

No. 729,147.

PATENTED MAY 26, 1903.

G. ENGEL.
FILTER.

APPLICATION FILED OCT. 7, 1902.

NO MODEL.

Fig. 2,

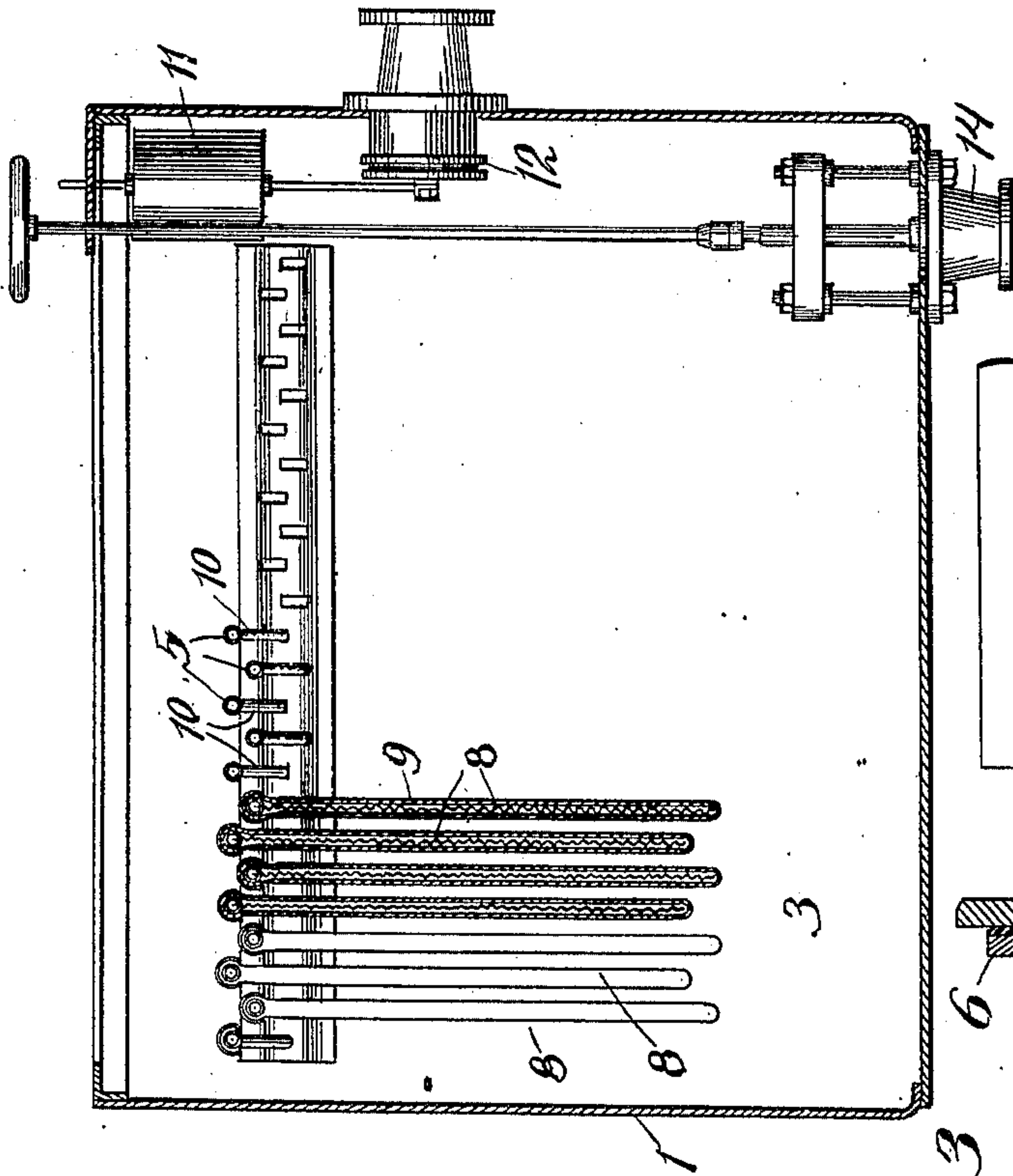


Fig. 4,

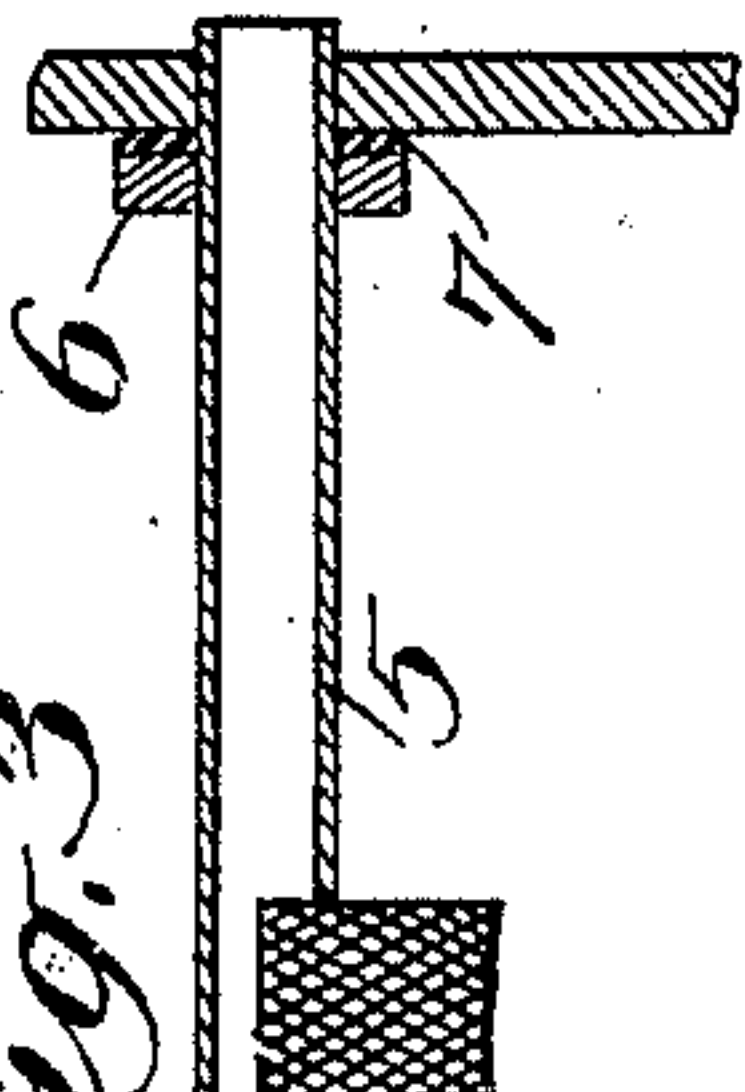
