

(No Model.)

4 Sheets—Sheet 1.

P. A. MAIGNEN.
FILTER.

No. 426,945.

Patented Apr. 29, 1890.

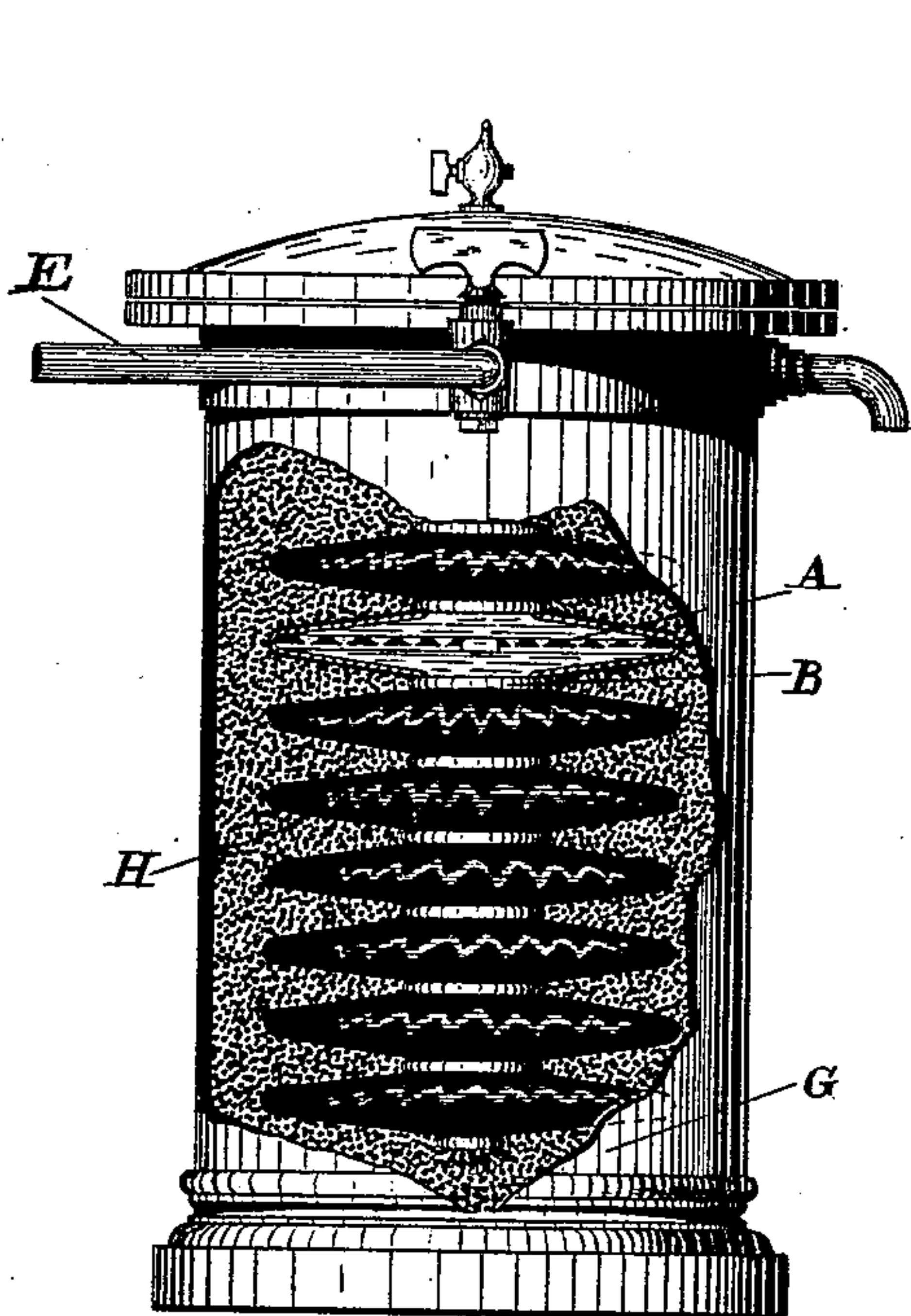


Fig. 1.

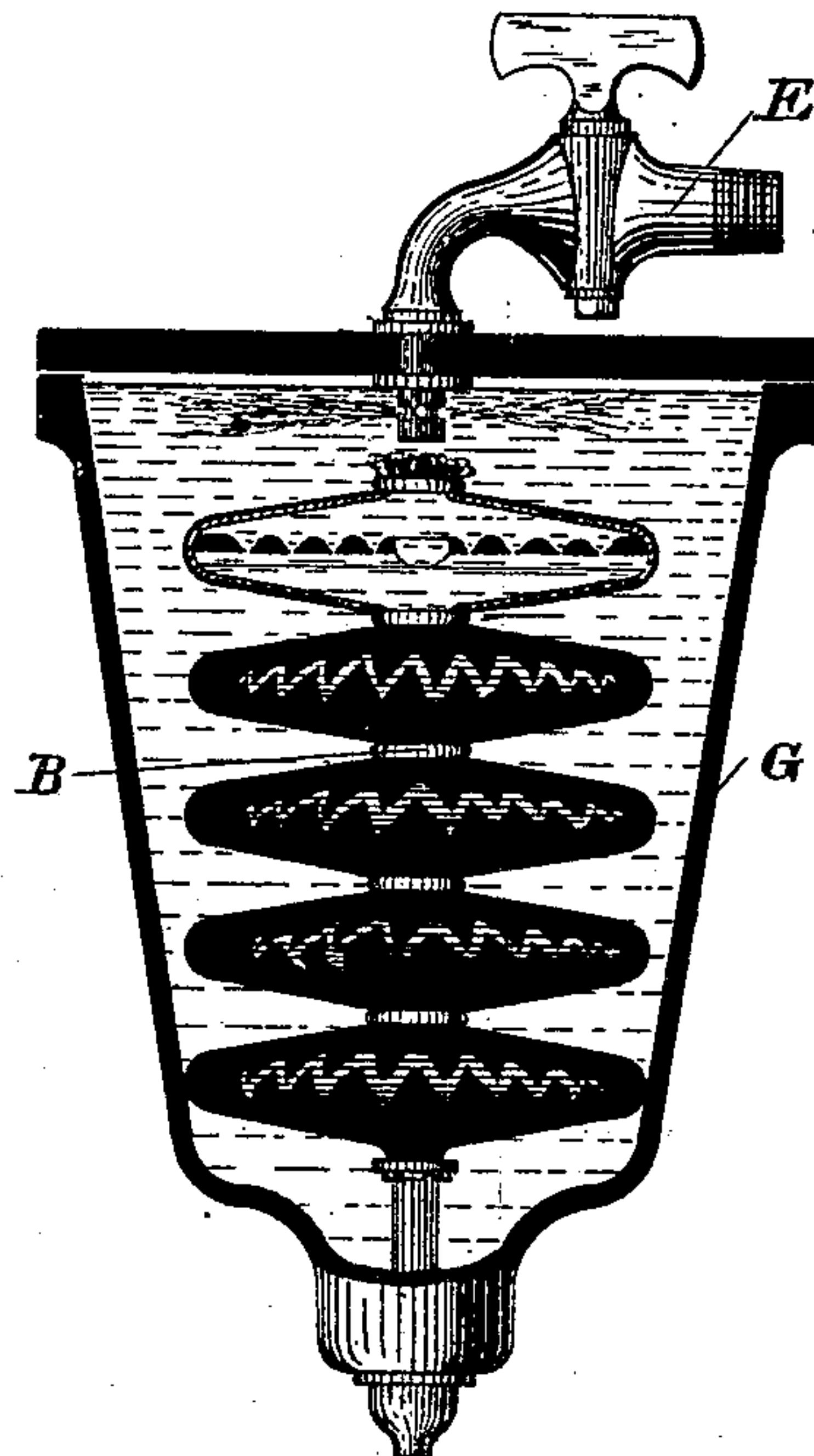


Fig. 2.

