

No. 625,794.

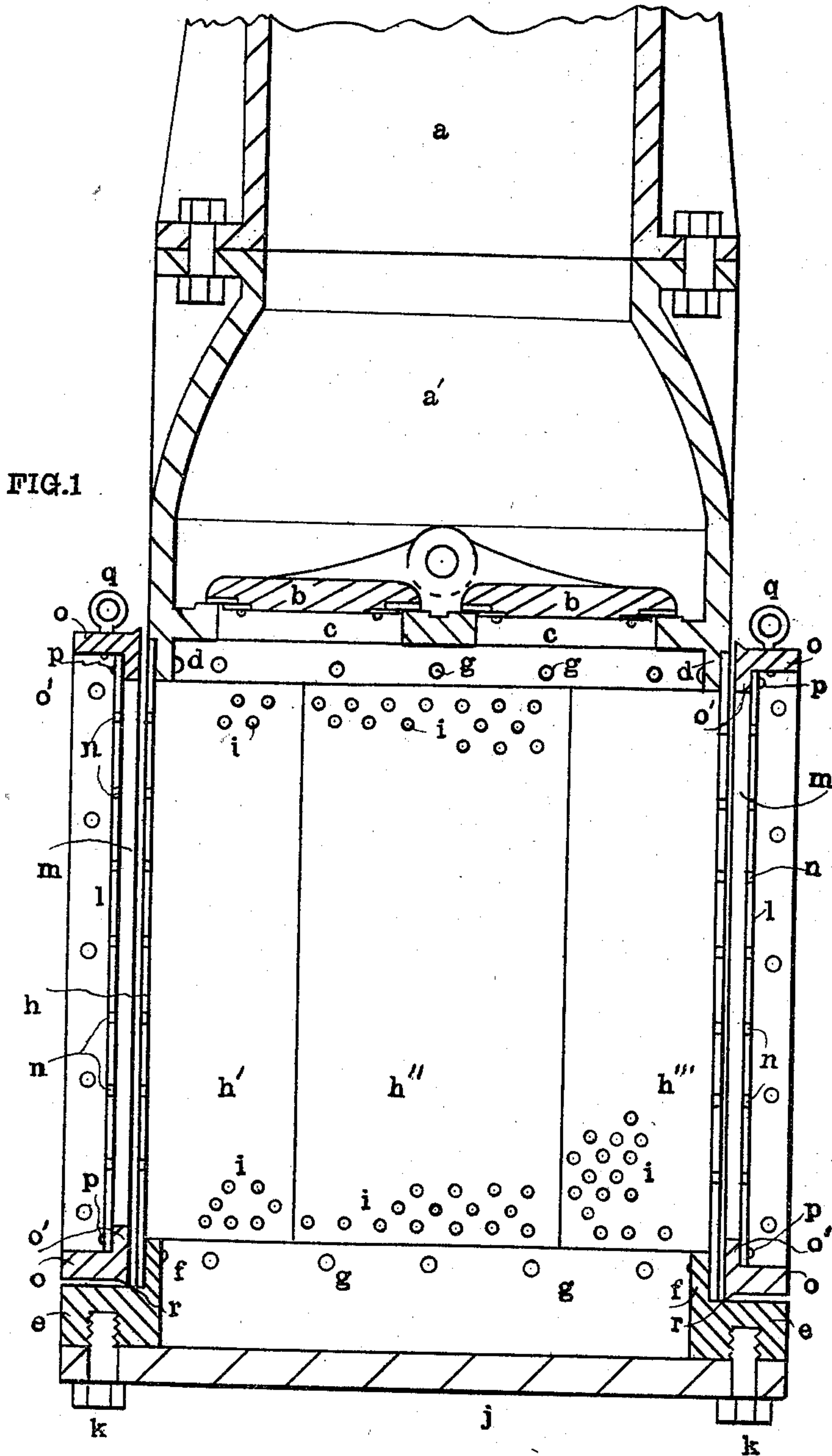
Patented May 30, 1899.

J. W. NEWMAN.
SUCTION PIPE FOOT VALVE FILTER.

(Application filed Mar. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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2 Sheets—Sheet 2.