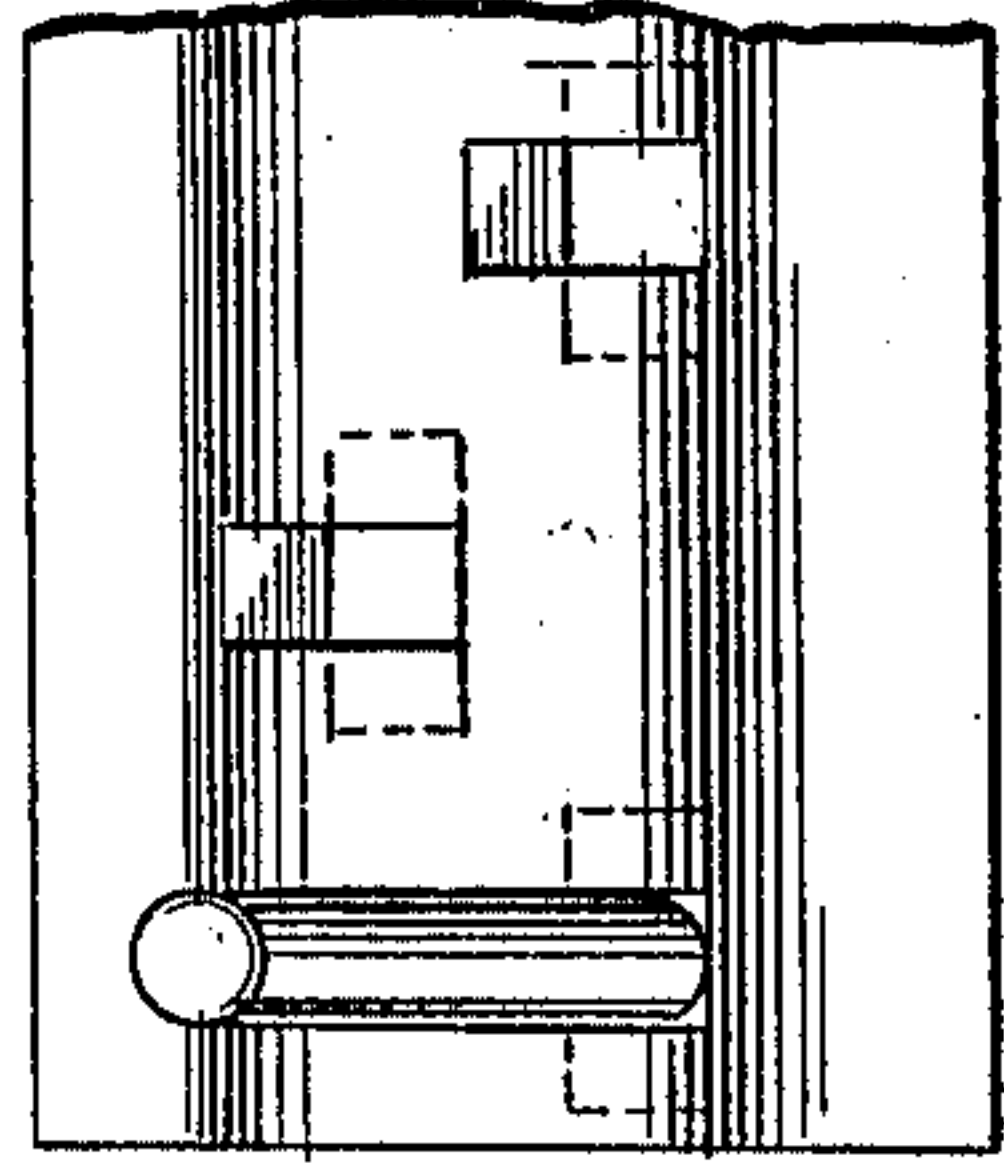
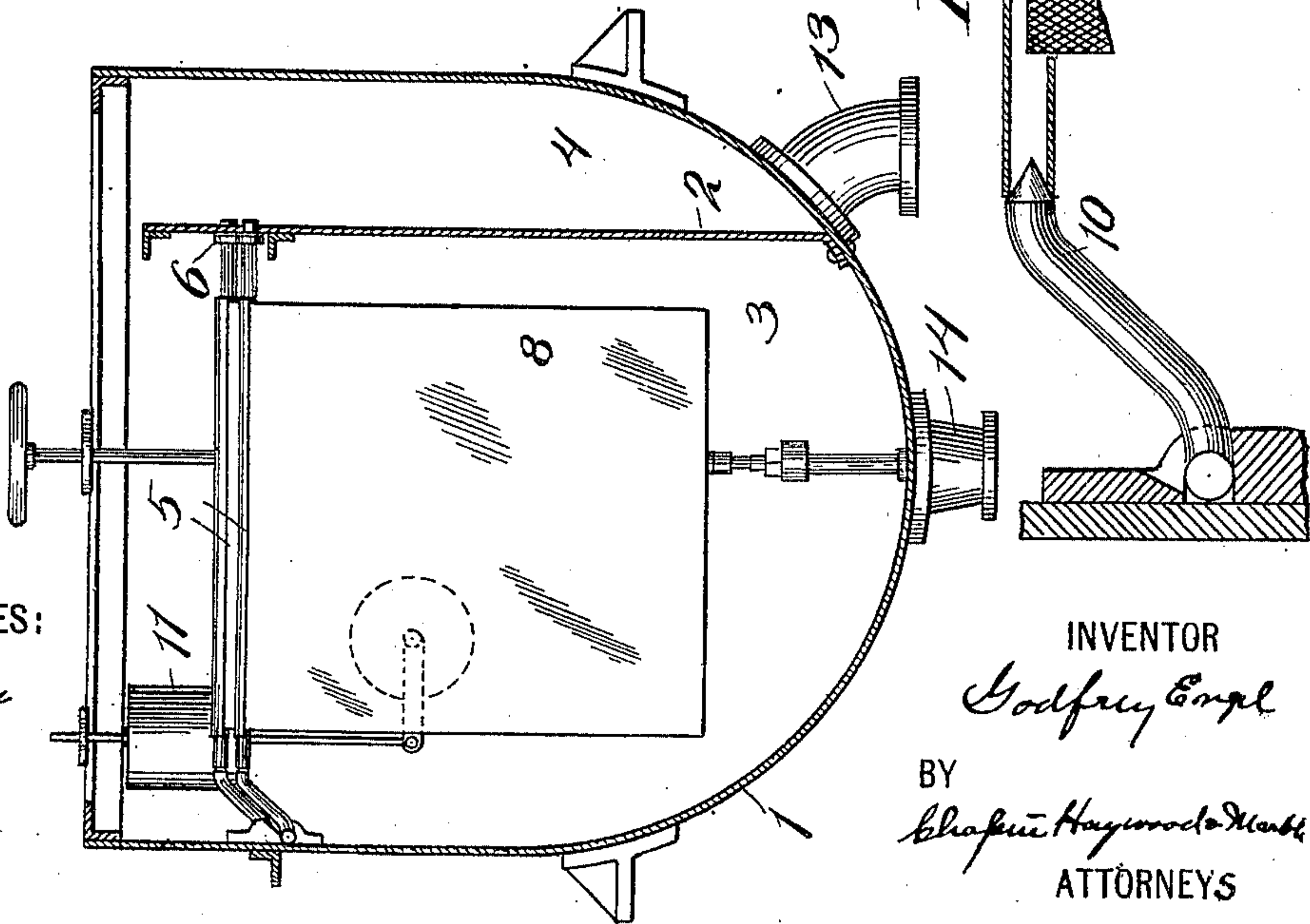


