

E. FÜLLNER.
DRUM FOR DRUM FILTERS.
APPLICATION FILED JAN. 13, 1905.

2 SHEETS—SHEET 1.

Fig 1

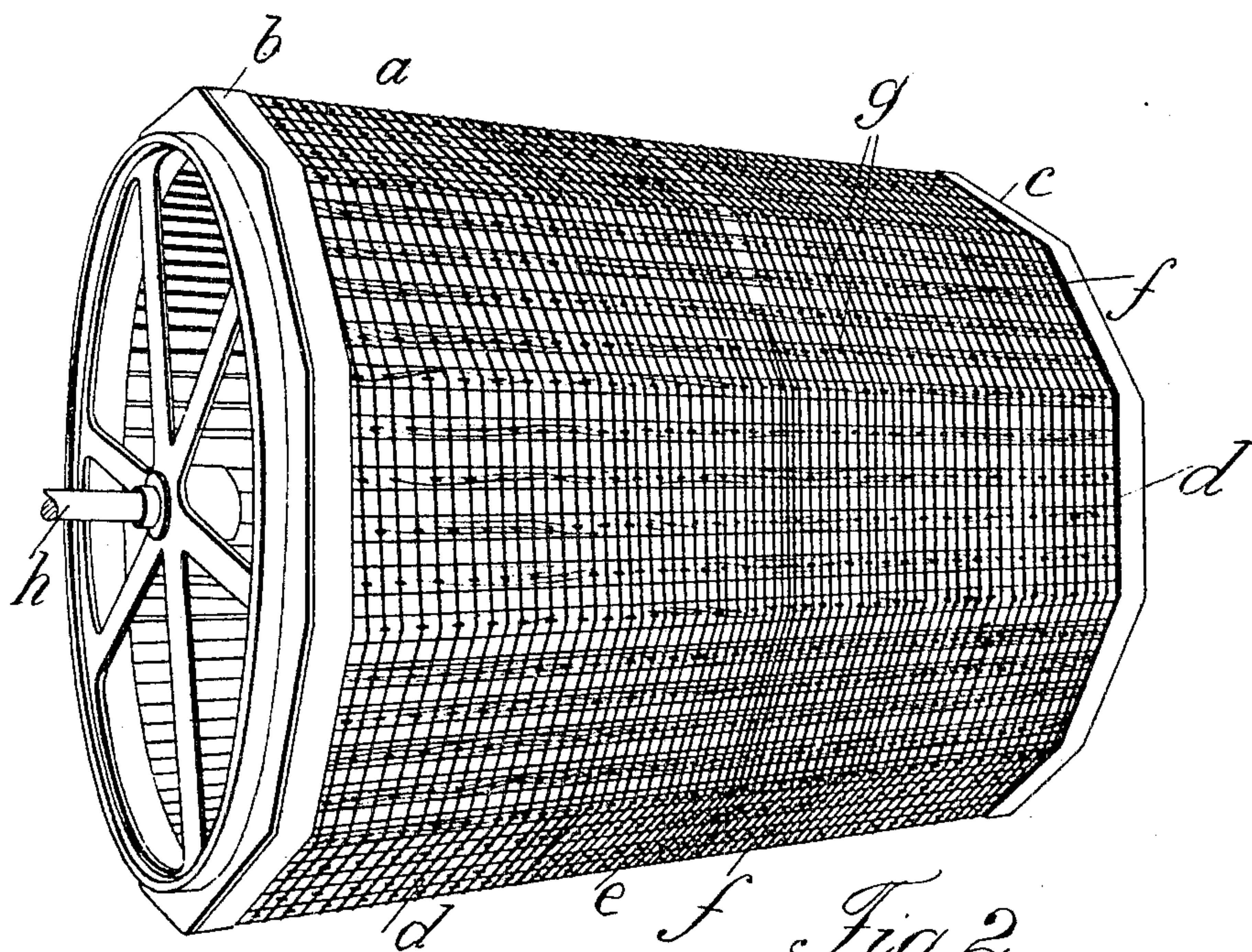


Fig. 5.

