

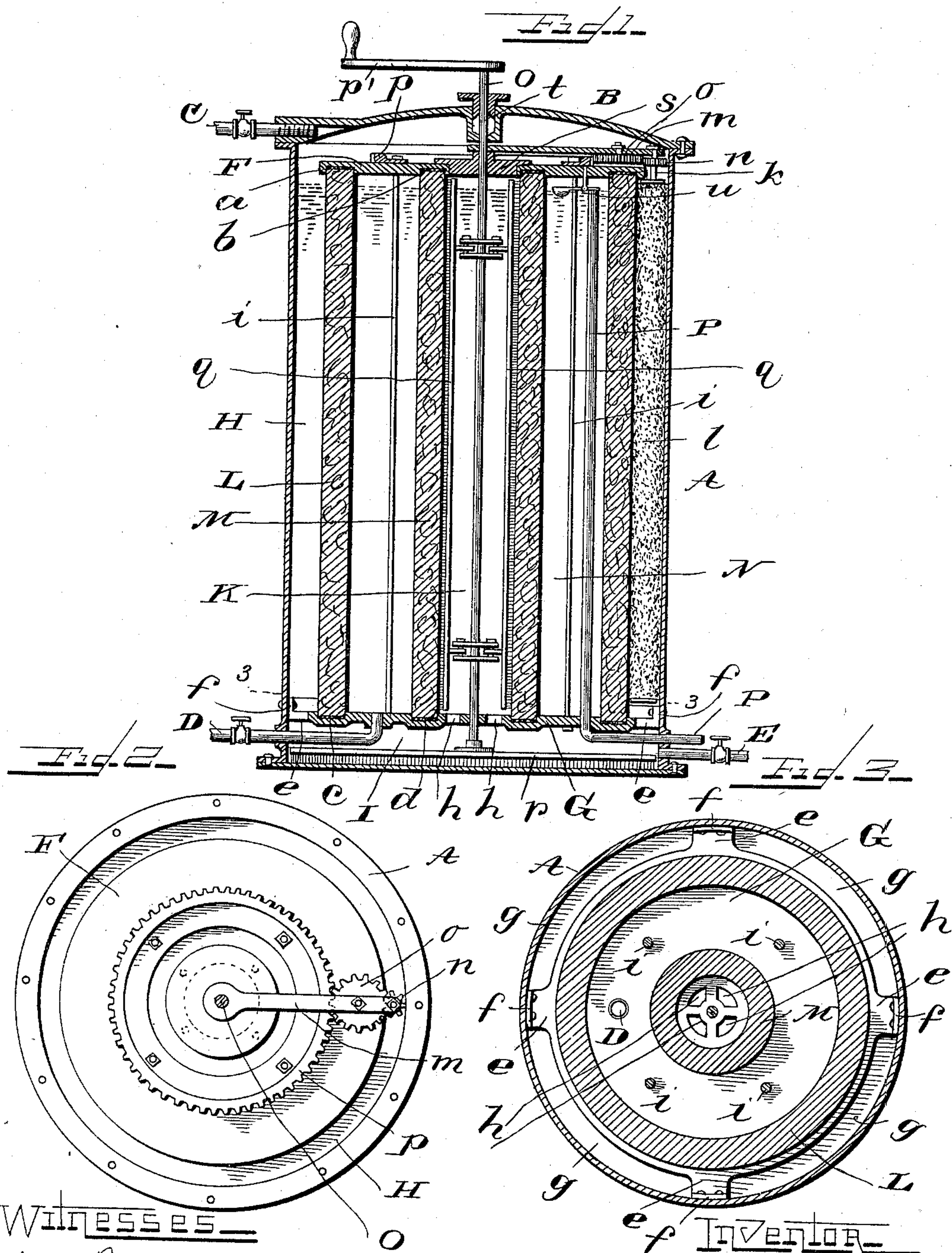
(No Model.)

2 Sheets—Sheet 1.

J. DAVIS.  
FILTER.

No. 590,968.