Fig. 3

Fig. 1



WITNESSES:

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UNITED STATES PATENT OFFICE.

GODFREY ENGEL, OF BALTIMORE, MARYLAND.

FILTER.

SPECIFICATION forming part of Letters Patent No. 729,147, dated May 26, 1903.

Application filed October 7, 1902. Serial No. 126,362. (No model.)

To all whom it may concern:

Be it known that I, GODFREY ENGEL, a citizen of the United States, residing in Baltimore, in the State of Maryland, 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 invention relates generally to improvements in filters, and particularly to improvements in bag-filters such as are employed, for example, in the filtration of sugar solutions and the like; and my invention consists in the novel means for forming tight joints automatically between the channeled supports of such filter-bags and the sockets of such supports, whereby the bags may be removed and replaced readily and the said channeled supports may be cleaned readily.

The objects of my invention are to facilitate the removal and replacement of such filter-bags and their supports, to insure the maintenance of tight joints between the said supports and their sockets, to provide adequate support for the bags and at the same time avoid the use of set-screws and the like for insuring tight joints, and generally to make the means for suspending the bags as simple, effective, and reliable as possible and to make it automatic in action and easy of operation.

In the drawings which accompany and form a part of this specification I have illustrated one embodiment of my invention.

In the drawings, Figure 1 shows a transverse section of a bag-filter constructed in accordance with my invention. Fig. 2 shows a longitudinal section of such filter. Fig. 3 is a detail side view of one of the channeled filter-bag supports in place, illustrating the manner of supporting the same; and Fig. 4 is a detail view of a portion of one side of the filter-chamber, showing the staggered arrangement of the swinging hangers for these supports.

