

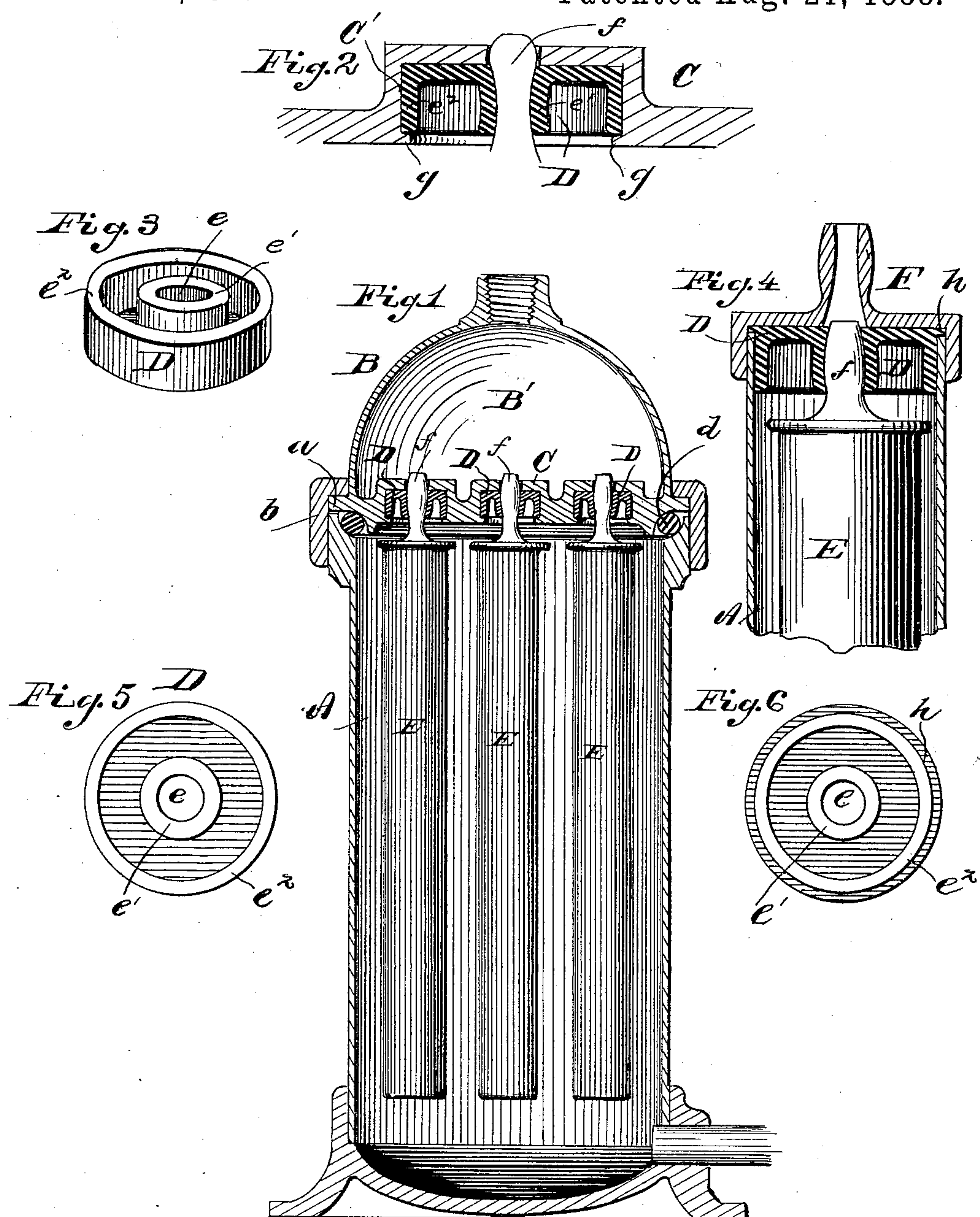
(No Model.)

F. K. WAY.

FILTER.

No. 388,162.

Patented Aug. 21, 1888.



Witnesses,
Forest Barton,
Frank R. Packham.

Inventor,
Frank R. Way.
By *Emil R. Smith*
Att'y.

UNITED STATES PATENT OFFICE.

FRANK K. WAY, OF SPRINGFIELD, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE PASTEUR CHAMBERLAND FILTER COMPANY, OF SAME PLACE.

FILTER.

SPECIFICATION forming part of Letters Patent No. 388,162, dated August 21, 1888.

Application filed November 21, 1887. Serial No. 255,824. (No model.)

To all whom it may concern:

Be it known that I, FRANK K. WAY, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Filters, of which the following is a specification.

My invention relates to improvements in filters; and it particularly relates to that class of filters in which the filtration is accomplished by passing the water through earthenware tubes or pipes. It also relates in its nature to a coupling for connecting pipes or tubes under pressure, the construction being such that the pipe or tube may be readily detached at any time.

My invention consists, primarily, in the use of a flexible coupler or washer of a peculiar shape and formation, adapted to fit in a pocket and receive and retain the tubes or pipes connected thereby.