Patented Oct. 5, 1897.



Witnesses—  
G A Pauberschmidt.  
D M Reinohl

John Davis.  
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Attorney.

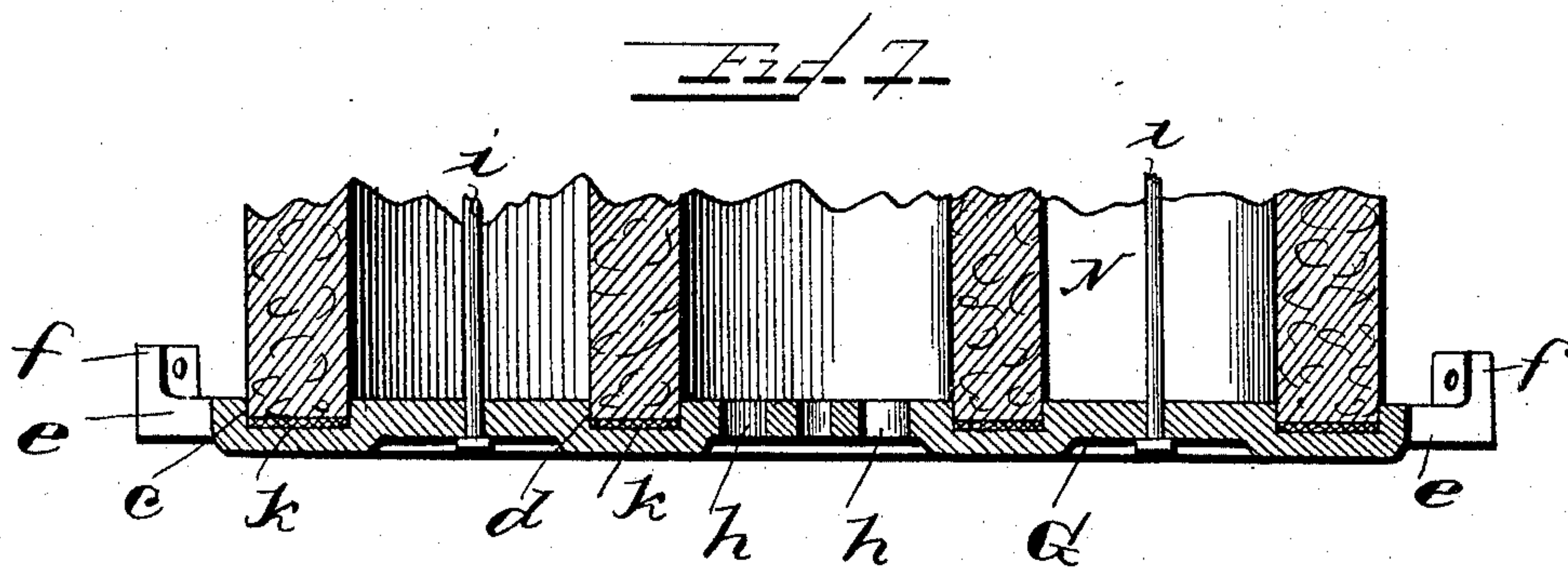
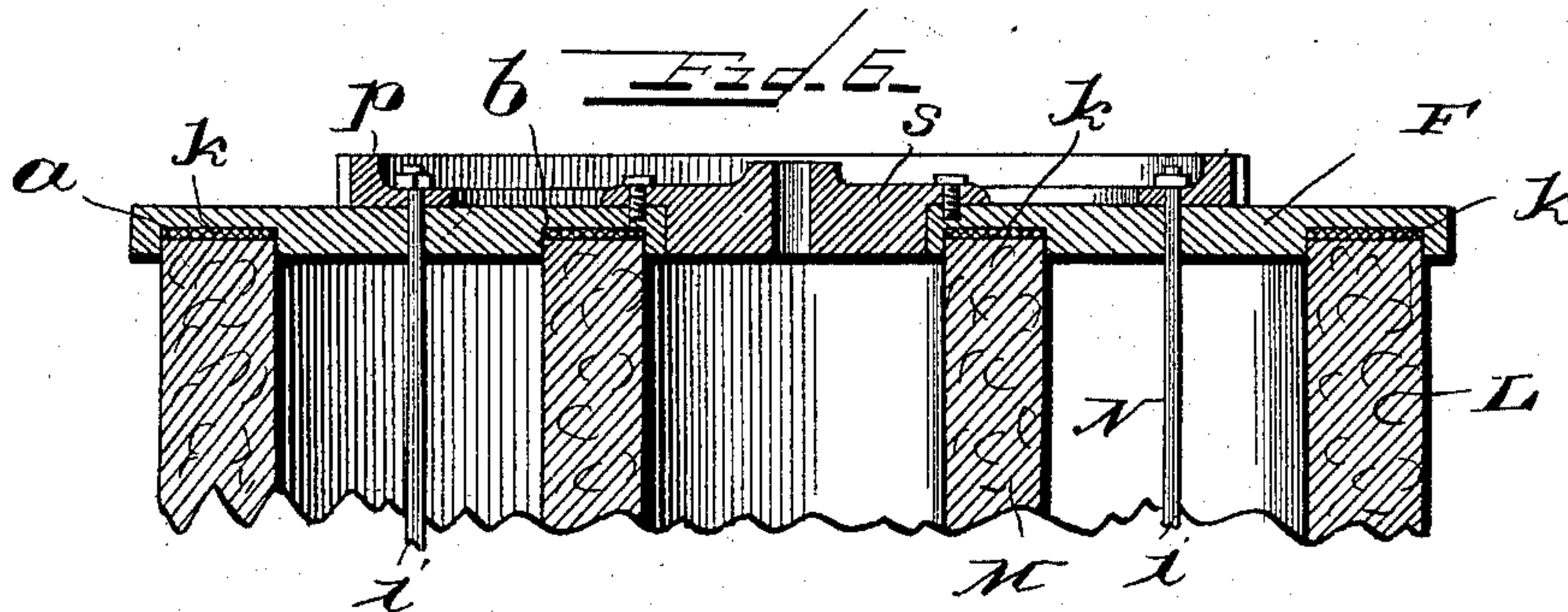