The filter comprises a tank 1, divided by a longitudinal partition 2 into two chambers, of which the larger, 3, is the filtering-chamber, and the smaller, 4, is the chamber for receiving the filtrate. I do not limit myself to this manner of producing a filtering-chamber

and a chamber for receiving the filtrate; but the same is convenient.

In the partition 2 are two rows of holes, forming sockets to receive the ends of channeled bag-supports 5, the holes of one row being staggered with respect to those of the other row. The bag-supports 5 preferably consist of pipes slit at the bottom, open at both ends, and provided near the ends which enter the holes in partition 2 with shoulders 6, between which and the partition there may be packing-rings 7, of rubber or other suitable material, to form a tight joint. Cloth bags 8 are suspended from these supports and are clamped thereto in any suitable manner—as, for example, by spring-clamps, as shown. The sides of the bags are preferably held apart by frames 9, of wire-netting or other suitable material, the said wire-netting and the supports 5 forming filter-frames. The outer ends of these frames are supported by means of swinging hangers 10, hinged to the side of the tank in two staggered rows, as shown in Fig. 4. These hangers are curved, as shown, and are of such length with respect to the bag-supports that they may enter the ends of such supports and when so entered will support the same, at the same time pressing said supports toward the opposite side of the tank by reason of the fact that in such position of the parts the hangers 10 are in angular positions much above the horizontal, so that the weight of the filter-frames and bags, tending as it does to draw said supports 5 downward, actually presses the shoulders 6 against the packing-rings 7, thereby insuring a tight joint between each filter-bag frame and the partition 2.

It will be noted that each filter-frame is supported at both ends, and therefore the tubes 5 need not be made unduly strong, as would be necessary were they supported at one end only. Furthermore, each filter-bag and frame may be removed or replaced at any time without disturbing the others and without stopping the operation of the filter; nor is it necessary to operate any cam or set-screw to insure a tight joint between any frame so replaced and the wall of the filter-chamber. To remove a filter-frame, all that is required is to lift it out, and to replace it its bag is dropped into the filtering-chamber in the proper place,

the end of the tube 5 is inserted in the corresponding hole in the partition 2, and the end of the corresponding hinged hanger 10 is inserted in the end of the said tube 5, after
5 which the frame may be allowed to drop of itself into the proper position. The hangers 10 close the outer ends of the tubes 5. Otherwise the said ends of said tubes are open, and therefore it is easy to clean said tubes.

10 Admission of fluid to be filtered into the filtering-chamber is regulated by a float 11 and valve 12 operated thereby. The filtered fluid flows off through a passage 13. The filtering-chamber may be drained by means of
15 a valve 14.

The improved filter herein described is capable of being modified in construction in various ways without departing from the essential principles thereof, and I do not limit myself to the particular details of construction
20 herein shown and described.

Having thus completely described my invention, what I claim, and desire to secure by Letters Patent, is—

25 1. In a filter, the combination with a channeled filter-bag support, of a support for one end thereof having a socket for the reception of such end, and a swinging hanger for the opposite end of said filter-bag support, normally occupying an angular position and
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adapted thereby to press the filter-bag support into its socket under the influence of gravity.

2. In a filter, the combination with a channeled filter-bag support, of a support for one end thereof having a socket for the reception
35 of such end, a packing-ring, and a swinging hanger for the opposite end of said filter-bag support, normally occupying an angular position.

3. In a filter, the combination with a tank having a filtering-chamber and a chamber for receiving filtrate, and a partition separating the two, of a channeled filter-bag support,
40 adapted at one end to fit into a socket in said partition, and a swinging hanger for the opposite end of said support, occupying an angular position when in engagement with and supporting the same.

4. In a filter, the combination of the channeled filter-bag support, the socketed support
50 for one end thereof, and the swinging hanger for the opposite end of said filter-bag support.

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

GODFREY ENGEL.

Witnesses:

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E. L. WILLIAMSON.