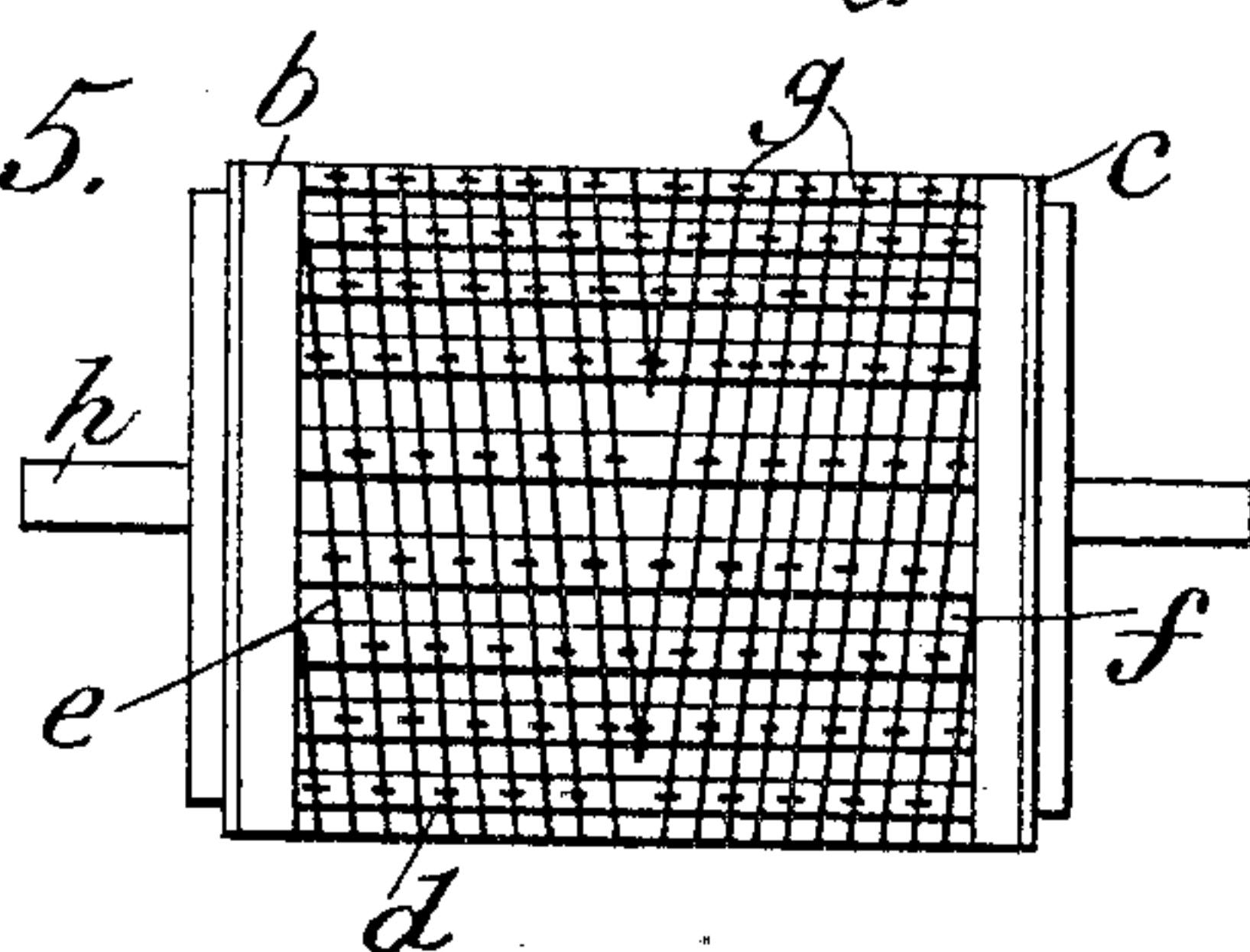
