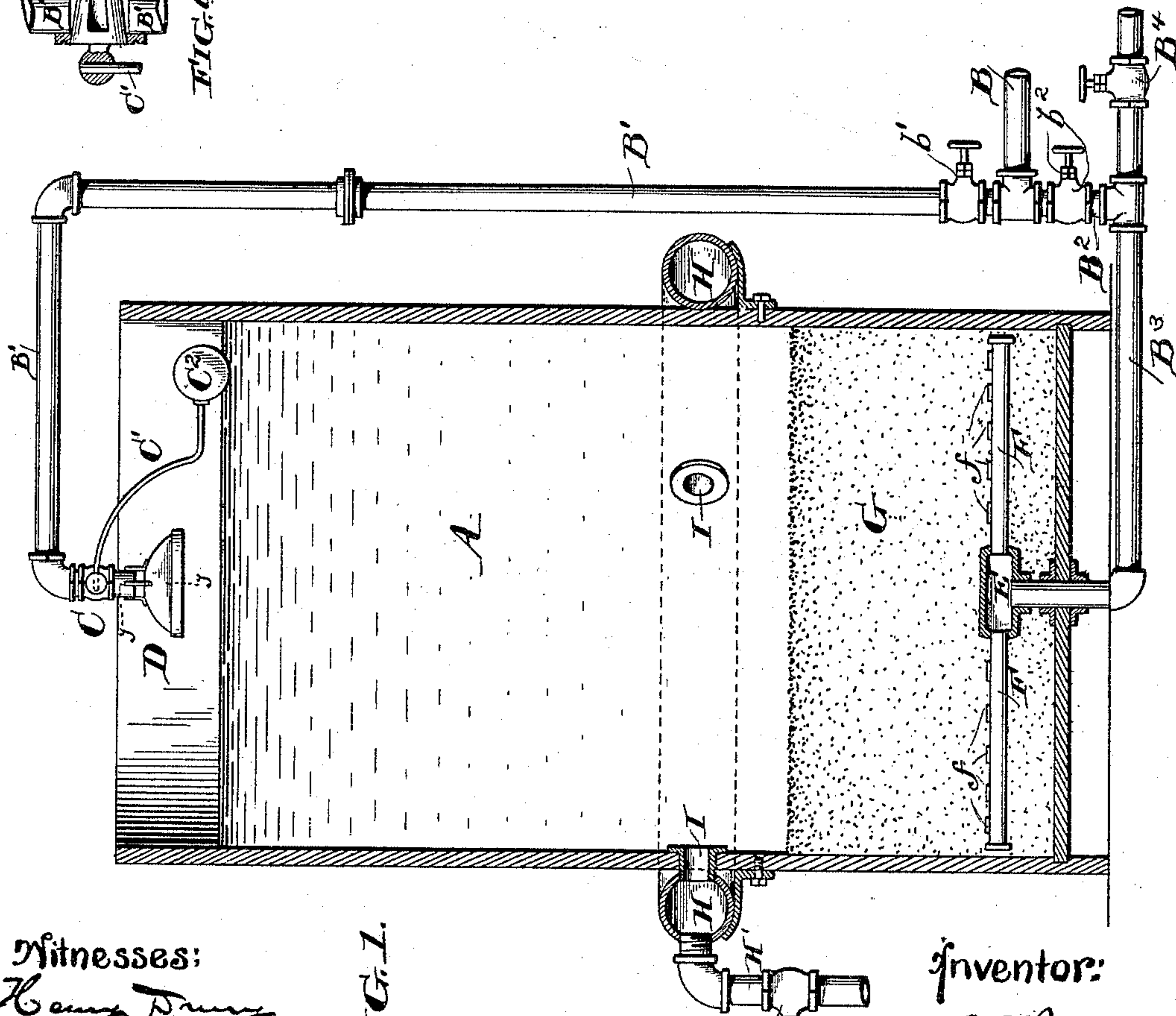
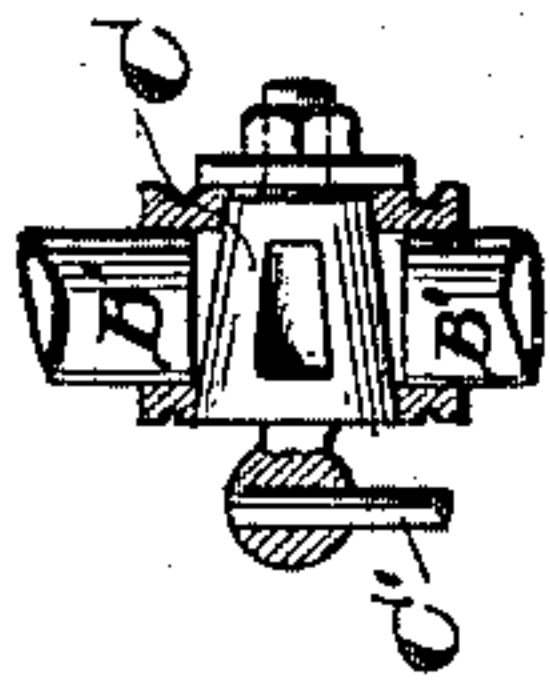