FIG 3

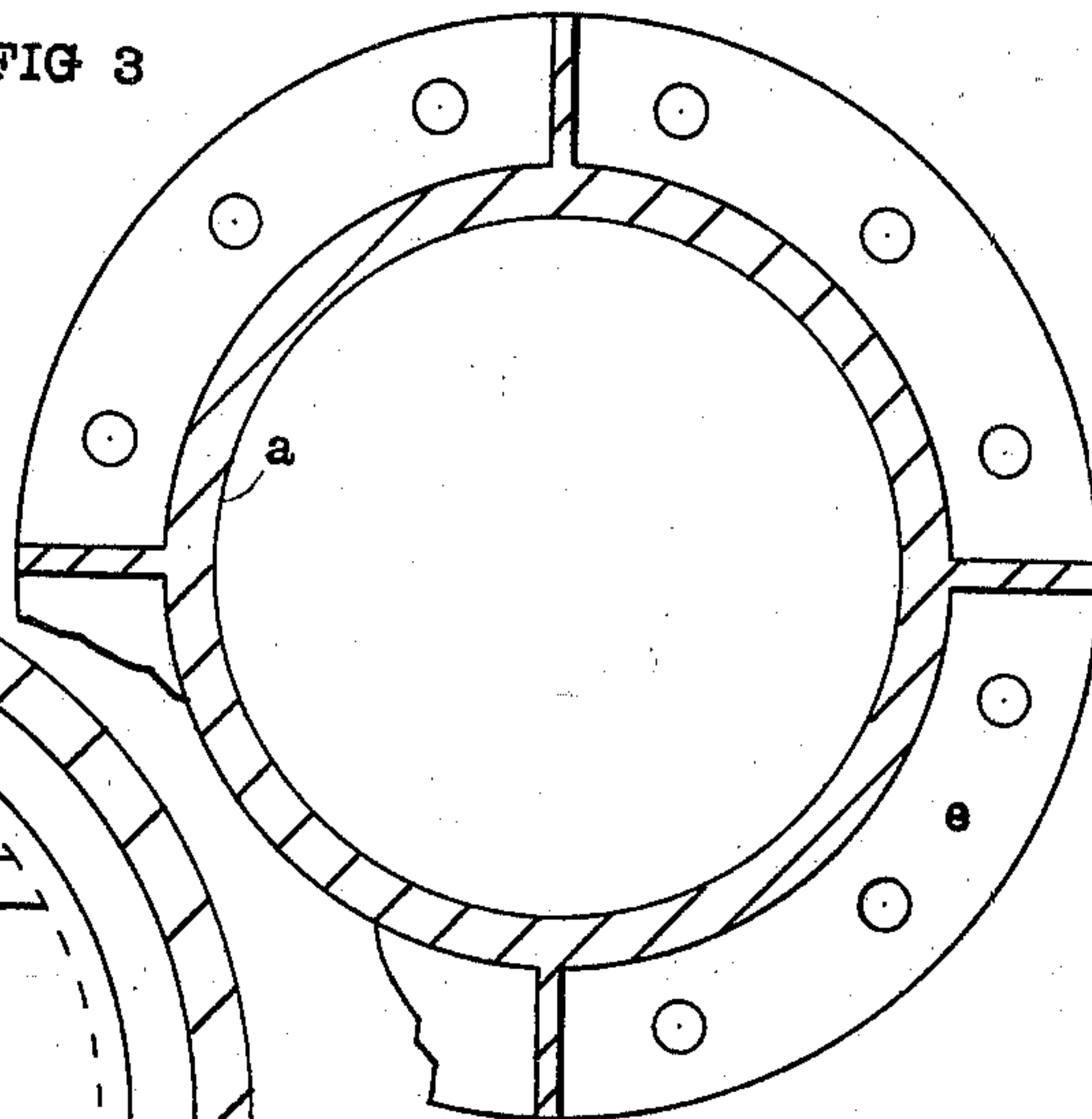


FIG 4

