

No. 816,266.

PATENTED MAR. 27, 1906.

G. A. STEBBINS.

GAS FILTER.

APPLICATION FILED MAY 6, 1905.

2 SHEETS—SHEET 1.

Fig. 3

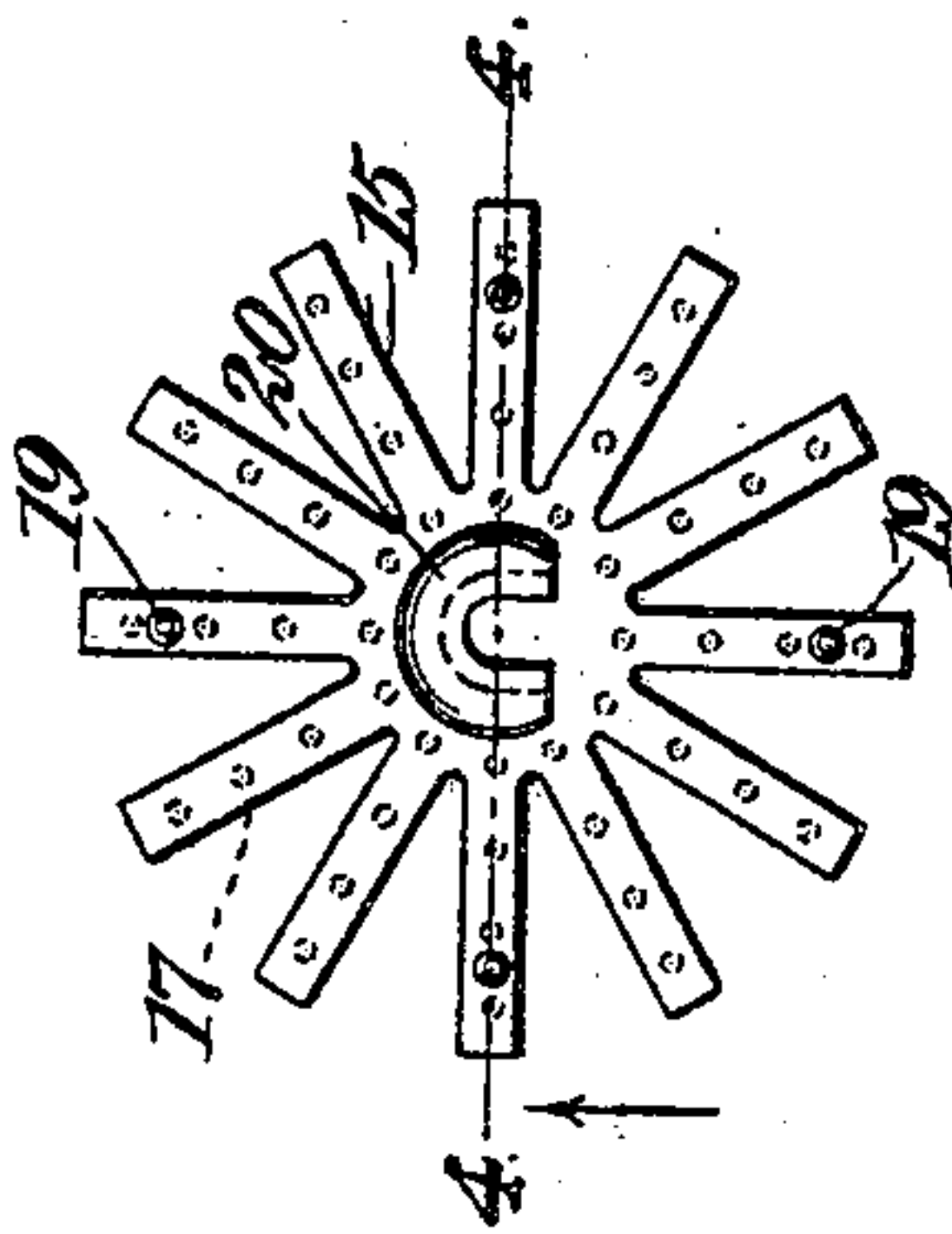


Fig. 4

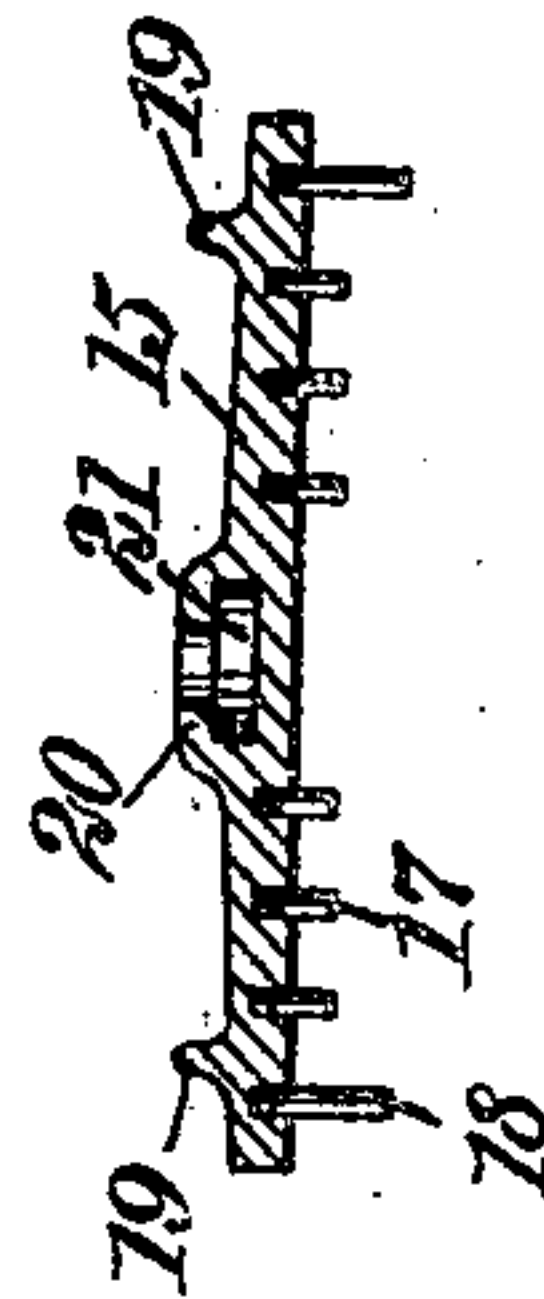