My invention further consists in various constructions and combinations of parts, hereinafter described, and pointed out in the claims. In the accompanying drawings, which form a part of this specification, Figure 1 is a vertical sectional elevation view of a device embodying my invention. Fig. 2 is a sectional view of a portion of the same in detail, showing the flexible washer or coupler in place. Fig. 3 is a perspective view of one of the washers or couplers in detail. Fig. 4 is a sectional view of a filter, showing a modified form of the washer or coupler. Fig. 5 is a plan view, in detail, of the washer or coupler shown in Figs. 1 to 3. Fig. 6 is a plan view of the modified form of washer or coupler shown in Fig. 4.

Like parts are indicated by similar letters of reference throughout the several views.

In the said drawings, A represents the outer casing of a filter, the top of which is closed by a cap, B, formed with a cavity, B'. The cap B is provided on the outside, near the bottom; with a projecting flange, a, adapted to be engaged by a clamping-ring, b, which screws onto the top of the casing A. Between the cap B and the top of the casing A, I interpose a packing-ring, d, of rubber and of circular cross-section. I also cup out the top of the casing A and the bottom of the cap B, respectively,

as shown, to form a recess for the said packing-ring.

The cap B is provided at the bottom with a partition, C, having formed therein a series of pockets, C', in which are placed the couplers or flexible washers D. Each of the pockets C' is provided with a central opening, which extends through the partition C, and through which the water from the filtering-tubes E passes into the cavity or chamber B' in the cap B. The couplers D are each provided with a central opening, e, corresponding to the opening in the partition C, and through which the nozzle f on each of the filtering-tubes E is adapted to project.

Projecting laterally from the main body of the coupler or washer D are two annular flanges, e' and e'', one of which, e', is placed around the central opening, e, and is adapted to fit around and conform to the filtering-tube nozzle inserted into said opening. The other flange, e'', is placed at the periphery of the coupler, and is adapted to bear against the walls of the pocket C', in which it is placed. The pockets C' are each preferably provided around the mouth thereof with a small projecting flange, or a series of projections, g, to hold the couplers D therein when the tubes are withdrawn. The couplers, being formed of flexible material, preferably rubber, may be compressed by the fingers sufficiently to be inserted into the pockets C', after which they will expand and fit snugly therein.

The filtering-tubes E are secured in place in the filter by simply pressing the nozzles f into the central openings, e, of the couplers. When it is desired to remove the tubes for cleaning or for other purposes, as is frequently necessary, they are simply released from the couplers by drawing the nozzles out of the central openings therein.

It will be seen that when the water or other liquid is turned into the filter the pressure necessary to cause the same to pass through the filtering-tubes will press the projecting flanges of the couplers against the nozzles and the walls of the pockets, respectively, thus forming a tight connection, which will prevent any leakage between the filter proper and the chamber B'.

In Fig. 4 I have shown a filter in which a single filtering-tube is used. In this case I extend the body of the coupler or washer slightly beyond the outer laterally-projecting flange *e'*, so that it will project over the end of the outer casing, A, and rest between the end of said casing and the cap F, and thus serve the double purpose of a packing-ring for the said cap and a coupler for the filtering-tube.

I have shown in the drawings the pockets C as being round. This is the preferable form, though it is obvious that they may be of any other desired shape, polygonous or otherwise, the couplers or washers being correspondingly shaped. It is obvious that other modifications may be used without departing from the spirit of my invention. I do not therefore limit myself to the exact constructions set forth.

Having thus described my invention, I claim—

1. The combination, in a filter having a filtering-chamber, a cap or partition having an opening therein, and a filtering-tube, one end of which is adapted to project through said opening, of a flexible coupler adapted to fit into the seat or pocket about said opening, provided with laterally-projecting flanges, as described, said coupler being adapted to receive the end or nozzle of said filtering-tube and hold the same in position in the opening in said cup or partition, and at the same time permit the said tube to be readily removed or replaced, substantially as described.

2. The combination, in a filter, with a cap having a series of pockets therein, a flexible coupler in each of said pockets, provided with laterally-projecting flanges, as described, and

a central opening adapted to register with an opening in the bottom of said pocket, of filtering-tubes having projecting nozzles adapted to be projected through said openings and held in position by said flexible couplers in such a manner that they may be readily removed therefrom, substantially as described.

3. The combination, with the cap having one or more pockets therein, each pocket having a projecting flange in the mouth thereof, of a flexible coupler adapted to fit into said pocket and provided with a central opening and the laterally-projecting flanges, as described, and a tube or pipe adapted to be inserted into said opening, substantially as specified.

4. The combination, in a filter having a filtering-tube with a nozzle thereon and a cap or partition through which said tube is adapted to discharge, of a flexible coupler having the main body adapted to rest in contact with said partition and a central opening therein, and an annular flange about the central opening, said opening being adapted to register with the opening in said partition and to receive the nozzle of said filtering-tube and retain the same by the elasticity of said coupler or permit it to be removed when desired, and a flange or projection to prevent the coupler from being withdrawn from its position when the tube is removed or inserted, substantially as specified.

In testimony whereof I have hereunto set my hand this 20th day of September, A. D. 1887.

FRANK K. WAY.

Witnesses:

CHASE STEWART,
PAUL A. STALEY.