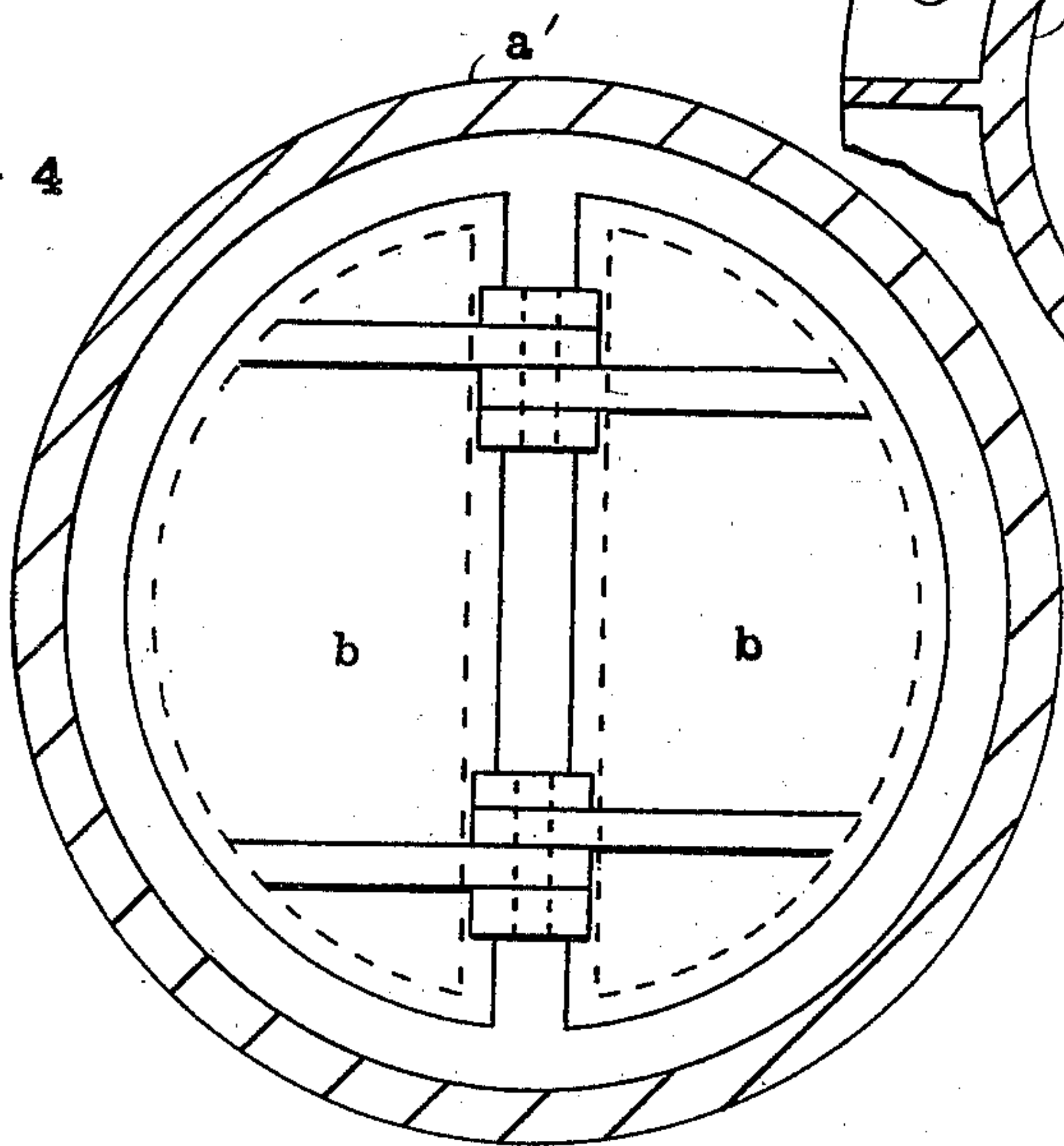


FIG 5