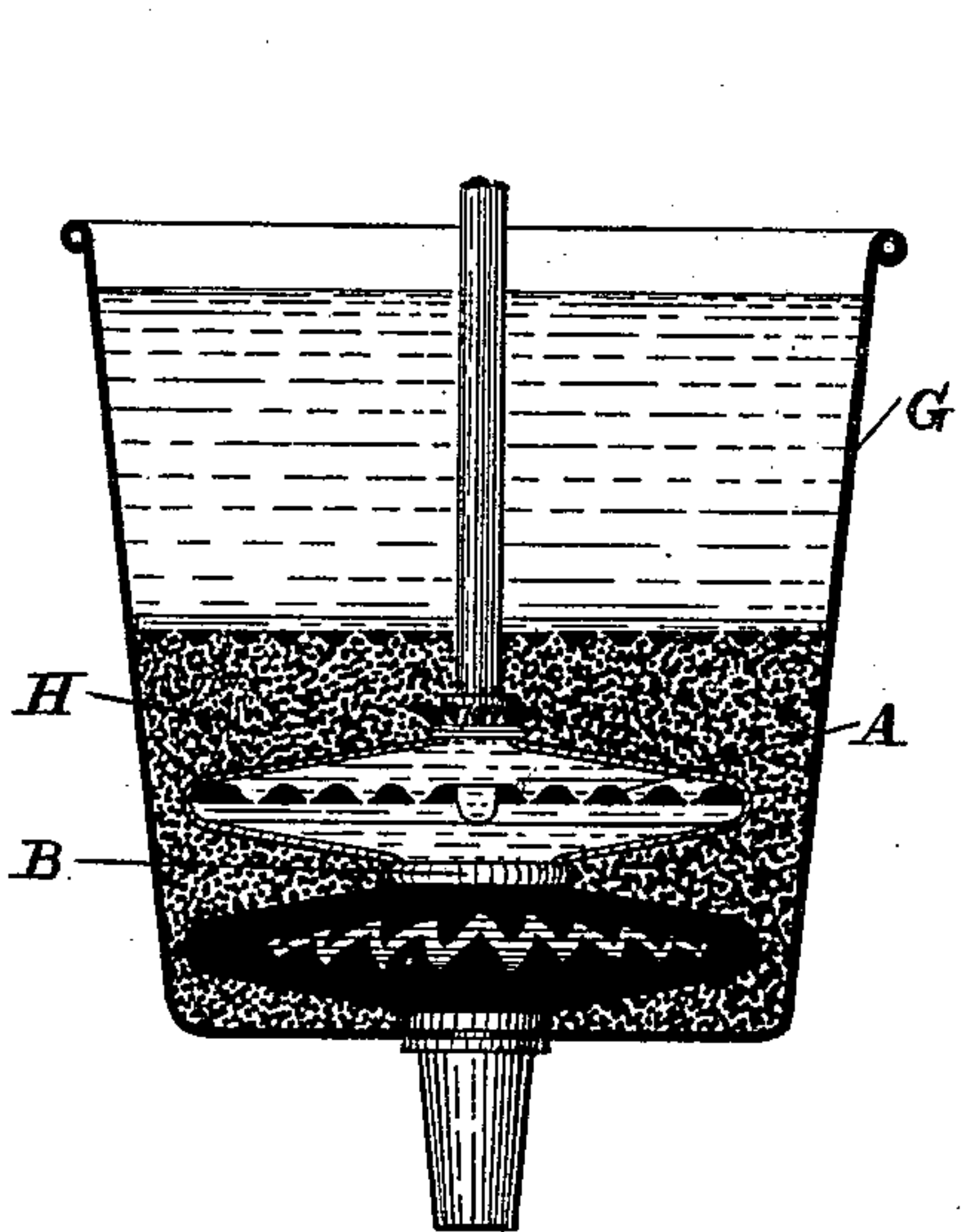


Fig. 3.

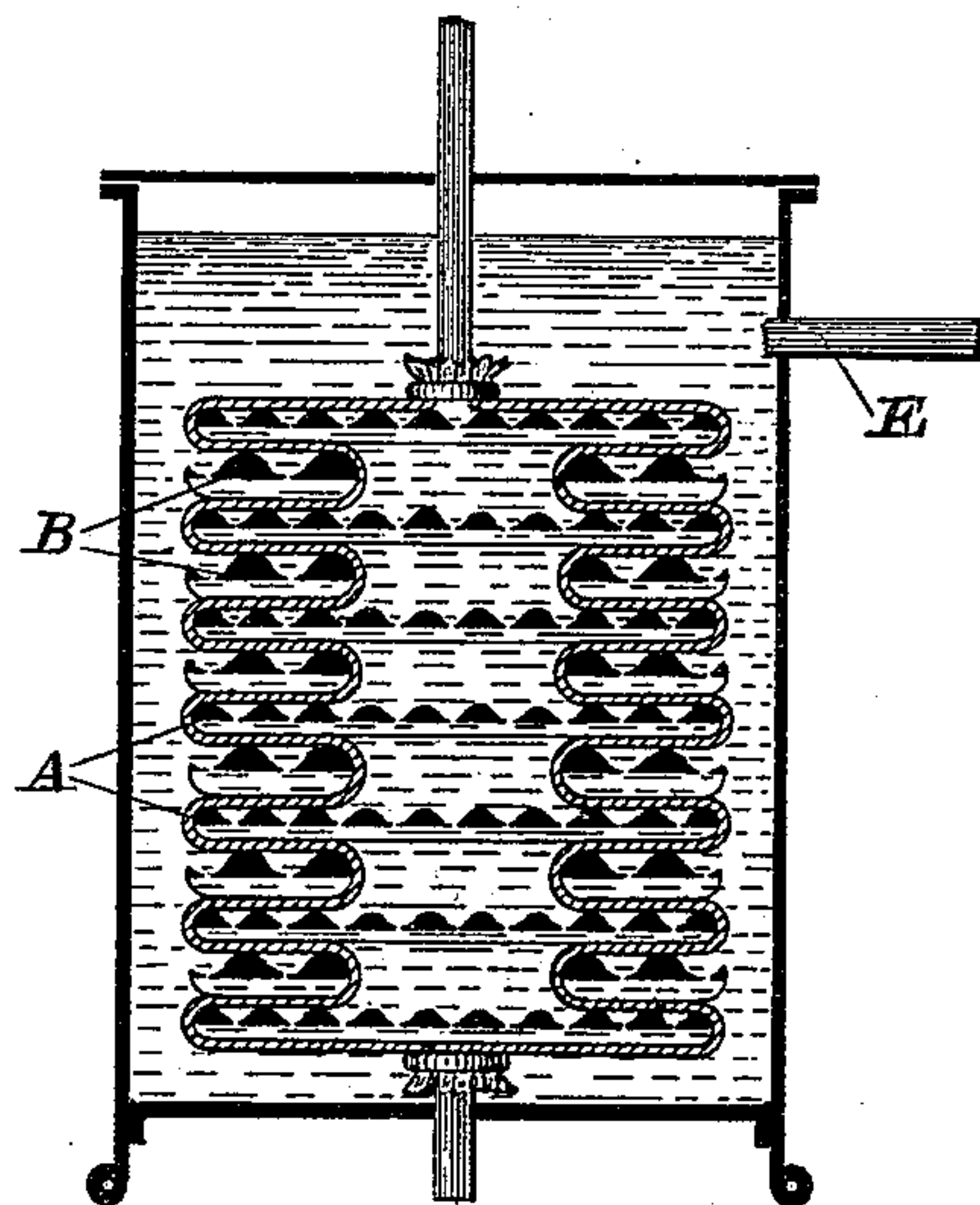


Fig. 4.