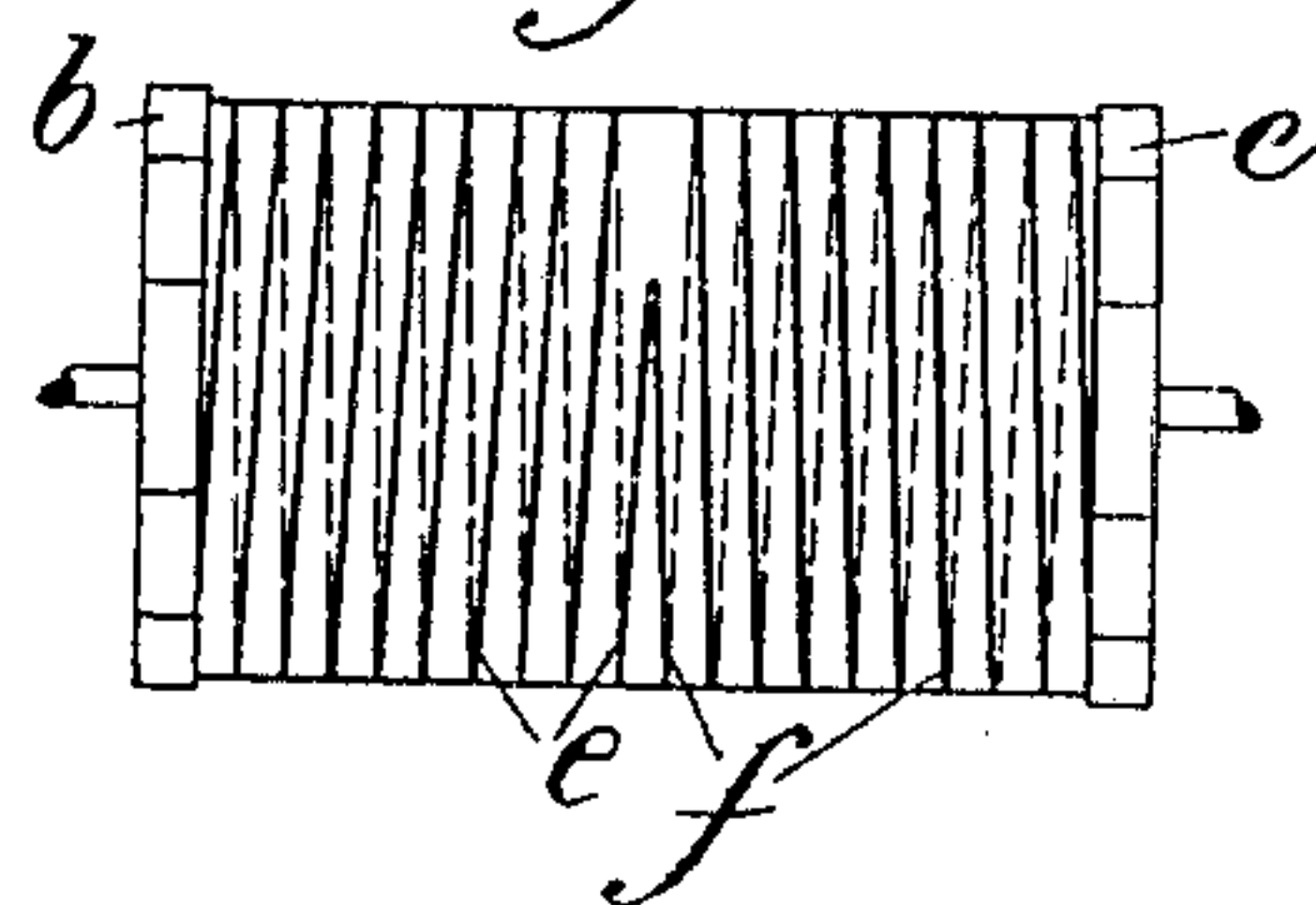