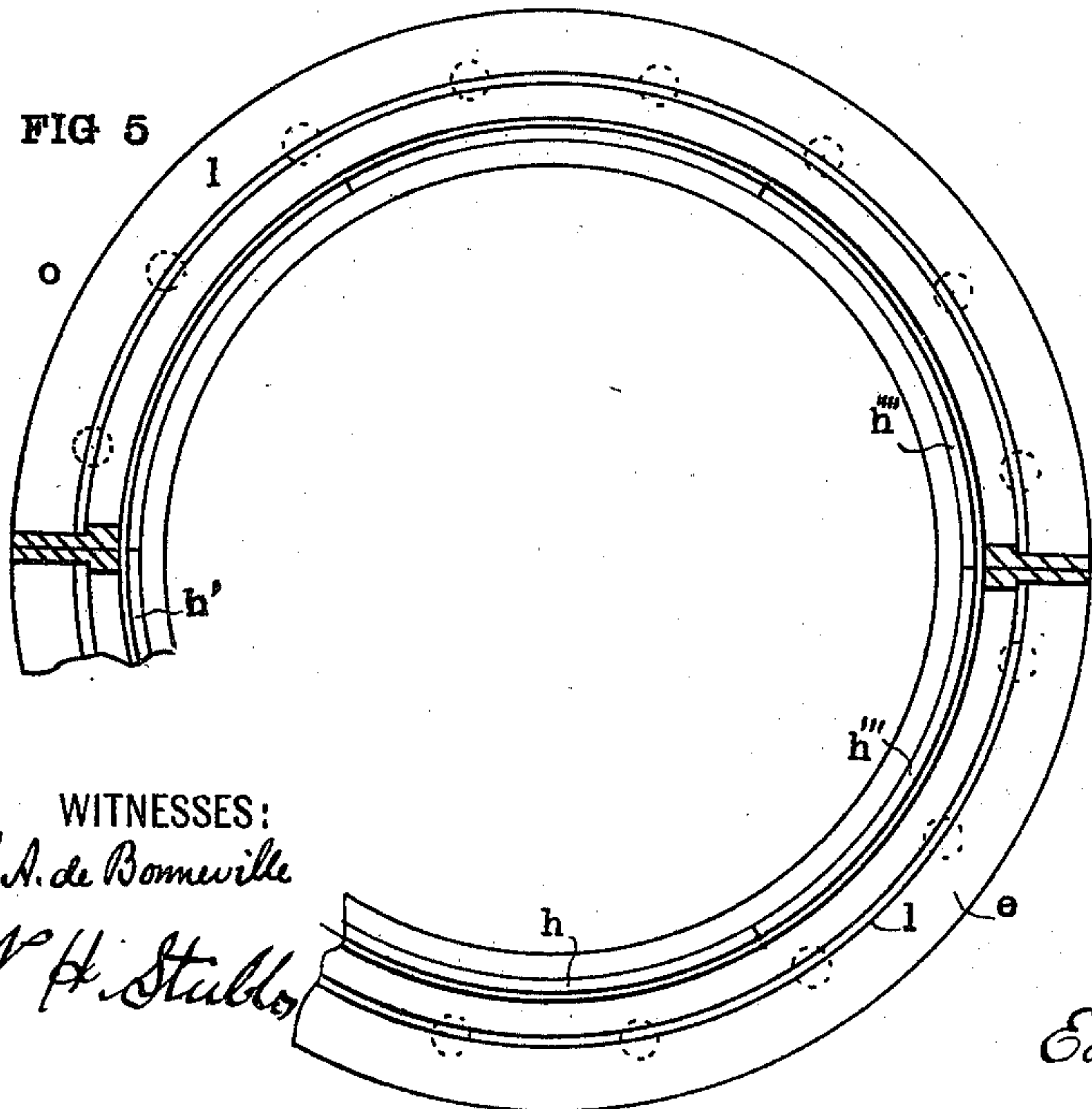
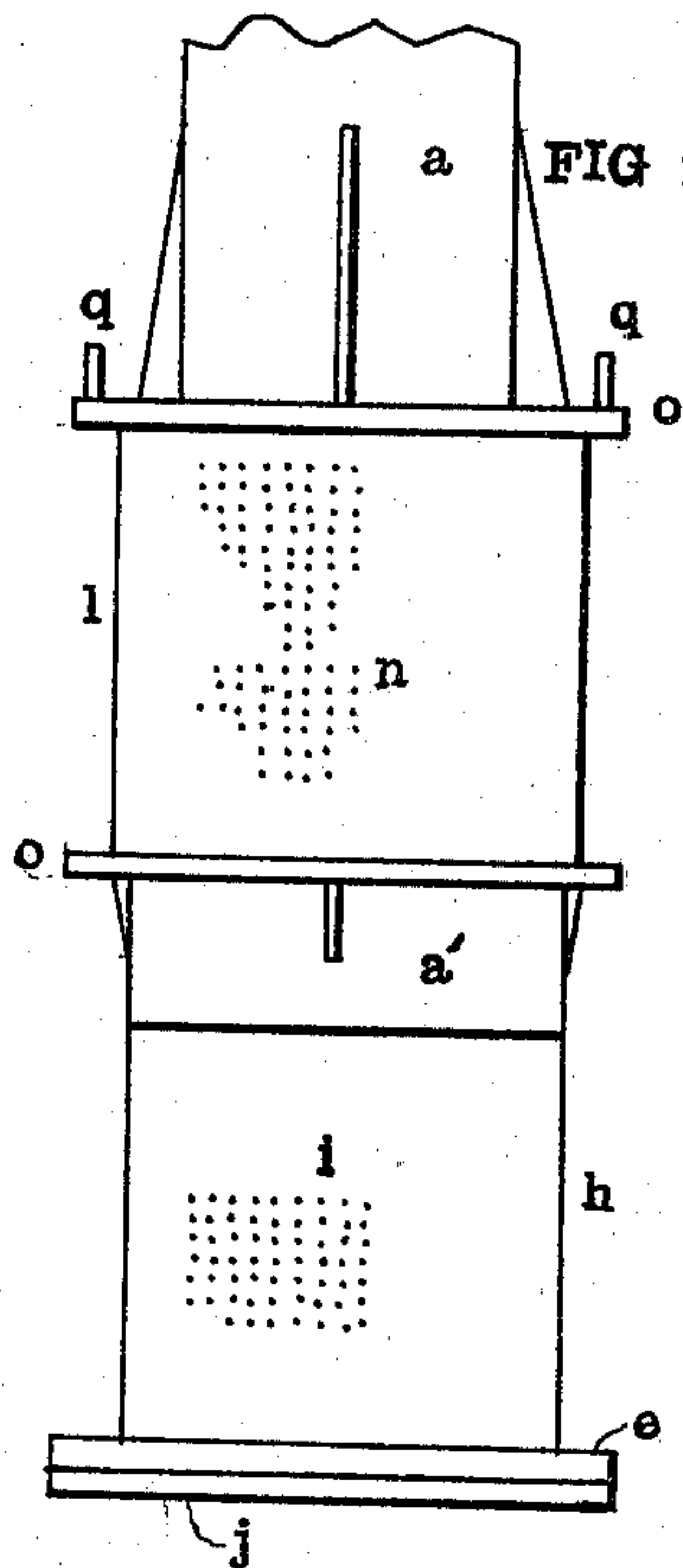