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(No Model.)

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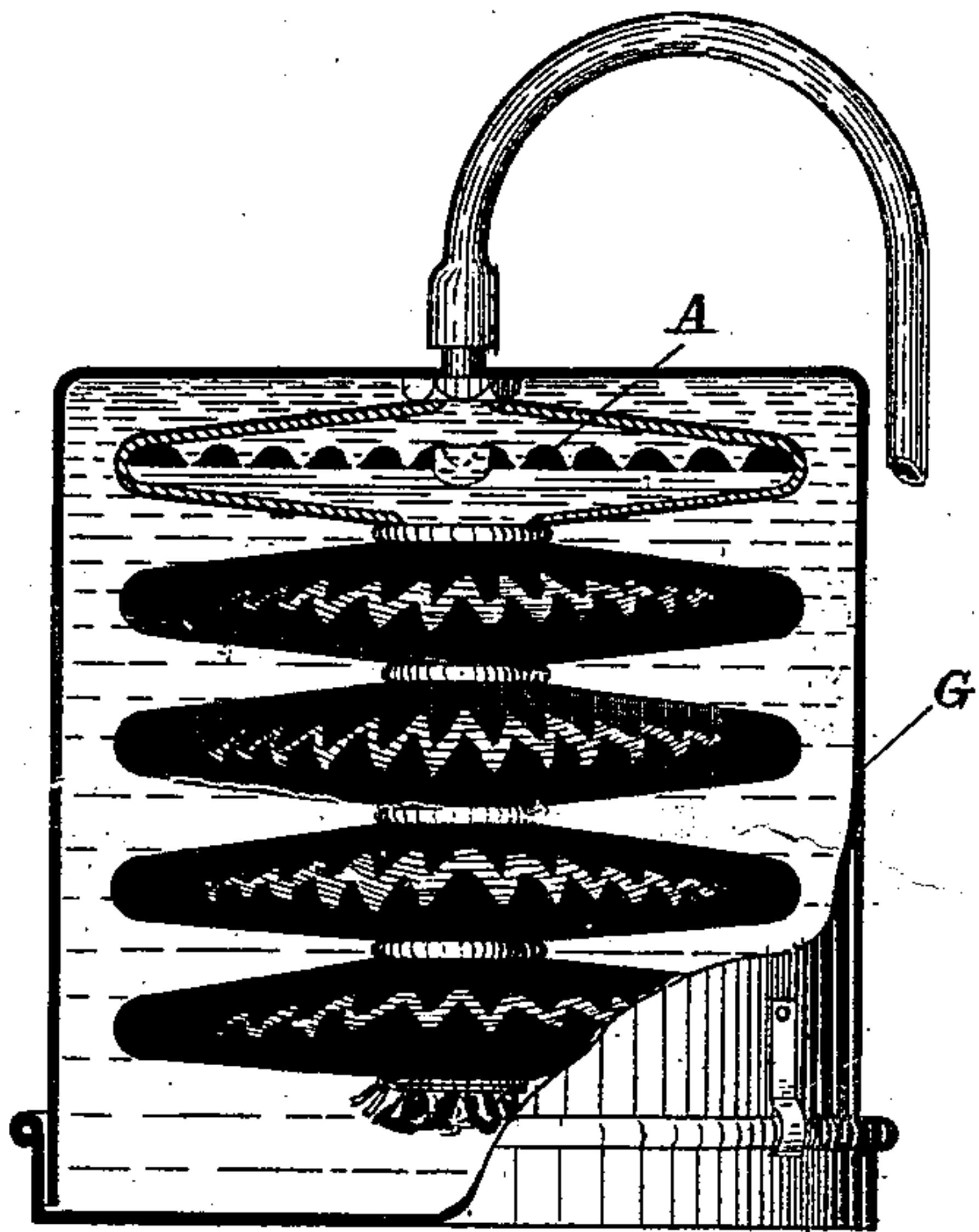


Fig. 5.

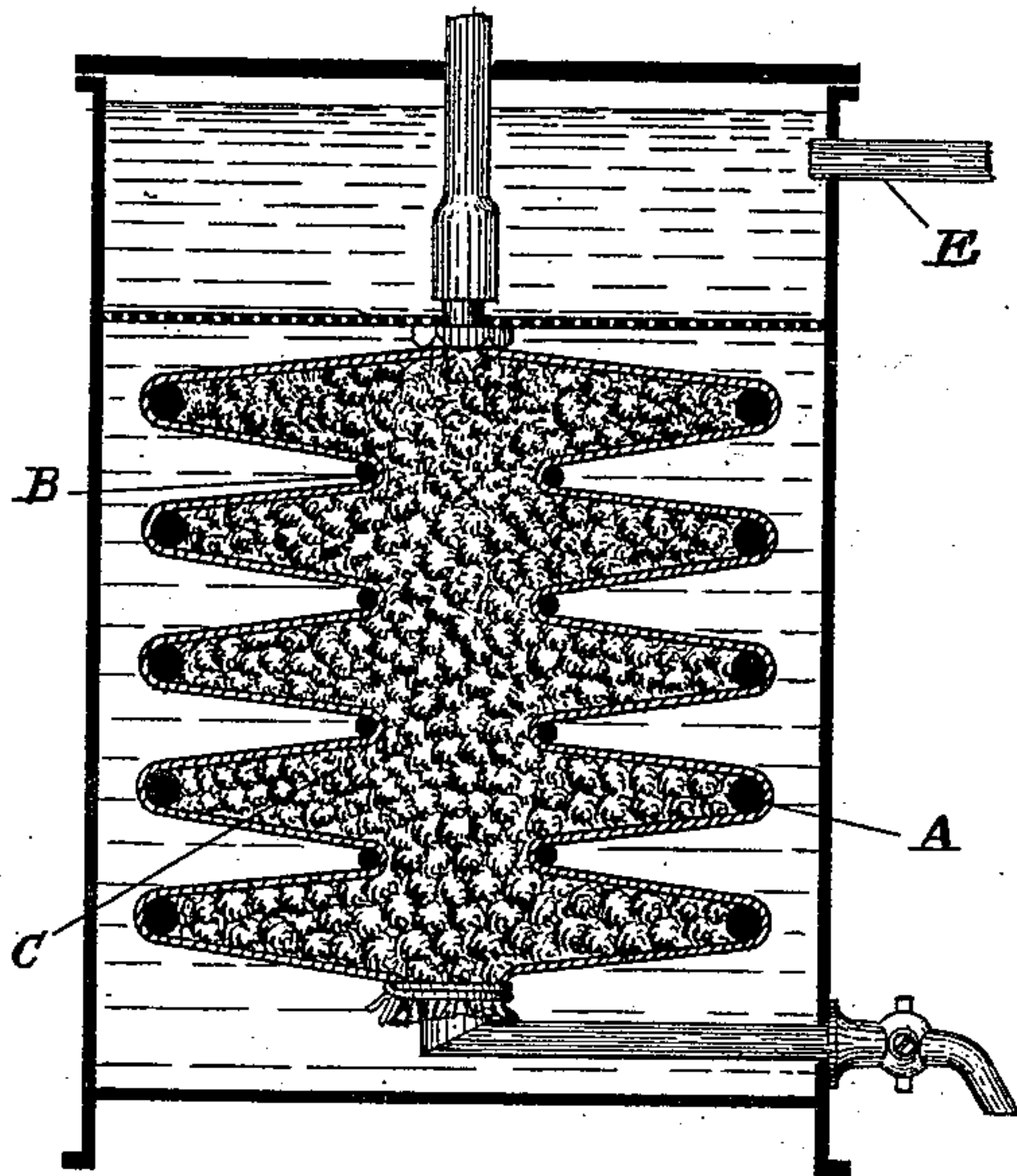


Fig. 6.