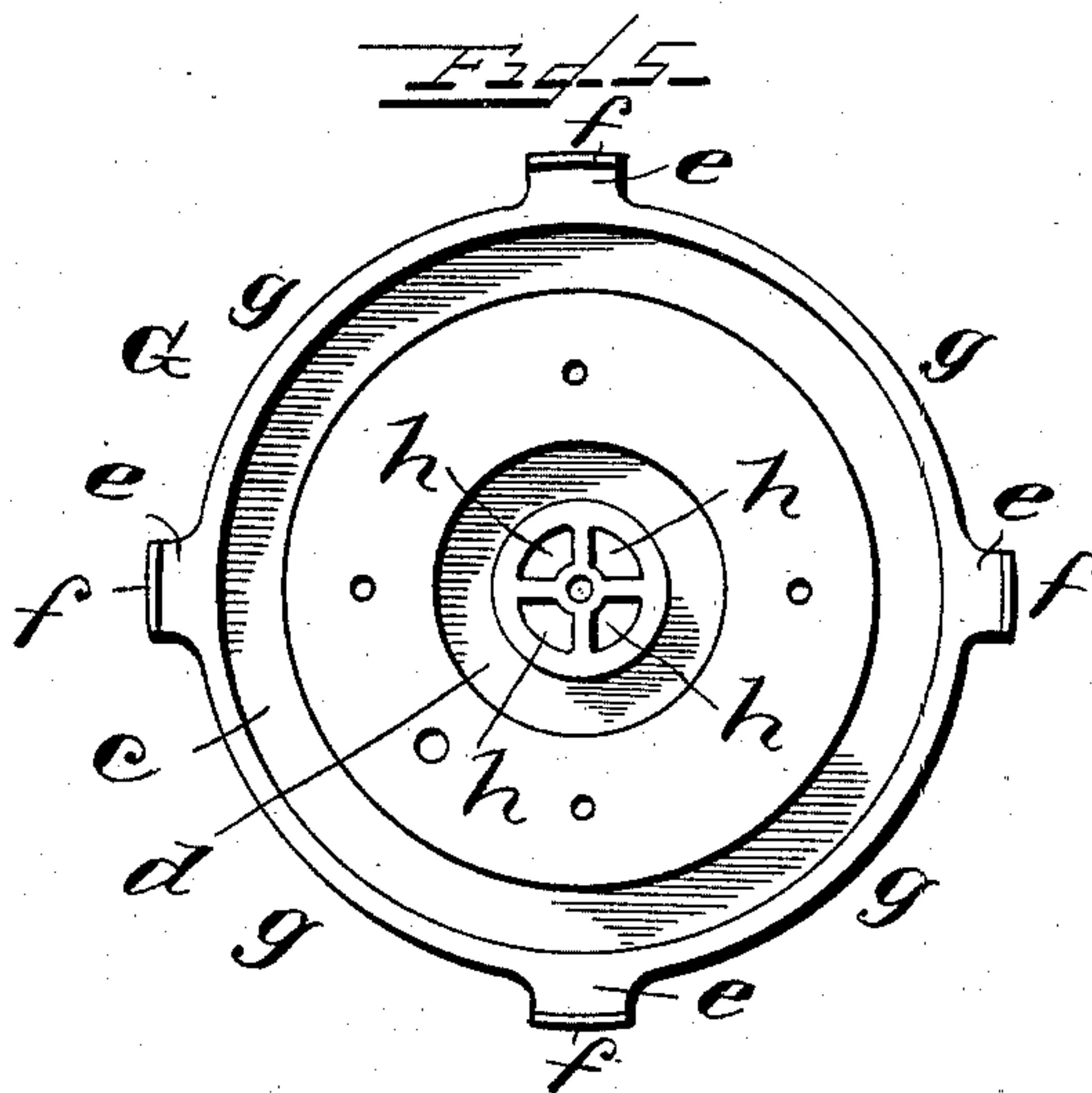
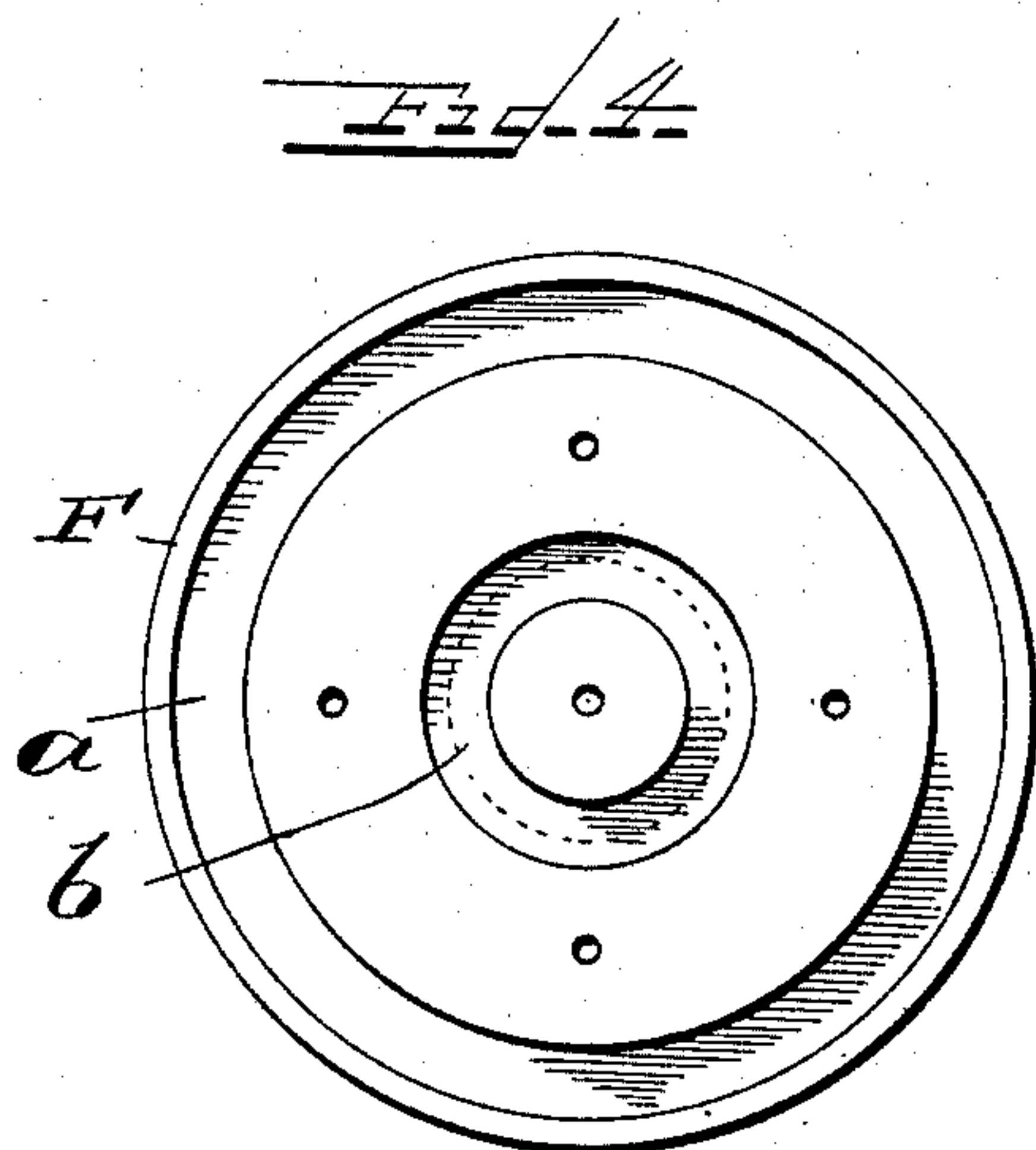
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WITNESSES—