FIG 2



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UNITED STATES PATENT OFFICE.

JOHN W. NEWMAN, OF ELIZABETH, NEW JERSEY.

SUCTION-PIPE FOOT-VALVE FILTER.

SPECIFICATION forming part of Letters Patent No. 625,794, dated May 30, 1899.

Application filed March 16, 1899. Serial No. 709,253. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. NEWMAN, a citizen of the United States of America, and a resident of Elizabeth, county of Union and State of New Jersey, have invented a new and useful Improvement in Suction-Pipe Foot-Valve Filters, of which the following is a specification.

My invention relates generally to suction-pipe valves, and particularly to means adapted to insure not only the filtering of the water, but also so equipped as to provide for the cleansing of the filter while the valve is open and the whole system of pumping and other machines dependent thereon are in full operation.

Heretofore, as far as I am aware, it has been customary and necessary to shut down the plant at great waste of time, and in the case of an electric plant almost an impossibility, in order that the dirt which chokes the filtering-holes may be removed.

The object of my present invention is to remove this difficulty and to secure the advantages which will hereinafter become evident.

The organization comprising my invention consists of the following elements, some of which are old, of course, but are mentioned in order to show those elements which cooperate as a complete operating device. The usual suction-pipe has, at or near the foot thereof, one or more valves adapted to open upward by the action of the current of water flowing from the well into which the pipe is submerged. Below the valve is a perforated cylinder, permanently located, so that the water before entering through the valve passes, so that the miscellaneous dirt will be stopped from passing upward through the valve and the suction-pipe. Surrounding the said first perforated cylinder is a second cylinder adapted to slide upward and entirely away from the first cylinder, and consequently it can be pulled upward out of the well by means of ropes or otherwise and can be thoroughly cleansed conveniently by a jet of steam, and while this second cylinder is being raised, cleansed, and lowered again the first cylinder continues to serve as a filter. In the regular condition of the operation both of the cylinders serve as filters, and thereby the second cylinder is in no wise a hindrance to

the filtering, but causes the device to be more effective, because that dirt which is not collected by the movable cylinder is very likely to be stopped, at least to a very large extent and practically entirely, by the stationary cylinder. The movable perforated cylinder is provided with means for scraping off the collected filtered dirt from the stationary cylinder during the lower process of the movable cylinder, and said means consists, essentially, of an annular knife-edge carried at the lower cylindrical edge of the movable cylinder.

