet 2.

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FILTER.

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Witnesses:

M. E. Fowler
W. S. Duval

Inventor

Henry Goodacre

By *his* Attorneys.

Cashmore & Co.

UNITED STATES PATENT OFFICE.

HENRY GOODACRE, OF LEXINGTON, KENTUCKY.

FILTER.

SPECIFICATION forming part of Letters Patent No. 446,342, dated February 10, 1891.

Application filed May 26, 1890. Serial No. 353,163. (No model.)

To all whom it may concern:

Be it known that I, HENRY GOODACRE, a citizen of the United States, residing at Lexington, in the county of Fayette and State of Kentucky, have invented a new and useful Filter, of which the following is a specification.

This invention has relation to improvements in filters, the objects in view being to increase the filtering capacity by multiplying the filtering-surfaces and providing an exceedingly cheap, simple, compact, and efficient filter.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective of a filter constructed in accordance with my invention. Fig. 2 is a longitudinal vertical section. Fig. 3 is a transverse central section; Fig. 4, a detail in perspective of the filtering-cylinder. Fig. 5 is a detail in plan of the lower circular disk of the filtering-cylinder; Fig. 6, a transverse section through ice-drawer.

Like numerals indicate like parts in all the figures of the drawings.

In practicing my invention I construct the filter-case 1 with double walls, as is usual, and between the same locate a packing of charcoal or other non-heat-conducting substance.

The inner wall of the casing is outwardly bent to form an internal annular shelf or ledge 3, and upon the same is mounted a rubber packing-ring 4, and above said packing-ring a slight distance there is located a series of ribs 5, between which occur spaces.

8 represents the cover for the filter-case, which cover is of circular form and adapted to fit upon the shelf 3, and between the bottom of the recess and the cover is located the before-mentioned rubber packing-ring 4. The upper surface of the cover at its periphery is provided with a series of inclined binding-ribs 10, which, when the cover is in position upon the filter-case, will by a partial rotation of the cover be snugly bound against the under surface of the ribs 5, and in this manner the cover is drawn closely into its

seat upon the packing-ring 4, thereby forming an air-tight joint. The cover is also provided at its center with a threaded nipple 11, to which may be connected a pipe leading from any suitable source of supply. In this instance, in order to facilitate a forced filtration of the water, I connect the lower end of a pipe 12 to the nipple 11, the upper end of said pipe being connected with and supporting a reservoir or supply-tank 13. The water, being supported at an elevation above the filter, serves to exert pressure in a discharge of the water to the filter.

Near the lower end of the filter-case there is provided a draw-off cock 14, and slightly above the same there is formed an opening 15 in the wall of the filter-case, from which there extends inwardly a box 16, in which is mounted a removable ice-drawer 17.

The filter proper comprises an upper and a lower circular disk or plate, designated as 18 and 19, respectively. The upper disk is provided with a central perforation 20 and with several concentric series of short curved slots or perforations 21, the slots of each series alternating with short curved depending flanges 22, the flanges between the slots being located slightly nearer the center of the disk than are the slots between which they are located. The disk is further provided between each series of slots and ribs with a concentric series of short curved flanges 21^x, similar to the flanges 22. The lower disk 19 is provided with a central perforation 20 and with several concentric series of combined short curved slots and flanges and intermediate the same with several series of flanges 21^x, the flanges all being located upon the upper side of the disk. The combined series of slots and flanges of the upper disk are vertically opposite or directly above the plain flanges 21^x of the lower disk, and between each annular combined slots and flanges and series of flanges alone is located a rubber packing-ring 23. Between the two disks thus constructed are interposed a series of filtering-cylinders 25, the same being constructed of any suitable porous material—such as porcelain, &c.—said cylinders being graduated in diameters, so as to take one within the other. These cylinders are seated between

the rubber packing-rings 23 and serve to divide the filter into a series of annular filtering-compartments. By reason of the relative location of the slots of the two disks those compartments open at their upper ends will be closed at their lower ends, and vice versa, so that those compartments open at their upper ends will alternate with those that are closed at their upper ends and open at their lower ends. Through the central openings of the two disks is passed a binding-bolt 26, the upper end of which extends above said upper disk, is threaded, and is provided with a washer 27 and a thumb-nut 28 for binding the disks and cylinders together. The periphery of the upper disk of the filter is bent to form an inclined flange 24, which forms a tight joint with an annular inclined supporting-shelf 24^x extending from the wall of the casing 1, a rubber packing-ring 23^x serving this purpose. The lower disk is slightly less in diameter than the upper disk, and may therefore pass below the supporting-flange when the filter is introduced.

From the above it will be apparent that the filtering device may be entirely separated and also withdrawn as a whole from the filter-case, whereby the case and the elements composing the filter may be thoroughly cleaned, &c.

The unfiltered water passes from the reservoir through the pipe into the filter-case, through the slots in the upper disk, which occur at the upper end of each alternate compartment, and through the filtering-cylinders to the adjacent compartments and out through the slots formed in the lower disk at the lower ends of the said compartments and collects in the bottom of the filter-case below the filter, in which is located the ice box and drawer heretofore mentioned. The water here is thoroughly cooled, and may be drawn off through the draw-off cock in the usual manner.

It will be observed that by employing the series of filtering cylinders or sections the capacity of the filter is greatly increased, in that a greater amount of filtering-area is provided. The source of supply being elevated serves to force the water through the filter more rapidly than would be the case if the water

was not introduced under pressure. For the purpose of producing this pressure various devices will readily suggest themselves, and I do not, therefore, limit my invention to any particular construction of such device.

Having thus described my invention, what I claim is—

1. The combination, with a filter-case, of a filter supported therein, the same comprising opposite disks, a series of filtering-partitions forming a series of filtering-compartments, the upper disk being perforated opposite the upper end of each alternate compartment and the lower disk perforated opposite the lower end of each intermediate compartment, and means for connecting said disks, substantially as specified.

2. The combination, with a filter-case, of a filter mounted therein, the same comprising upper and lower perforated disks, a series of cylindrical and graduated filtering-cylinders arranged between the plates and spaced apart to form a series of annular filtering-compartments, the upper disk being perforated opposite the upper end of each alternate compartment and the lower disk perforated opposite the lower end of each intermediate compartment, and a binding-bolt passed through the center of the two disks and the central cylinder, substantially as specified.

3. The herein-described filtering medium adapted for suspension within the filter-case, the same consisting of upper and lower disks, each having several concentric series of alternating flanges and slots, those of the lower disk being arranged out of vertical alignment with those of the upper disk, a series of packing-rings mounted between said series, cylindrical filtering-sections mounted between opposite rings of the two disks, a binding-bolt connecting the two disks, and a binding-nut mounted on the end of the bolt, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HENRY GOODACRE.

Witnesses:

WM. YELLMAN,
FRANK ROGERS.