Fig 2



Witnesses.
Julius H. Hutz
John Lotka

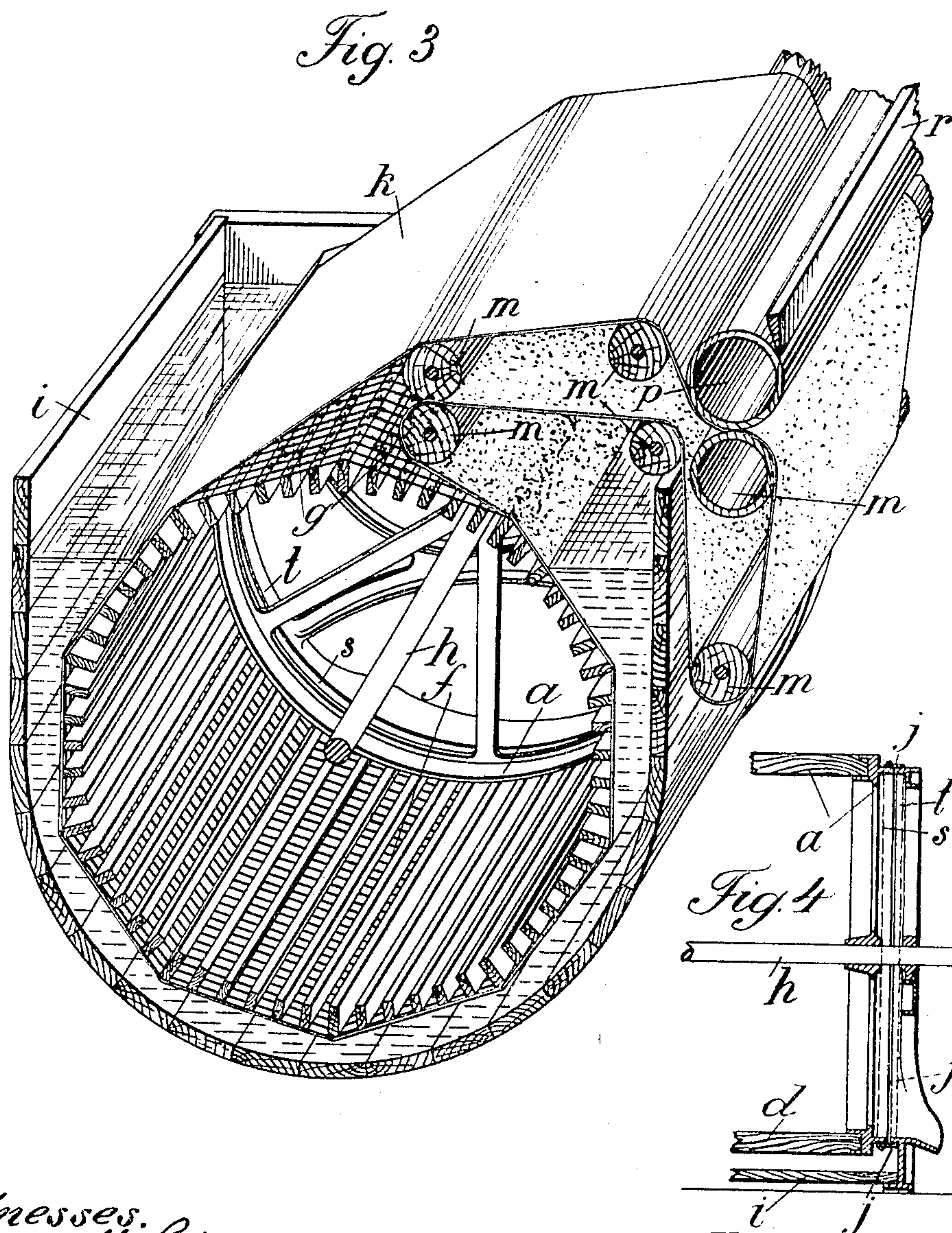
Inventor
Eugen Füllner
By *Friesen Kuantz*
his Attorneys.

No. 799,153.

PATENTED SEPT. 12, 1905.

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2 SHEETS—SHEET 2.



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John Lotka

Inventor.
Eugen Füllner
By Briesen, T. K. M. A. N. T.
his Attorneys.

UNITED STATES PATENT OFFICE.

EUGEN FÜLLNER, OF HERISIHODORF, NEAR WARMBRUNN, GERMANY.

DRUM FOR DRUM-FILTERS.

No. 799,153.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed January 13, 1905. Serial No. 240,874.

To all whom it may concern:

Be it known that I, EUGEN FÜLLNER, manufacturer, a subject of the German Emperor, residing at Herisihdorf, near Warmbrunn, Sillesia, in the Empire of Germany, have invented new and useful Improvements in Drums for Drum-Filters, of which the following is a specification.

The present invention relates to the drums of such drum-filters as those in which endless filtering members, felt or the like, are utilized for filtering.

The invention consists in forming the support or foundation for the filtering member on the filter-drum of two helical windings, of wire or the like, which are wound, starting from the middle of the drum, in opposite directions and which may be single or multiple threaded. Such a support for the filtering organ has, in consequence of the helical windings running in opposite directions from the middle of the drum, continually the tendency to draw the filtering member toward both sides in opposite directions, whereby, on the one hand, the filtering member is caused to lie smoothly on the drum, while, on the other hand, by means of the tension continually imparted to the filtering member in the direction of its breadth, the pores of the filtering member are kept open, and thus the water, which is essentially filtered through the layer forming on the filtering member, passes through better than is otherwise the case.

The accompanying drawings illustrate the new drum in a decagonal form by way of example.

In said drawings, Figure 1 is a perspective view of the drum, and Fig. 2 shows diagrammatically the winding of the same. Fig. 3 shows a perspective section through the filter fitted with the drum. Fig. 4 is a section through one end of the drum and the adjacent wall of the tank, and Fig. 5 is a front elevation of another form of drum.

The drum *a* in the case represented consists of two polygonal and, indeed, decagonal, frames *b* and *c*, which are connected with one another by means of bars *d*, which are arranged close to one another, intervals being left between adjacent bars. Starting from the middle of the drum, wires *e* and *f* are wound in helical windings round the drum, and this is so carried out that the windings of the one half of the drum run in the opposite direction to those of the other half. The one half of the drum is consequently wound in the sense of a right-

handed screw and the other half of the drum in that of a left-handed screw. The windings of the wires *e* and *f* are fastened in their position on the bars *d* by means of hook pins or cramps *g*. The wire may have any suitable cross-sectional form. When in the case of drums of great length in order to obtain as great a stretching force as possible it is necessary to make the pitch of the helical windings comparatively large, each half of the drum is wound round with several wires after the manner of a double, triple, or multiple threaded screw, as shown in Fig. 5. In this manner the large intervals which would otherwise be present between the windings of a single-threaded winding of large pitch are avoided, and also the pouch-like sagging of the filtering member is prevented, which would otherwise take place in consequence of the hydrostatic pressure pressing upon the filtering member.