Figure 1 is a vertical central section of the complete organization which involves my invention. The phase of the device is that in which both cylinders are acting as filters. The movable perforated cylinder is at the lowest position opposite the stationary cylinder. Fig. 2 is a vertical exterior elevation, the phase being different from that shown in Fig. 1, the movable cylinder being in the uppermost position at a distance from the stationary cylinder above the water-level of the well. The device in this figure is drawn to a reduced scale as compared with that used in Fig. 1. Fig. 3 is a horizontal cross-section at line X of a portion of the device shown in Fig. 1. Fig. 4 is a horizontal cross-section at a point just above the valve looking downward. Fig. 5 is a horizontal cross-section at about line Y looking downward in Fig. 1.

a represents the suction-pipe, having an enlarged lower valve-chest *a'*. Two hinged valves *b* are shown in the lower part of the valve-chest *a'*; but I do not give a detailed description of this valve, because it has nothing to do with my invention other than one of the elements necessarily entering into the combination.

c represents the openings, which are adapted to be covered by the valves and through which the water rises. At a lower circumference of the valve-chest and on the outside thereof there is the flange *d*. At some distance directly below there is a ring *e*, having a similar flange *f*. Connecting and riveted to these flanges by means of bolts or rivets *g* is a cylinder *h*, having holes *i*, which should be sufficiently large in their aggregate area to make the total opening at least a great deal larger than the total opening at the valves. It is advisable that the area of the openings should

be about three times the cross-sectional area of the suction-pipe *a* and, say, about one-third the area of the sheet forming the cylinder *h*. This inner stationary cylinder *h* 5 may be built up of sectional or arc-shaped strips of sheet metal *h'* *h''* *h'''*, &c. These sections are bolted or riveted to the flanges *d* and *f* by rivets *g*. Attached to the lower surface of the ring *e* is a base-board *j*, being 10 secured by screws *k*. This lower cylinder *h* is entirely immersed in the water in the river or well or other reservoirs.

l is a movable cylinder concentrically surrounding the stationary cylinder *h* and out of 15 contact therewith, so as to leave a large enough space *m* between the two cylinders, so that the water may pass freely, first through the holes *n* in the cylinder *l* and then through the holes *i* in cylinder *h*. The movable cylinder *l* connects the two rings *o*, respectively, 20 located in the normal condition at the lower and upper portions of the stationary cylinder *h*. The rings *o* have flanges *o'*, to which the cylinder *l* is riveted, screwed, or bolted, as 25 shown at *p*. In the top ring *o* are eyebolts *q*, with which ropes may be attached for raising the movable cylinder.

r represents a knife-edge formed upon the lower edge of the lower ring *o* adjacent to the 30 outer surface of the inner cylinder *h*.

The operation is as follows: By means of the force of suction the water from the well flows through the outer movable cylinder *l*, through the space *m*, then through the inner stationary 35 cylinder *h*, then upward through the valve-openings *c*, past the valve *b*, and then upward through the valve-chest *a'* and suction-pipe *a*. On account of the filter being located usually in a river or pond or other reservoir 40 sticks and other dirt flow along with the water, but are stopped partly by the movable perforated cylinder *l* and finally practically and completely by the inner stationary cylinder *h*.

After an interval of time, more or less according to circumstances, the holes in both of 45 the cylinders and especially in the outer movable one become more or less stopped by dirt. When this accumulation occurs to an inconvenient degree, the movable outer cylinder is elevated to its highest position and washed 50 by a jet of steam or water or in any other convenient manner, after which the said cylinder is allowed to drop by its own weight or may be pushed downward by hand, whereby the flange *r* on the lower ring *o* scrapes off the 55 mud from the holes in the cylinder *h* very effectively. It is important to notice that this cleansing process is carried out without any interruption whatever to the plant to which the foot-valve belongs. 60

I claim as my invention—

1. The combination with the foot-valve in a given suction-pipe, of the two filters communicating therewith, one of them being permanently located in the path of the water 65 and the other one being movable to and from said path.

2. The combination with the foot-valve in a given suction-pipe, of a stationary perforated inclosure below the valve and communicating with the water on the outside thereof, 70 and a perforated movable inclosure surrounding the first-named inclosure.

3. The combination with the foot-valve in a given suction-pipe, of an inner and an outer 75 perforated inclosure, the latter being movable along the inner and provided with a scraper which is movable over the surface of the said inner inclosure.

In testimony whereof I have hereunto subscribed my name this 7th day of March, 1899. 80

JOHN W. NEWMAN. [L. S.]

Witnesses:

A. B. CARLTON,
E. H. STEVENS.