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# UNITED STATES PATENT OFFICE.

JOHN DAVIS, OF ALLEGHENY, PENNSYLVANIA.

## FILTER.

SPECIFICATION forming part of Letters Patent No. 590,968, dated October 5, 1897.

Application filed January 28, 1897. Serial No. 621,086. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DAVIS, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Filters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to filters of the class known as "Pasteur" filters, and has for its object certain improvements in construction, which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a vertical section of my improved filter; Fig. 2, a top plan view of the frame which supports the filtering-bodies; Fig. 3, a like view on the line 3 3, Fig. 1; Fig. 4, an inverted plan of the upper head of the frame; Fig. 5, a plan of the lower head of the frame; Fig. 6, a vertical section, on an enlarged scale, of the upper part of the frame and the filtering-bodies; and Fig. 7, a like view of the lower part of the same.

Reference being had to the drawings and the letters thereon, A indicates the body or casing of the filter; B, the detachable cover; C, the supply-pipe; D, the discharge-pipe for filtered water, and E the pipe for discharging dirty water in cleansing the filter.

Within the casing is a frame composed of an upper cylindrical metallic head F, on the inner or under side of which are two annular and concentric grooves or seats *a b* and a lower head G, on the inner or upper side of which are two annular and concentric seats *c d* directly opposite the seats *a b* in the upper head, and on the periphery of the head G are lugs *e e e e*, provided with vertical flanges *f f f f*, by which the head is secured to the body or casing of the filter by suitable bolts. Between the lugs *e e* are openings *g g g g*, and through the head are openings *h h h h* for the passage of water from the annular precipitating-chamber H to the chamber I through the openings *g* and from the sediment-chamber I to the chamber K through the openings *h*.