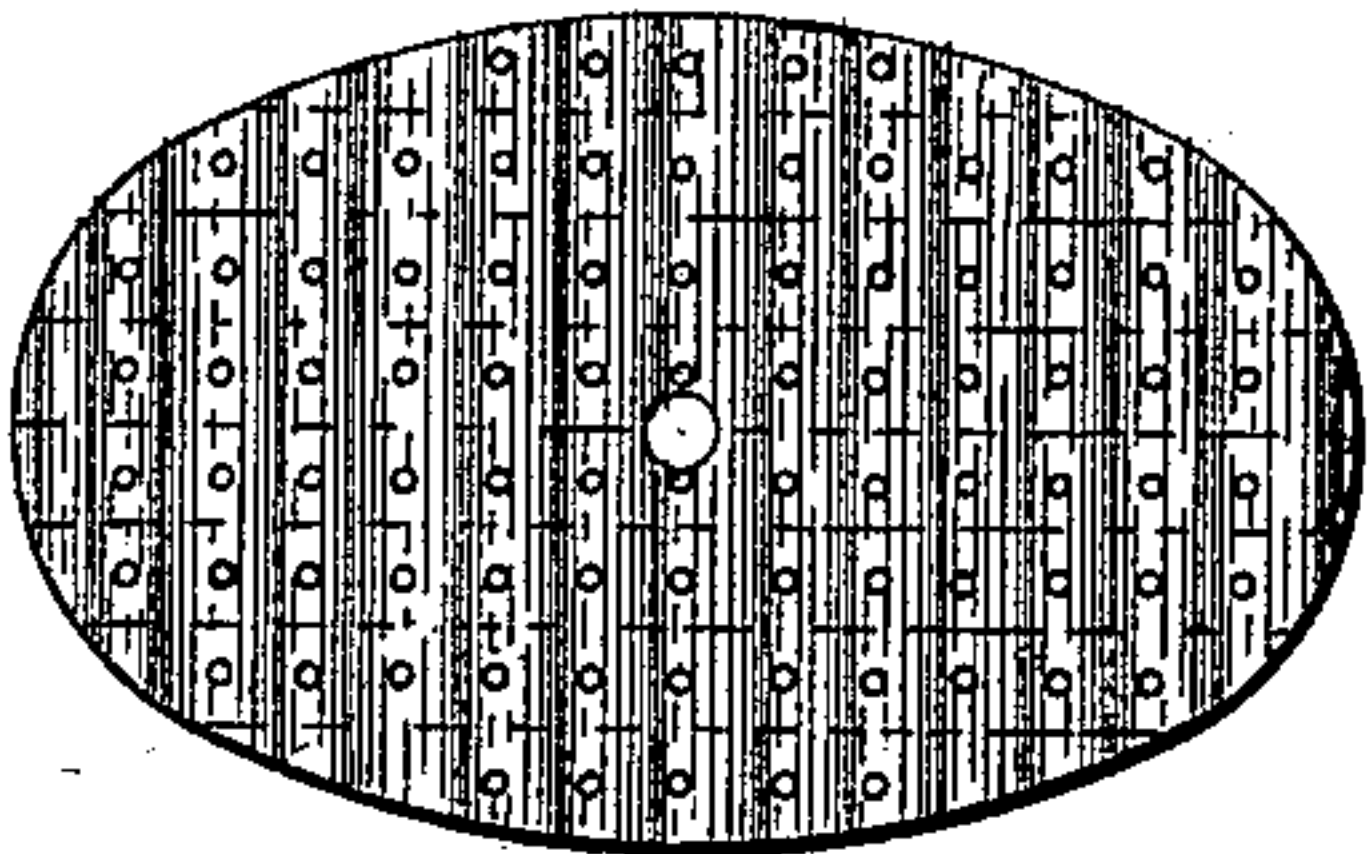


Fig. 7.

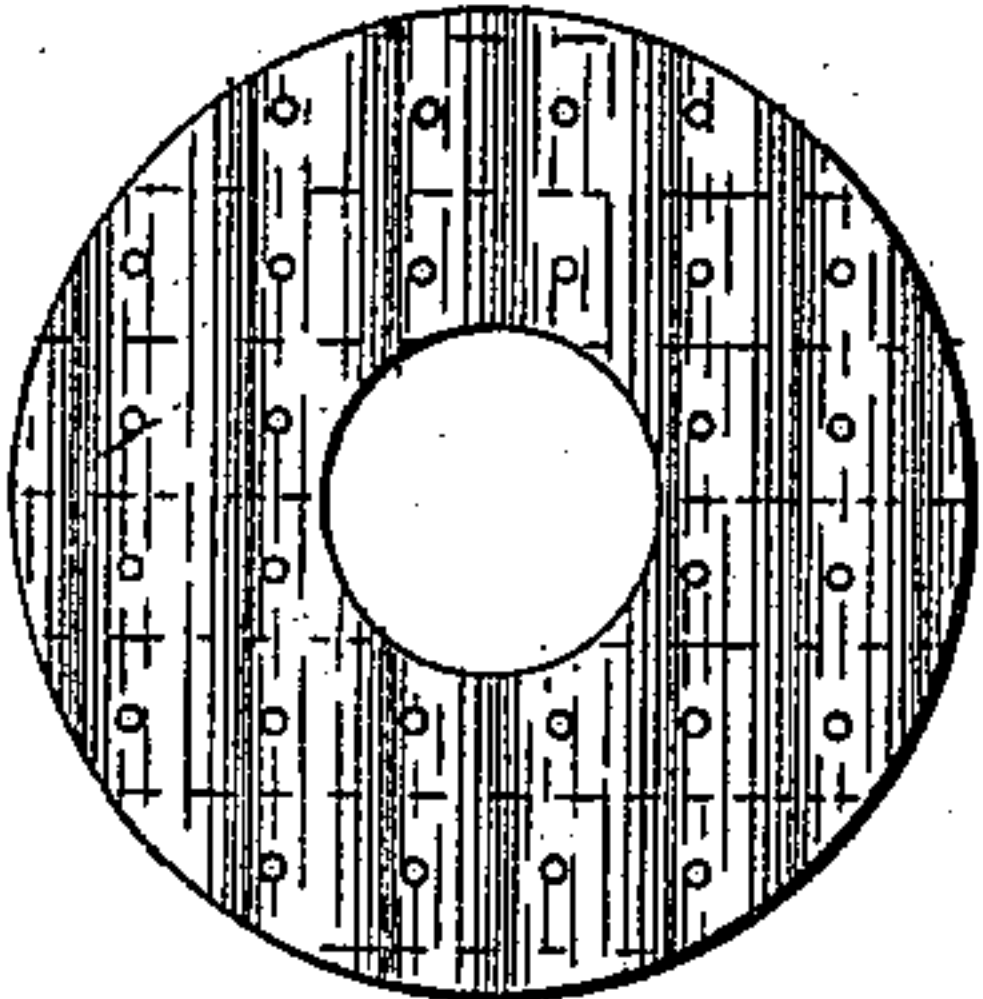


Fig. 8.