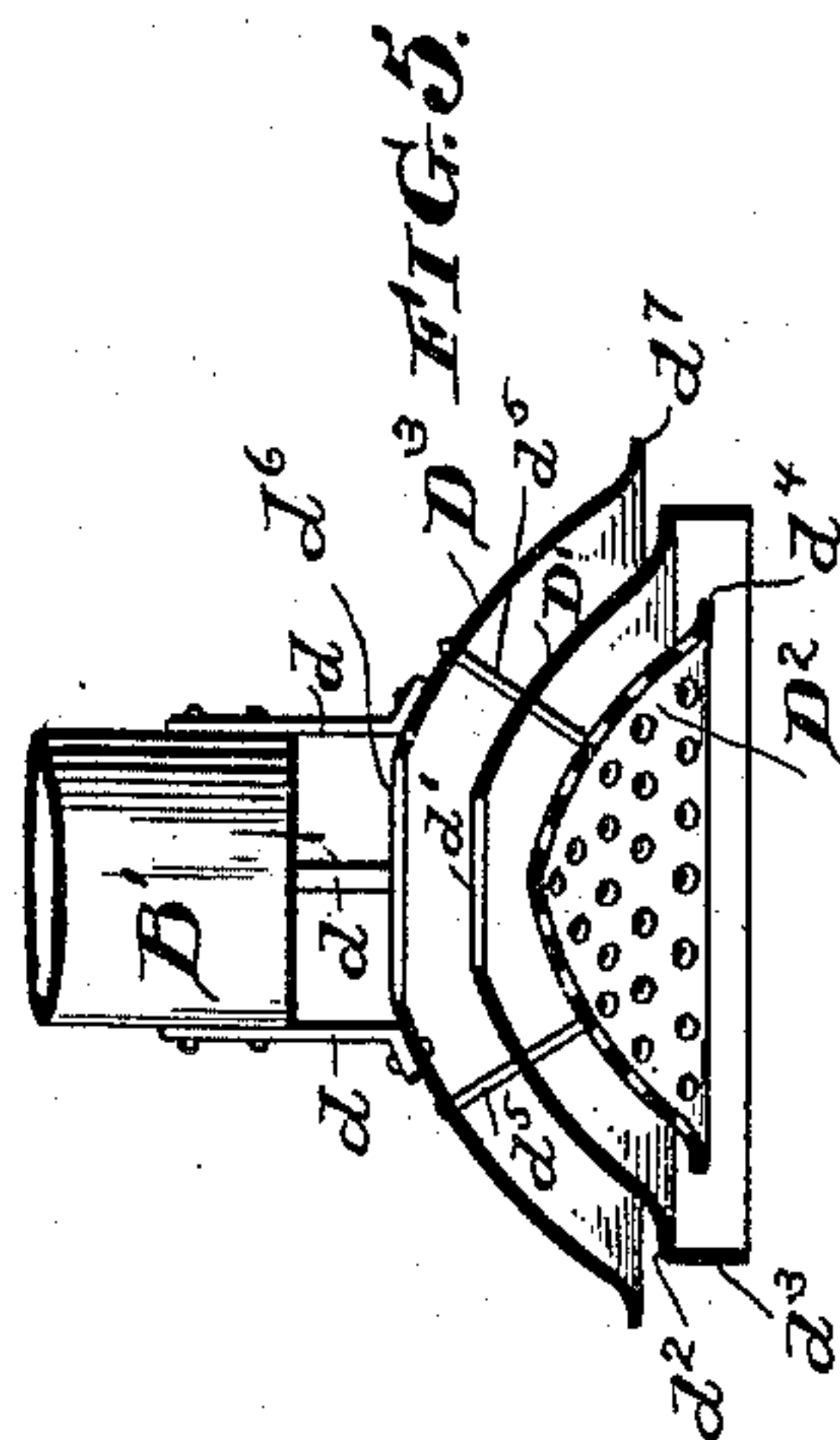