Fig. 1

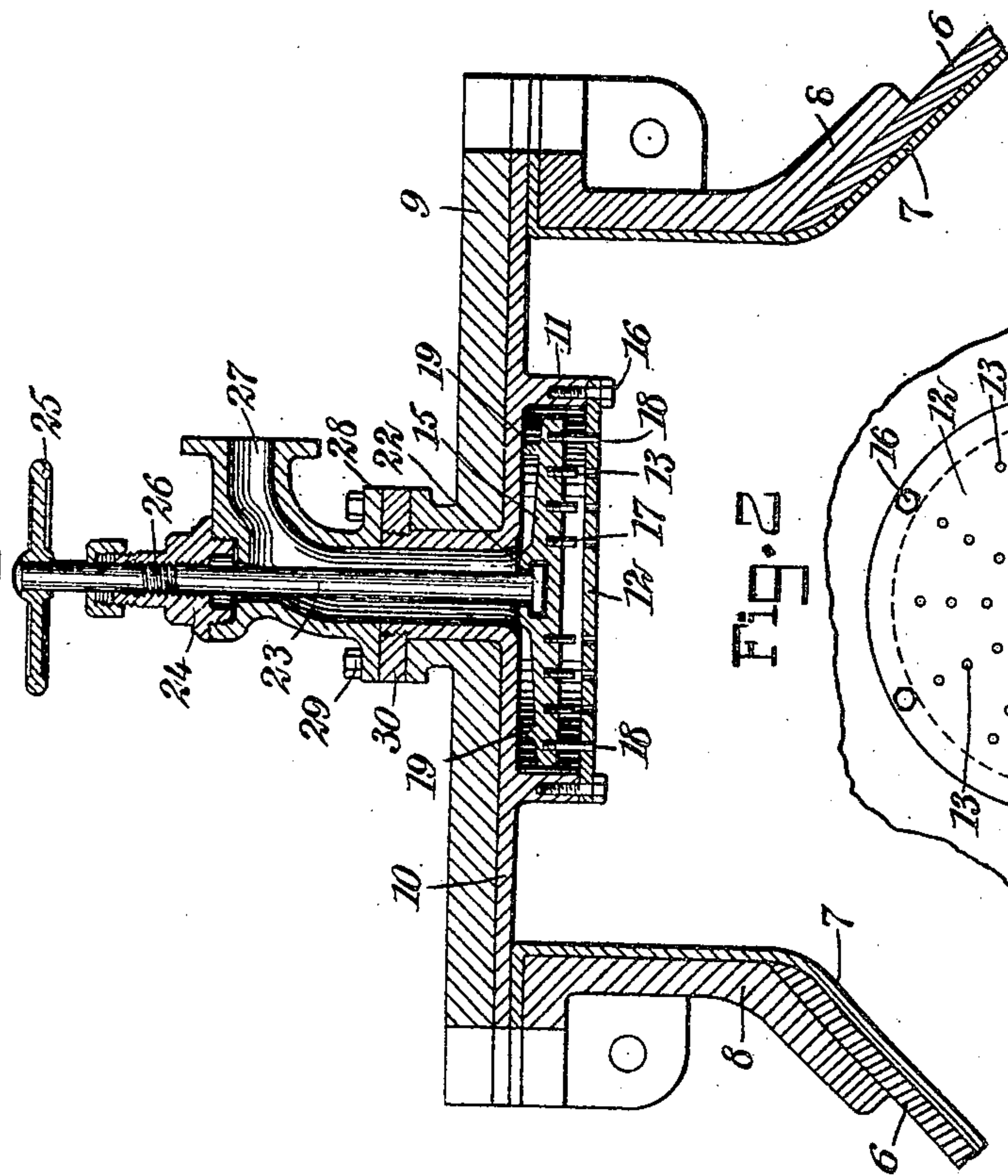
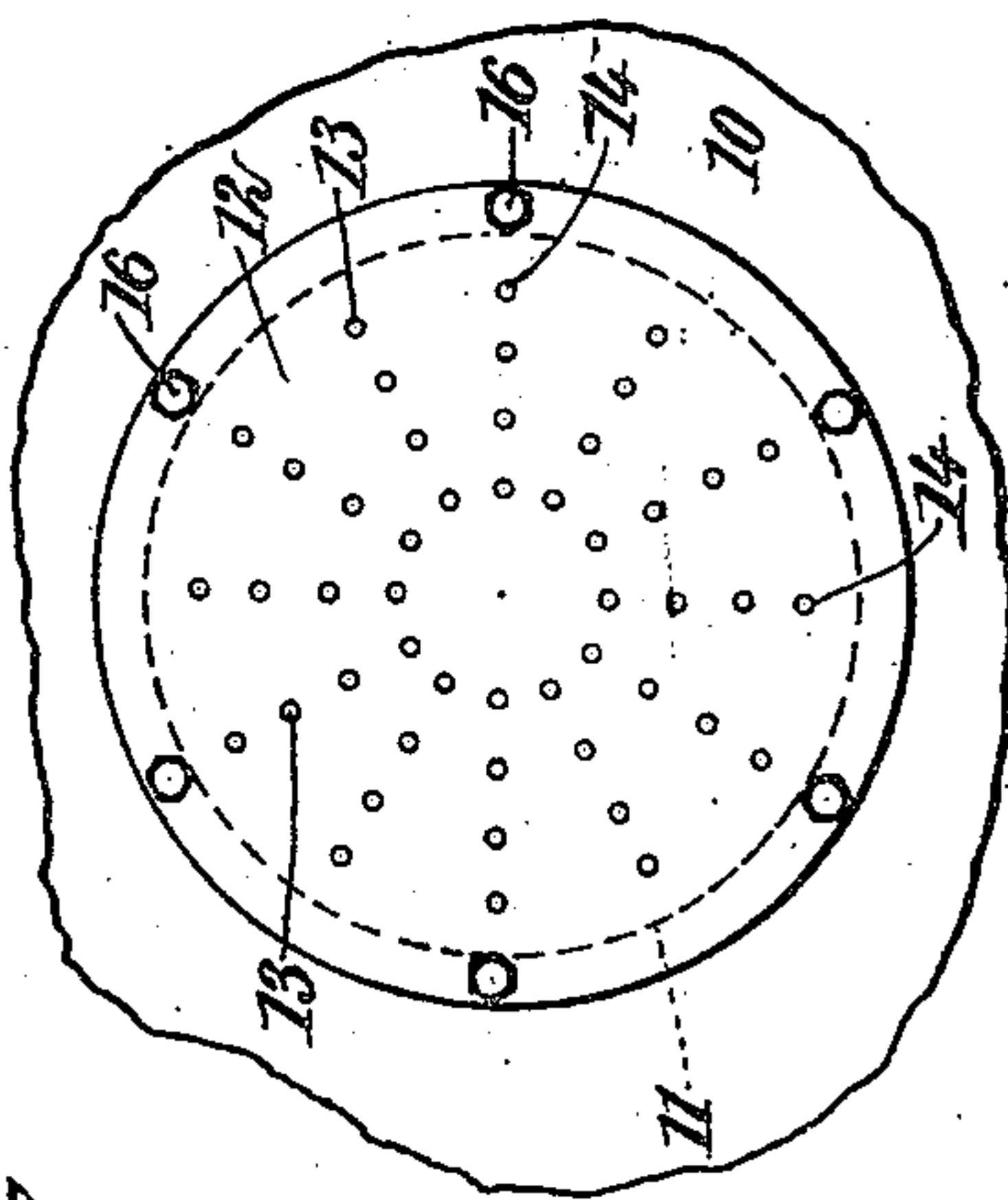