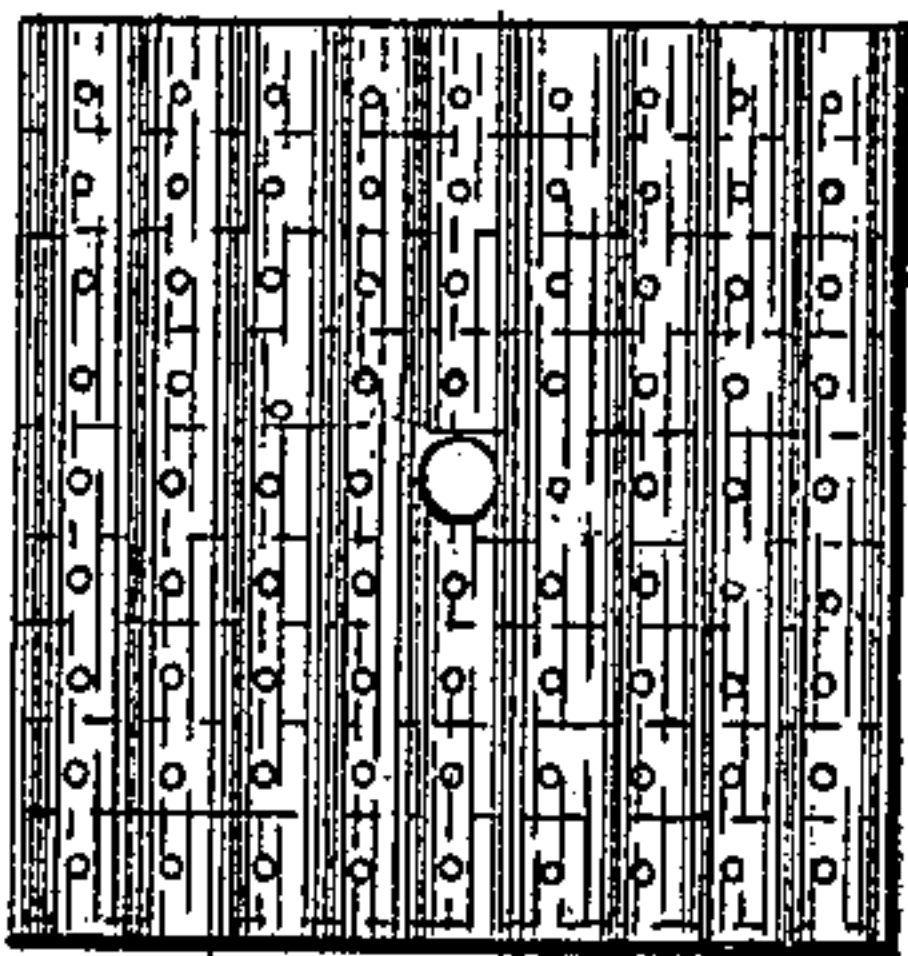


Fig. 9.

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(No Model.)

4 Sheets—Sheet 3.

P. A. MAIGNEN.
FILTER.

No. 426,945.

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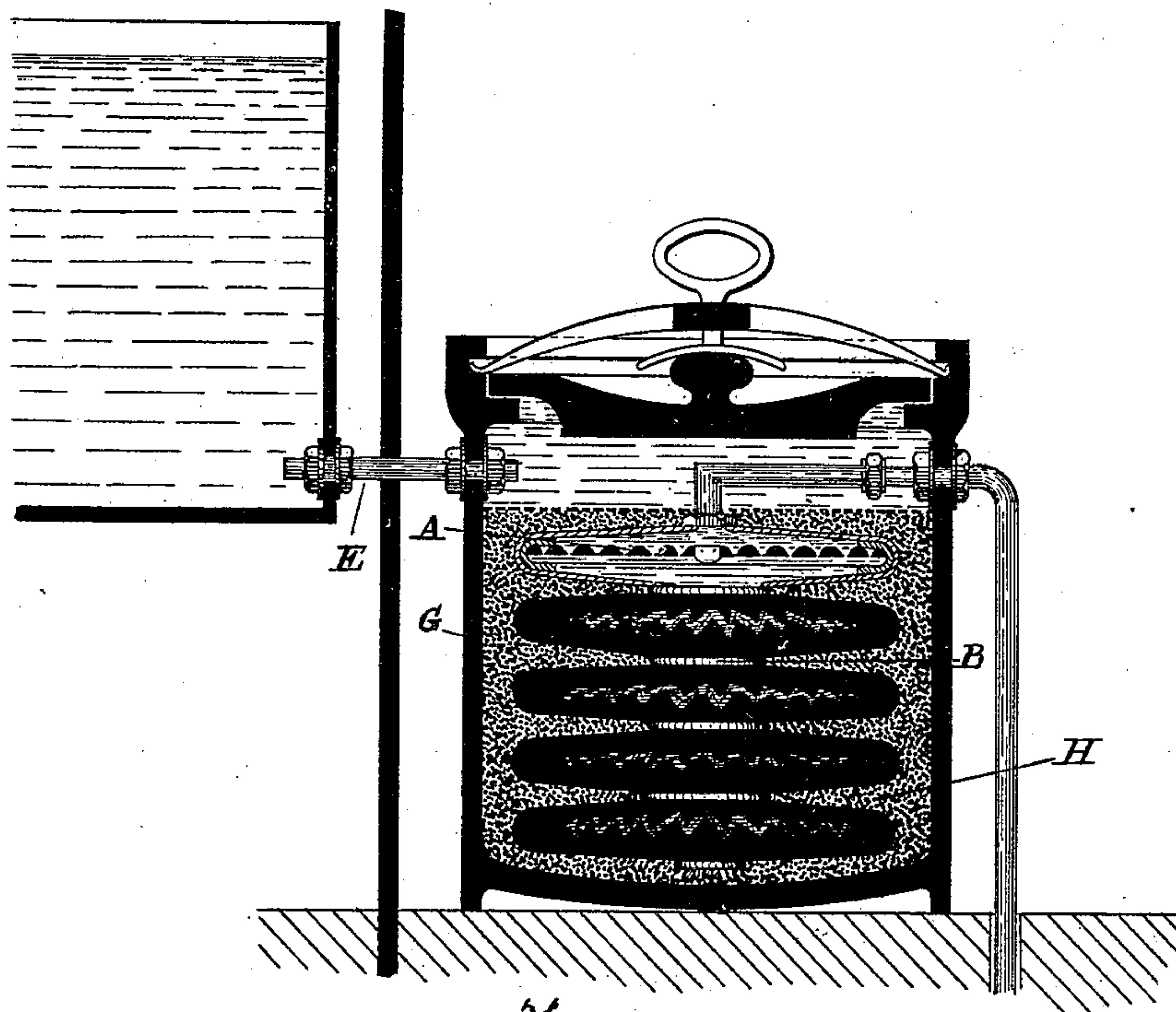


Fig. 11.