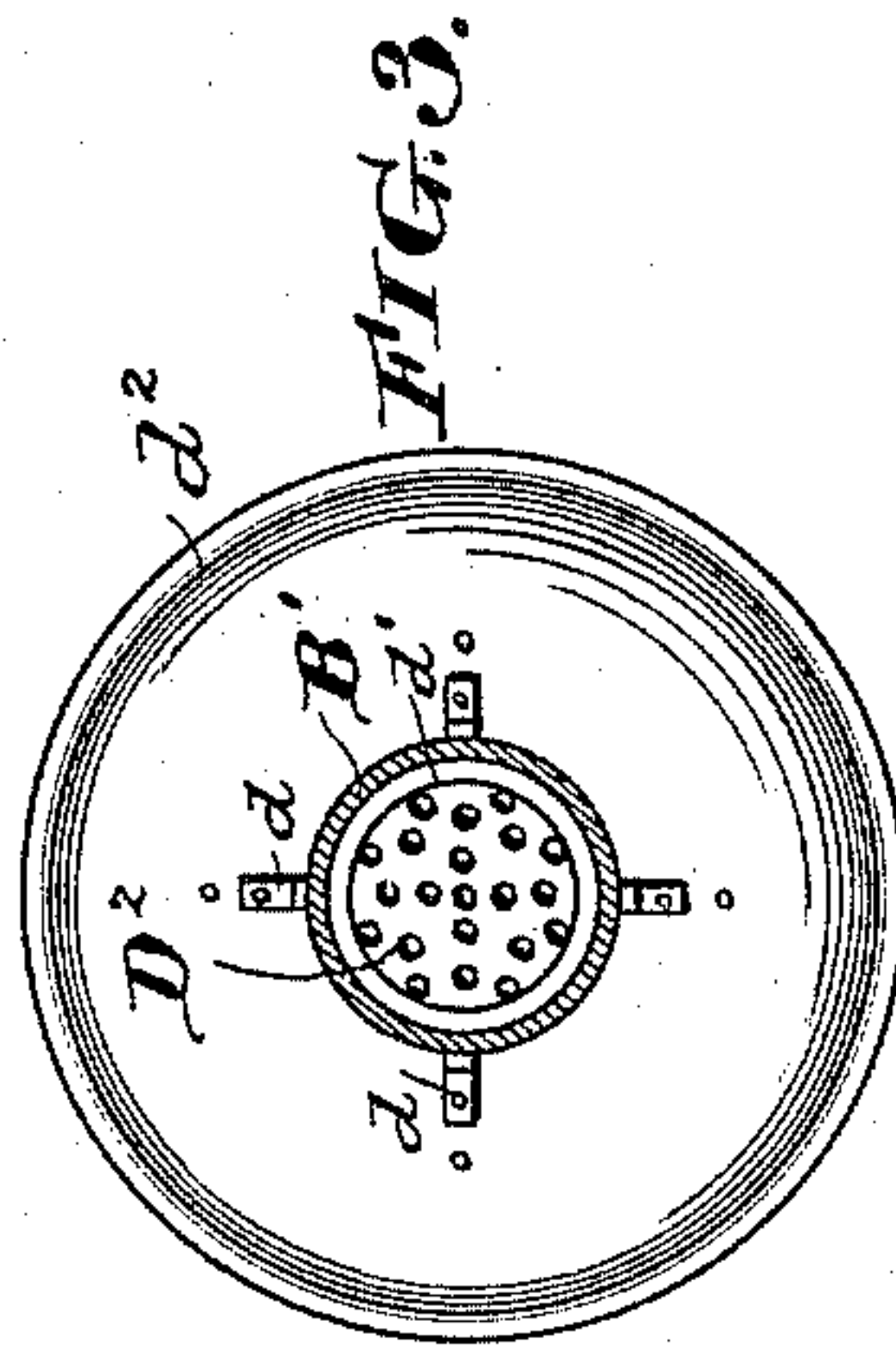
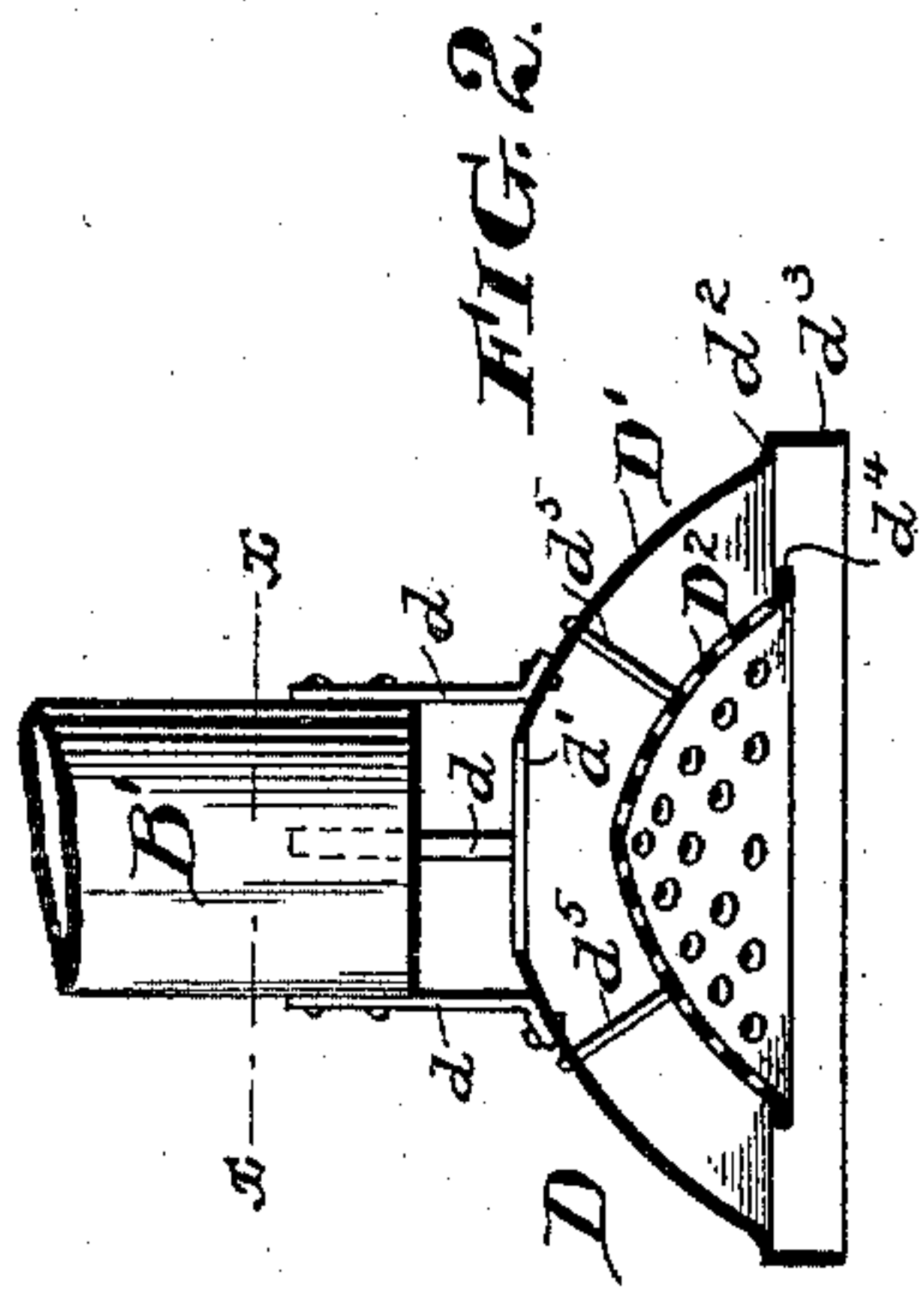