Fig. 2



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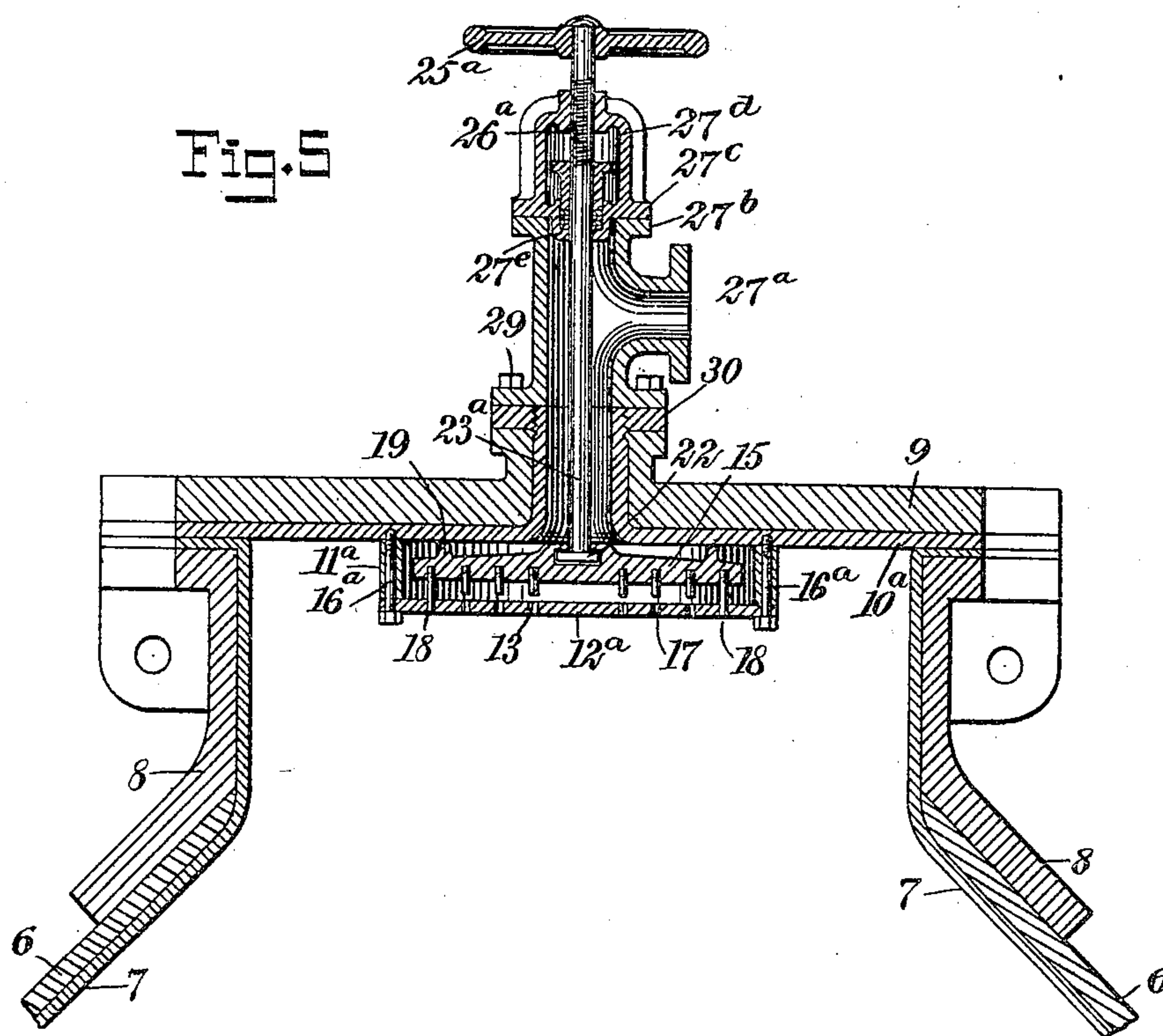
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UNITED STATES PATENT OFFICE.