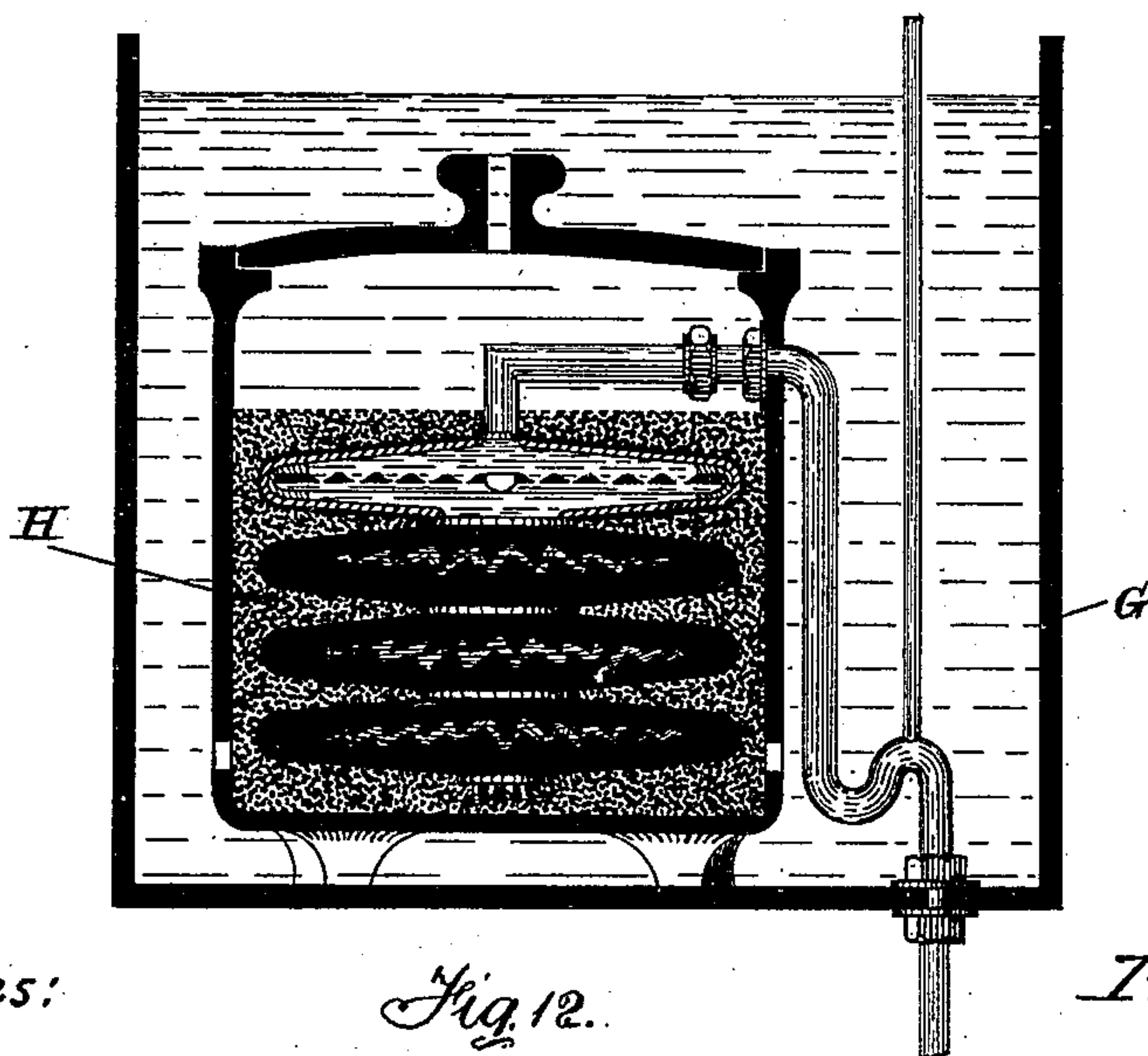


Fig. 12.

Witnesses:

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(No Model.)

4 Sheets—Sheet 4.

P. A. MAIGNEN.
FILTER.

No. 426,945.

Patented Apr. 29, 1890.

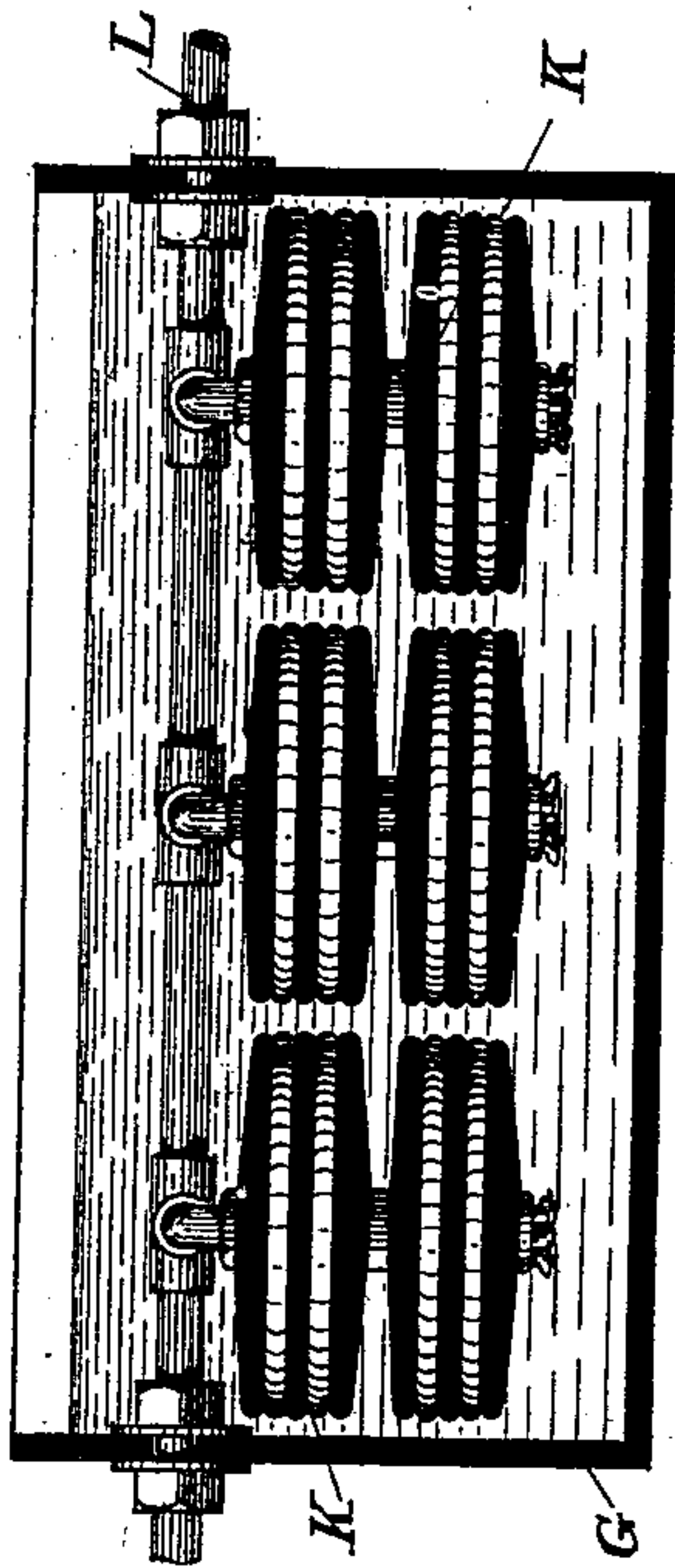


Fig. 13.