(No Model.)

H. C. THURSTON.  
DISTRIBUTING FEED NOZZLE FOR FILTERS.

No. 488,297.

Patented Dec. 20, 1892.



Witnesses:  
Henry D. Dwyer  
J. H. Russell.

FIG. 1.

Inventor:  
Henry C. Thurston  
by his atty.  
James T. Chambers.



# UNITED STATES PATENT OFFICE.

HENRY C. THURSTON, OF NORWICH, CONNECTICUT, ASSIGNOR TO THE  
MORISON-ALLEN COMPANY, OF NEW YORK, N. Y.

## DISTRIBUTING FEED-NOZZLE FOR FILTERS.

SPECIFICATION forming part of Letters Patent No. 488,297, dated December 20, 1892.

Application filed December 9, 1891. Serial No. 414,483. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. THURSTON, of the city of Norwich, county of New London, and State of Connecticut, have invented a certain new and useful Distributing Feed-Nozzle for Filters, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the construction of the nozzle by which the feed water is delivered to the filter tank, and has for its object to so deliver the water to the tank as to prevent the formation of currents and eddies in the column of water resting on the filter bed.

My invention will be best understood as described in connection with the drawings, and in which:

Figure 1. is a central vertical cross section through the filter tank showing the distributing nozzle on side elevation. Fig. 2. is a central vertical cross section through the distributing nozzle, taken for instance on the line *y y* of Fig. 1. Fig. 3 is a plan view of the distributing nozzle taken on the section line *x x* of Fig. 2. Fig. 4. is a cross sectional view of the regulating cock in the feed pipe, and: Fig. 5. is a vertical cross sectional view of a modified form of distributing nozzle.