GEORGE ALFRED STEBBINS, OF WATERTOWN, NEW YORK.

GAS-FILTER.

No. 816,266.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed May 6, 1905. Serial No. 259,110.

To all whom it may concern:

Be it known that I, GEORGE ALFRED STEBBINS, a citizen of the United States, and a resident of Watertown, in the county of Jefferson and State of New York, have invented a new and Improved Gas-Filter, of which the following is a full, clear, and exact description.

My invention relates to sulfite apparatus, my more particular object being to equip the digester with a suitable filter, together with means for preventing the filter from fouling.

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

Figure 1 is a fragmentary section showing the top of the digester equipped with my invention. Fig. 2 is an inverted plan or bottom view of the filter, showing the means for securing the same within the digester. Fig. 3 is a plan view of the spider 15, used to prevent the filter from fouling. Fig. 4 is a vertical section through the spider 15, taken upon the line 4-4 of Fig. 3, looking in the direction of the arrow; and Fig. 5 is a vertical cross-section showing another form of means for holding the filter in position.

The body of the digester is shown at 6, the acid-proof lining at 7, and the neck at 8. The cover is shown at 9 and is provided with an acid-proof lining 10. Mounted rigidly upon the lining 10 and concentric with the center thereof is an annular bead 11, and secured upon this bead is a filter 12, consisting of a disk plate, of acid-proof material, provided with holes 13 14, disposed, preferably, in radial rows, as indicated in Fig. 2. This filter is secured in position by means of threaded bolts 16, which penetrate the annular bead 11.

In the form shown in Fig. 5 the filter 12^a is secured in position by comparatively long bolts 16^a, which pass directly through an annular collar 11^a into a lining 10^a, the collar 11^a being separate therefrom. The spider 15 is encircled by the annular bead 11 (or the collar 11^a) and is provided with a number of bosses 17, screw-threaded and secured rigidly upon its under face, so as to aline with the holes 13 in the filter. Guide-pins 18, preferably four in number, are similarly screw-threaded and project downwardly from the spider 15. The guide-pins 18 register with certain holes 14 and are never entirely removed therefrom while the device is in action.

The spider is provided with bosses 19, preferably integral therewith and projecting upwardly therefrom. The spider is further provided with a stirrup-swivel 20, having an aperture 21, which receives a head 22, rigidly mounted upon a revoluble stem 23 23^a.

In Fig. 1 a stuffing-box 24 encircles the stem 23 and is provided with a hand-wheel 25, whereby the stem 23 and the head 22 may be turned. The stem 23 is threaded at 26 and when turned by the hand-wheel 25 is slightly raised or lowered, as will be understood from Fig. 1. An elbow 27 is provided with a flange 28, which is secured in position by means of bolts 29 upon a collar 30.