L indicates the outer annular filtering-body,

made of porous stone or composition; and M the inner annular filtering-body of the same material and concentric to the outer body. The upper ends of the filtering-bodies engage the grooves or seats *a b* in the upper head F of the frame, and the lower ends engage the seats *c d* in the lower head G and are secured between the heads by rods *i i i i*, which extend through both of said heads, and between the ends of the filtering-bodies and the seats are inserted gaskets *k* to prevent the passage of water between the bodies and the heads and prevent the chipping off of the porous material, and between the two filtering-bodies is formed an annular storage-chamber N for clear water, which has been filtered by passing through the walls of the two filtering-bodies from the precipitating-chamber H through the wall of the body L and from the chamber K through the wall of the body M.

To remove the impurities which accumulate upon the periphery of the filter-body L and the inner surface of the casing, a revolvable brush *l* is inserted in the chamber H, supported upon an arm *m* and revolved by a pinion *n*, which engages an idler *o*, interposed between the pinion *n* and the annular fixed gear-wheel *p*, secured to the upper side of the head F. The inner end of the arm *m* engages the shaft O and is revolved by the crank *p'*. The brush *l* has an axial as well as an orbital motion imparted, and by having the two motions and by giving a reversed motion to the brush with the idler *o* much time is saved in cleaning.

To clean the inner surface of the wall of the body M, brushes *q q* are adjustably secured to the shaft O in the chamber K, and to remove the sediment from the bottom of the sediment-chamber I a brush *r* is attached to the lower end of the shaft O. Thus as the shaft O is revolved by the crank *p'* all the brushes are put in motion and the several parts of the filter cleansed, the impure water flowing off through the pipe E. The chamber K is provided with a removable cover *s*, through which the shaft O passes, and may be provided with vertical passages for water to enter chamber K, and the cover B with a stuffing-box *t* for the shaft O.

P indicates an air-pipe which extends to the upper end of the clean-water-storage



chamber N and is provided with an automatically-operated float-valve *u* to supply air to the filter. The air-pipe P also allows air to escape as the clean-water-storage chamber N is being filled, and when the clean-water chamber is nearly full of water the float-valve will close, and the air above the water becomes compressed in the upper end of the chamber by the further rise of the water, so that if more clean water is wanted at any time than is running into the filter through the supply-pipe C and being filtered it can be drawn from the storage-chamber N. By opening the valve of the discharge-pipe D the water will run, and instantly the float-valve P will open and air will take the place of the water drawn from the storage-chamber.

In the operation of the filter water is supplied through pipe C to the chamber H, in which the heavier impurities gravitate into the sediment-chamber I. The water thus relieved of its heavier impurities passes inward through the wall of the filter-body L into the chamber N, and the water rising from the chamber I through opening *h* in the head G fills chamber K and passes outward through the wall of the filter-body M into chamber N, from which the filtered water is discharged through pipe D.

Having thus fully described my invention, what I claim is—

1. A filter provided with an outer casing, annular and concentric porous filtering-bodies, a receiving and precipitating chamber between the casing and the outer filtering-

body, a sediment-chamber below the filtering-bodies, an annular clean-water-storage chamber between the filtering-bodies, a discharge-pipe at the lower end of the storage-chamber, a chamber in the inner filtering-body and openings or passages connecting said chamber and the sediment-chamber, in combination with means for removing impurities from the filtering-bodies and from the bottom of the sediment-chamber.

2. A filter provided with annular concentric porous filtering-bodies, a frame having heads containing annular grooves on their inner surfaces to receive said filtering-bodies, passages around and in the center of the lower head and lugs for securing said head to the casing, in combination with revoluble brushes connected to a central shaft and operating to remove impurities from the filtering-bodies and from the sediment-chamber.

3. A filter provided with annular and concentric porous filtering-bodies, a storage-chamber between the bodies, an air-supply pipe in said chamber extending to the upper end thereof and having an automatically-operated float-valve, in combination with a receiving and precipitating chamber and a sediment-chamber in communication therewith.

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

JOHN DAVIS.

Witnesses:

EDW. A. HESS,

OLIVER R. MINNEMEYER.