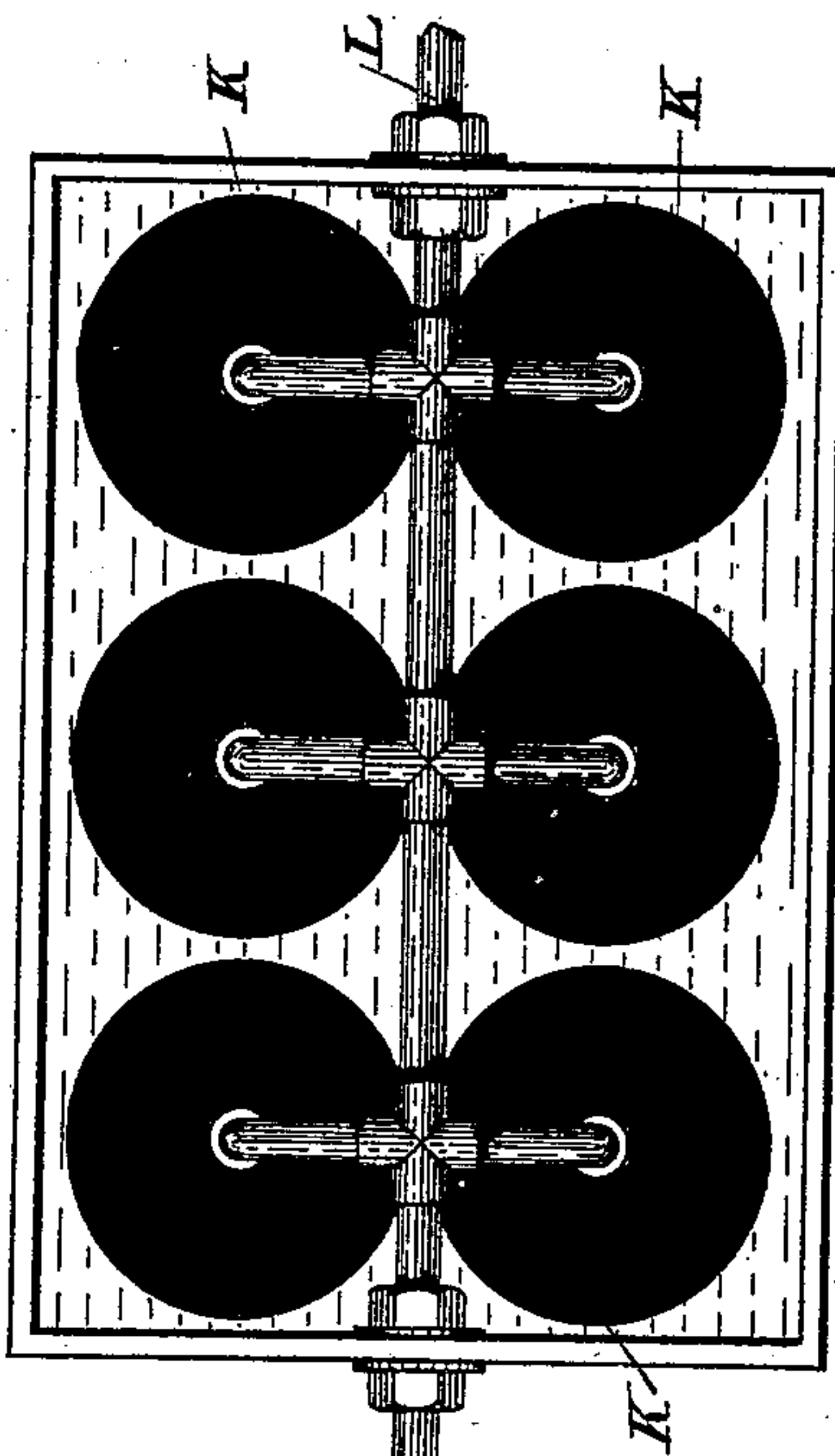


Fig. 14.

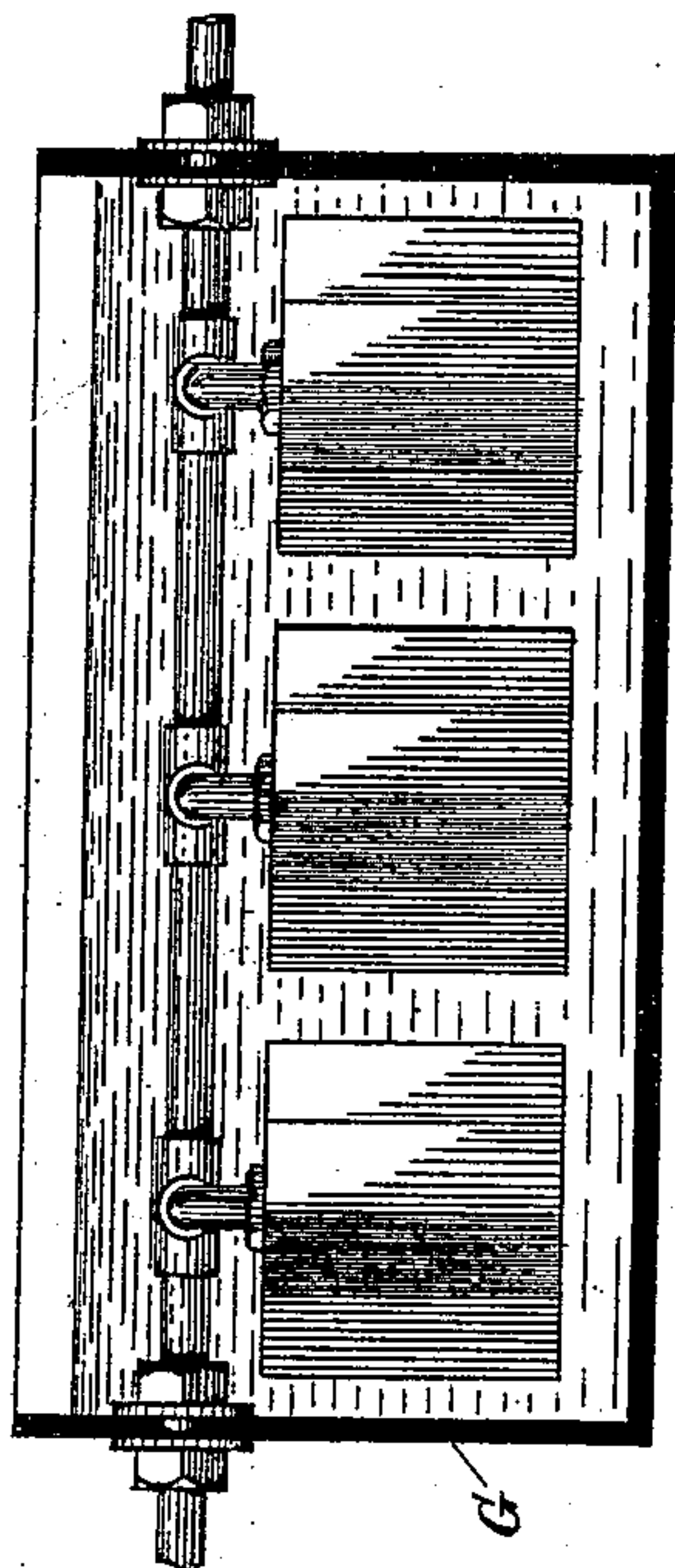


Fig. 15.