A. is the filter tank. B. the supply pipe connecting with the feed pipe B', and also with the downwardly extending pipe B<sup>2</sup>. Pipe B<sup>2</sup> connects with the delivery pipe B<sup>3</sup> of the filter, and also with the pipe B<sup>4</sup> which leads to the point of use or storage for the filtered water.

*b' b<sup>2</sup> b<sup>4</sup>* are the valves by which the course of the water can be regulated at will.

E is a hollow box communicating with pipe B<sup>3</sup>, and also with the radial pipe arms F. F. &c. which open into the bottom of the filter tank at *f* &c.

G indicates the filter bed. I. I. openings a short distance above the top of the filter bed which connect with a pipe H. and from which pipe leads another pipe H'. *h* being a cock situated in pipe H'.

C is a regulating cock situated in the pipe B'. and operated by means of a float C<sup>2</sup>. through the medium of a lever C'.

In the above particulars the filter shown is

of ordinary construction and forms no part of my invention.

D indicates a distributing nozzle which is secured on the downwardly extending mouth of pipe B', and is best placed in the center of the tank. The essential features of this nozzle consist of the bell or dome D'. having an opening *d'* at its top and supporting an inner deflector which is preferably also made of a bell or dome shape and which is indicated at D<sup>2</sup>. *d<sup>5</sup>*. *d<sup>5</sup>* &c. indicating the braces by which the deflector is supported inside of the bell D'. Preferably D<sup>2</sup> is perforated throughout. Preferably also provided with one or more outwardly projecting ridges as indicated at *d<sup>4</sup>*.

It is advisable to secure the bell D' a short distance below the mouth of pipe B', which can be readily done by means of supports *d d* &c., and in this case the diameter of the opening *d'* should be somewhat less than that of the pipe B', and when this mode of construction is employed I prefer to form on the outer face of the bell D' one or more annular ridges such as is indicated at *d<sup>2</sup>*. In the drawings such a ridge is shown at the extremity of the dome, and a cylindrical flange *b<sup>3</sup>* is shown as extending below the ridge.

In some cases, particularly when the tanks are of large diameter, it is advisable to employ more than one dome above the deflecting plate or bell, such a construction as illustrated in Fig. 5, where a supplementary bell or dome D<sup>3</sup> is shown secured above the bell D', and in this case the opening *d<sup>6</sup>* at top of the upper bell should be larger than the opening *d'* in the bell D'. *d<sup>7</sup>* indicates an outwardly projecting ridge at the bottom of bell D<sup>3</sup>.

The operation of the distributing nozzle can be readily followed. The water passing through the opening *d'* is thrown up against the inside of the bell D', and falls through the annular opening around the edge of the deflector in a broken and more or less spray like condition, this is particularly the case when the deflector is made of a bell shape, and the ridge *d<sup>4</sup>* naturally aids in breaking up the water. Where the deflector is perforated as we prefer it should be, a certain amount of water will pass through it in thin streams.



In the preferred construction in which the upper bell is situated at some distance below the mouth of the pipe B' a portion of the water strikes on the outside of the bell and is  
5 thrown off in a broken condition, the breaking up of the water into drops being materially aided by ridges such as  $d^2$  formed on the outside of the bell. Where two or more bells are used as in Fig. 5 the water is even more broken  
10 up for reasons which are self-apparent, and in all cases I effect to a greater or less extent the result which I have in view, and which is to effect a substantially even distribution of water over a large portion of the tank, thus  
15 avoiding the formation of currents in the filter.

Having now described my invention what I claim as new and desire to secure by Letters Patent, is:

20 1. In combination with a filter tank a supply pipe B' extending over the top thereof

concentric domes, the upper ones having central openings for the passage of water, and the upper one suspended below the mouth of pipe B' substantially as and for the purpose 25 specified.

2. A filter supply nozzle having in combination a supply pipe B' a dome provided with a central opening suspended below the mouth of pipe B and a peripheral ridge  $d^2$  and a 30 perforated deflector D<sup>2</sup>.

3. A filter supply nozzle having in combination a supply pipe B a dome provided with a central opening suspended below the mouth of pipe B and a peripheral ridge  $d^2$ , and a 35 perforated deflector D situated in the dome and having a peripheral ridge  $d^4$ .

HENRY C. THURSTON.

Witnesses:

INCREASE W. CARPENTER,  
JOSEPH T. CUNNINGHAM.