The drum *a*, as shown in Figs. 3 and 4, is revolvably supported by means of its axle *h* in a well-known manner in the end walls of the filter-tank *i*, and, as is specially shown in Fig. 4, is fitted water-tight, likewise in a well-known manner, at each end by means of a suitably-attached india-rubber sleeve *j*, passing round a flange *s* on the drum and a corresponding flange *t* on the tank end.

When the drum revolves inside the filter-tank, the filtering member *k*, felt or the like, clings to the wires and is continually stroked from the middle toward both sides in opposite directions in consequence of the oppositely-wound windings of the two halves of the drum, so that the felt or the like cannot wrinkle and become too thick. The endless filtering member *k* is led outside the tank *i* in a well-known manner over rollers *m* and passes a pressing-roller or couch-roller *p*, by means of which the sediment or residue is removed from the filtering member *k*. The sediment or residue is taken off the couch-roller *p* by means of the scraper *r*. By means of the stroking action of the drum-windings the felt is, on the contrary, continually smoothed, and the pores are kept uniformly penetrable, so that the filtering capacity of filters fitted with such drums remains permanently constant.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A drum-filter consisting of the combination of a tank containing liquid to be filtered, a drum having a circumference provided with openings and having a support, for a filtering member, helically arranged round each half

of its circumference, the one support being arranged after the manner of a right-handed screw and the other after the manner of a left-handed screw, means revolubly supporting said drum in said tank, a plurality of guide-rollers, a filtering member passing round said drum and guide-rollers, and means for removing from the filtering member the sediment deposited thereon, substantially as and for the purpose described.

2. A drum-filter consisting of the combination of a tank containing liquid to be filtered, a drum, having openings in its circumference, means revolubly supporting said drum in said tank, a helical wire winding passing round each half of the drum, the one winding being wound in the opposite direction to the other, a plurality of guide-rollers, an endless filtering member passing round said drum and guide-rollers, and means for removing from the filtering member the sediment deposited thereon, substantially as and for the purpose described.

3. A drum-filter consisting of the combination of a tank containing liquid to be filtered, a drum having a circumference consisting of longitudinal bars placed at a short distance from one another, means revolubly supporting said drum in said tank, a helical wire winding passing round each half of the drum, the one winding being wound in the opposite direction to the other, a plurality of guide-rollers, an endless filtering member passing round said drum and guide-rollers, and means for removing from the filtering member the sediment deposited thereon, substantially as and for the purpose described.

4. A drum-filter consisting of the combination of a tank containing liquid to be filtered, a drum, having openings in its circumference, means revolubly supporting said drum in said tank, a helical wire winding passing round each half of the drum, the one winding being wound in the opposite direction to the other, a couch-roller and a plurality of guide-rollers outside the tank, an endless filtering member passing round the drum and said guide-rollers and couch-roller, and a scraper for scraping

the couch-roller, substantially as and for the purpose described.

5. A drum-filter consisting of the combination of a tank containing liquid to be filtered, a drum, an axle mounted on the tank and revolubly supporting the drum, said drum having open framework ends each provided with a circular flange concentric with the axle and a circumference consisting of longitudinal bars placed at a short distance from one another, and said tank having ends provided with circular flanges similar to the flanges on the drum ends and concentric with the axle, an india-rubber sleeve at each end of the drum surrounding the adjacent flanges on the drum end and tank end and making a watertight joint between the same, a helical wire winding passing round each half of the drum, the one winding being wound in the opposite direction to the other, a plurality of guide-rollers, an endless filtering member passing round said drum and guide-rollers, and means for removing from the filtering member the sediment deposited thereon, substantially as and for the purpose described.

6. A drum-filter consisting of the combination of a tank containing liquid to be filtered, a drum having a circumference consisting of longitudinal bars placed at a short distance from one another, means revolubly supporting said drum in said tank, a helical wire winding passing round each half of the drum, the one winding being wound in the opposite direction to the other, means for securing the wire windings to the bars of the drum where said windings cross the bars, a plurality of guide-rollers, an endless filtering member passing round said drum and guide-rollers, and means for removing from the filtering member the sediment deposited thereon, substantially as and for the purpose described.

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

EUGEN FÜLLNER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.