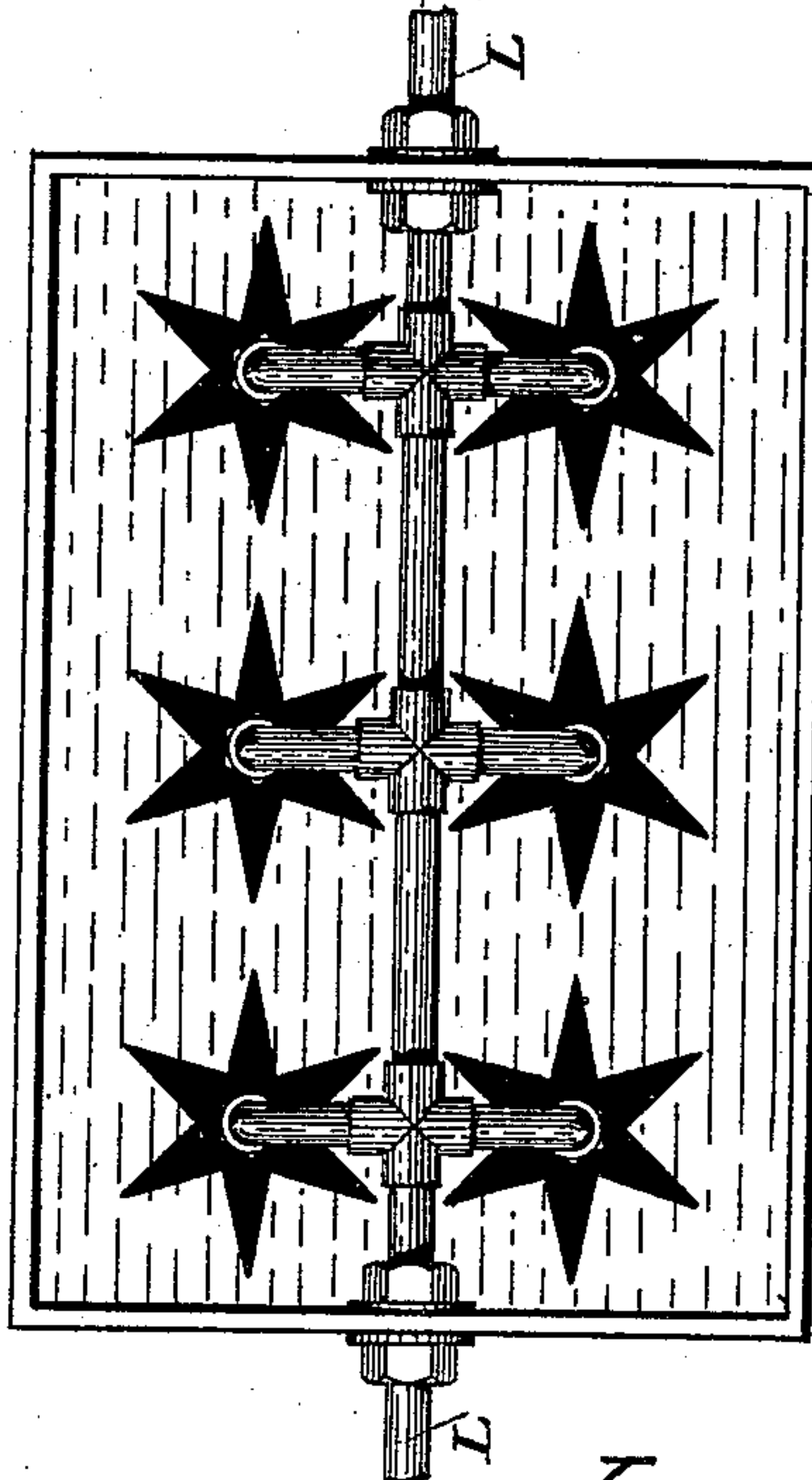


Fig. 16.

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Inventor:

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UNITED STATES PATENT OFFICE.

PROSPER AUGUSTE MAIGNEN, OF LONDON, ENGLAND.

FILTER.

SPECIFICATION forming part of Letters Patent No. 426,945, dated April 29, 1890.

Application filed June 4, 1889. Serial No. 313,068. (No model.) Patented in England December 14, 1887, No. 17,220, and in France July 13, 1888, No. 191,807.

To all whom it may concern:

Be it known that I, PROSPER AUGUSTE MAIGNEN, of London, England, a citizen of France, have invented an Improvement in
5 Filters, (patented in Great Britain and Ireland under No. 17,220, dated December 14, 1887, and in France under No. 191,807, dated July 13, 1888,) of which the following is a specification.

10 My invention relates to a novel construction of a filtering device whereby I obtain a very large area of filtering-surface within a very small compass and with very few fittings, and to the combination therewith of
15 any form of filter-case that may be desired.

My invention consists, essentially, in supporting a textile fabric in a corrugated form so as to fulfill the foregoing objects, and this I carry out in various equivalent ways. In
20 order, however, that my invention may be the better understood, I now proceed to describe the same in relation to the drawings hereunto annexed, reference being had to the letters and figures marked thereon.

25 Like letters refer to like parts throughout the drawings.

Figures 1, 5, 11, 12, 13, 14, 15, and 16 show filters arranged so that the water ascends after being filtered. Figs. 2, 3, 4, 6, and 10
30 show filter arranged so that the water descends after being filtered. Figs. 7, 8, and 9 show in plan the double-channeled supporting-diaphragms of different shapes.

I may take a cylinder or other convenient
35 shape of textile fabric (which for water filtration is preferably asbestos-tissue) and alternately bulge the same by an inner ring or shape A, which may be a double-channeled and perforated diaphragm or any other supporting-diaphragm, as shown in plan in Figs.
40 7 and 8 and in section in the various figures, and constricted by a smaller or outer ring or cord B. In place of the internal rings or diaphragms, however, I may have an internal
45 packing of any suitable substance which may or may not possess filtering properties to act as a support to the fabric. This form is shown in Fig. 6, C being the packing referred to; or I may carry the said textile fabric in
50 a corrugated form by a series of porous or perforated skeleton supports. These sup-

ports may be of any convenient shape to carry the textile fabric in corrugation—for instance, as shown in Figs. 7 and 8—and they may be either horizontal, vertical, or at any convenient angle or angles. An alternative form
55 is shown in Figs. 15 and 16, where the corrugations are vertical. Similarly these supports may be constructed of any suitable material—such, for instance, as woven spiral wire, 60 crossed wood, or wicker-work, or any other material or form that may lend itself to the object required—or I may weave equivalents to the successive rings or supports in the textile fabric itself, so as to cause it to
65 maintain the required shape. The outer rings may on occasion be enlarged, as in Fig. 4, where they are shown in position, and Fig. 9, where one is shown in plan. They thus not only serve as constrictors, but by their enlarged form afford proper support to my de-
70 vices when used under pressure.

The water or other liquid introduced by the supply-pipe E or directly into the filtering-vessel may be drawn directly from the interior of the said frames by ascension, as shown
75 in Figs. 1, 5, 11, 12, 13, 14, 15, and 16, or descension, as shown in Figs. 2, 3, 4, 6, and 10, or laterally.

Upon the outer surface of my device I may
80 deposit filtering medium by subsidence in the manner well-known in respect of my "*filtre rapide*." Again, I may pack the space between my filtering device and the casing G, which may be of any suitable form, with
85 any suitable filtering medium H, Figs. 1, 3, 10, 11, and 12, such as carbon, sand, or sponge.

It is obvious that my device may be either single or multiple, in which latter case the collecting-pipes from the various devices will
90 be led into a common delivery. This is shown in Figs. 13, 14, 15, and 16. In the first instance in Fig. 13 the filtering devices are formed in nests K, the enlarged constricting ring or diaphragm being preferably used, and
95 from each set of nests K the liquid is led into a common delivery-pipe L. This arrangement of nests enables them to be attached by flanges and nuts, so that they may be readily removed separately for cleansing. Plan of
100 this is shown in Fig. 14. Where vertical corrugations are used, a suitable arrangement is

shown in Figs. 15 and 16 in elevation and plan, respectively. Applications of my device to constant water-service are shown in Figs. 11 and 12.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination, with a surrounding
10 bag of textile filtering fabric, of internal supports consisting of plates of ceramic or other ware with both faces corrugated with channels crosswise to each other, so that their intersections make apertures through the said
15 plate, substantially as specified.

2. The combination, with a surrounding bag of textile filtering fabric, of alternate internal supports and external constricting-rings in the form of corrugated ceramic or other plates, the outer constricting-plate being
20 provided with a central orifice of suitable size, substantially as described.

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

PROSPER AUGUSTE MAIGNEN.

Witnesses:

R. G. PRESTON,

J. L. RATHBONE.