In Fig. 5 a T 27^a is provided with a flange 27^b, and this flange is mated by a flange 27^c, which is integral with a cap 27^d. The revoluble stem 23^a is provided with a thread 26^a, which works freely through the cap 27^d. A stuffing-box carried by the cap 27^d closely encircles the stem 23^a.

The operation of my device is as follows: As is well known, digesters used in the manufacture of wood-pulp fiber are filled nearly full with chips of wood, and the so-called "cooking" liquor is supplied in sufficient quantity to practically cover the chips, the aggregate quantity of the chips and cooking liquor being such that a little space is left at the top after filling. Steam being admitted, however, condenses quite rapidly, and this causes the volume of the liquid within the digester to increase to such a point that some of the chips are raised into contact with the lining of the digester-cover. The filter 12 is provided for the purpose of preventing the chips from passing upwardly out of the apparatus through the elbow 27 or T 27^a; but if no other mechanism were present the chips would clog the holes 13, so as to prevent gases from escaping in the customary manner. It is upon this account that I provide the spider 15, together with the means for moving the same vertically. Whenever the chips tend to cause fouling of the filter 12, by turning the hand-wheel 25 and forcing the stem 23 downwardly the bosses 17 are forced through the holes 13, and thus dislodge such of the chips as obstruct the holes. This being done, the hand-wheel 25 is turned in the opposite direction and the stem 23 and the head 22 raised, so as to elevate the spider 15 to its normal position. The lugs 19 bind against the lining 10 and prevent excessive upward movement of the spider 15. When the parts are in their

normal position, as indicated in Fig. 1, the filter 12 offers no undue obstruction to the exit of the gases from the digester, and yet with a sliding movement of the hand-wheel 5 25 the spider 15 can be lowered, so that the lugs 17 assume their lowermost position. The guide-pins 18 prevent the bosses 17 from moving out of registry with the holes 13.

I do not limit myself to any particular 10 mechanism for raising and lowering the spider, nor to the exact shape of spider shown, nor to the materials of which any of the parts are composed, nor to the exact construction shown and described, for the reason that va- 15 rious changes in the construction may be made without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters 20 Patent—

1. The combination of a digester provided with a cover, an annular member connected with said cover and depending into said digester, a filter having substantially the form 25 of a disk and connected with said annular member being disposed substantially parallel with the general plane of said cover and being provided with apertures, a spider disposed intermediate of said filter and said 30 cover, bosses mounted upon said spider and adapted to enter said apertures, guide-pins mounted upon said spider and projecting into others of said apertures for the purpose of holding said spider in a predetermined rela- 35 tion to said filter, and a manually-operated stem connected with said spider for raising and lowering the same.

2. The combination of a digester, a cover therefor, a filter disposed adjacent to said 40 cover and spaced therefrom, a spider mounted intermediate of said filter and said cover, means for moving said spider relatively to said filter, bosses connected with said spider and adapted to engage said filter for the pur- 45 pose of preventing the same from fouling,

guides for said spider, a stirrup-swivel connected with said spider, and a manually-operated stem provided with a head engaging said stirrup-swivel for the purpose of moving said spider relatively to said filter.

3. The combination of a containing vessel, 50 a T connected therewith for allowing the passage of steam and gases therefrom, said T being provided with a flange, a cap mounted upon said T and provided with a flange mat- 55 ing said flange of said T, a stuffing-box connected with said cap and supported thereby, a revoluble stem engaging said cap and said stuffing-box, means for actuating said stem, and a gas-filtering member connected with 60 said stem and adapted to prevent the passage of coarse substances from said containing vessel to said T.

4. The combination of a digester, a cover therefor, said cover being provided with an 65 annular member, a filter connected with said annular member and provided with holes, a spider encircled by said annular member and provided with bosses adapted to enter said 70 holes, means for causing said bosses to aline with said holes, and mechanism for shifting the position of said spider relatively to said filter.

5. The combination of a digester, a filter connected therewith for allowing the escape 75 of gases therefrom while preventing the escape of other materials, and a member movable toward and from said filter and provided with means for preventing said filter from 80 fouling, said member being further provided with beads serving as limiting-stops for engaging the digester.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE ALFRED STEBBINS.

Witnesses:

HERBERT S. LUTHER,
GERTRUDE A. GAFFNEY.