(No Model.)

F. K. WAY.

FILTER.

No. 385,333. Patented June 26, 1888.

Fig. 3

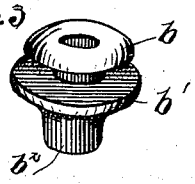

Fig. 1

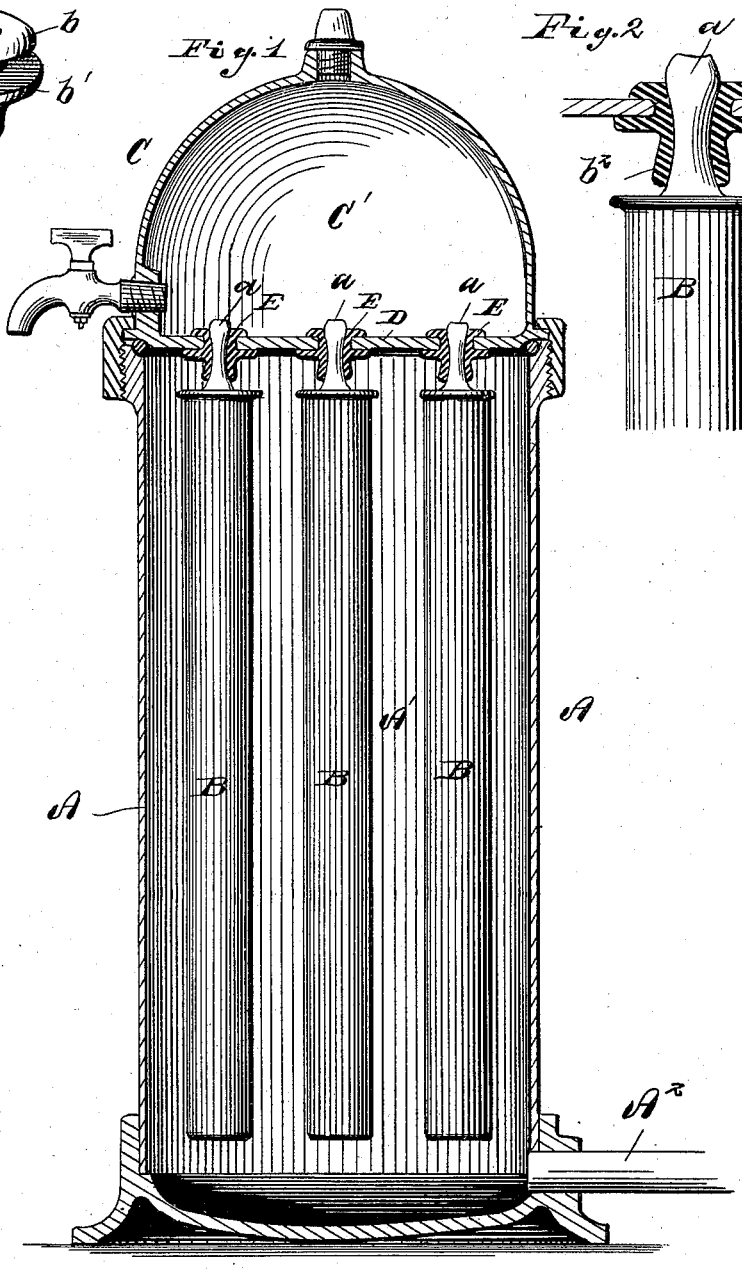

Fig. 2

Witnesses

Chas. L. Burrin

Joshua Scott

Inventor

Frank K. Way

By Paul A. Staats

Atty.

UNITED STATES PATENT OFFICE.

FRANK. K. WAY, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF TO HENRY C. DIMOND, OF SAME PLACE.

FILTER.

SPECIFICATION forming part of Letters Patent No. 385,333, dated June 26, 1888.

Application filed March 30, 1888. Serial No. 269,016. (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 particularly relates to that class of filters in which earthenware tubes or pipes are used to accomplish the filtration by passing the water or other liquid to be filtered through the same. It also relates in its nature to a coupling for connecting the pipes or tubes under pressure in such a manner that the said pipes or tubes may be readily detached.

My invention consists in the constructions and combinations of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional elevational view of a filter to which my improved device has been applied. Fig. 2 is a sectional view showing one tube and its connection in detail on an enlarged scale. Fig. 3 is a perspective view of a coupler in detail.

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

In the said drawings, A represents the main or outer casing of a filtering device containing a number of filtering-tubes, B, and provided with a cap or upper casing, C, having therein a filtering-chamber, C'. The lower portion, D, of the cap or casing C forms the bottom of the filtering-chamber C' and a partition between the main chamber A' and the filtering-chamber C'. The tubes B are each provided in the ordinary manner with nozzles *a*, adapted to project through the partition D and discharge the filtered liquid which passes through the walls of the tube B into the chamber C'.

The liquid to be filtered is introduced into the chamber A' through a supply-pipe, A^2, and is usually introduced under pressure and finds its way through the walls of the tube B in a well-known manner. Now, in order to hold the tubes firmly in position in the partition D, prevent the liquids from passing from the chamber A' to the chamber C', except through the tubes B, and at the same time provide for detaching or removing the said tubes for cleaning, or otherwise, I employ a novel form of coupler, E, in the said partition and about the nozzles *a* of the respective tubes B. This coupler I preferably make as follows: The partition D is made of uniform thickness sufficient to withstand the pressure in the main chamber A'. At a point where each tube is to pass through the same a plain opening is formed, preferably cylindrical in shape, of sufficient size to admit the coupler about the nozzle *a*. The coupler E consists of a flexible tube or washer, preferably of rubber, formed with laterally-projecting flanges *b b'* and the longitudinally-projecting nipple b^2. The distance between the flanges *b* and *b'* is made to correspond to the thickness of the partition D, about the openings through which the tubes are to be inserted. The flange *b* is made sufficiently small, so that when compressed it may be passed through the opening in the partition D until the flange *b'* comes against the partition, when the flange *b* will expand in the position shown in Fig. 2, thus bringing the respective flanges *b* and *b'* on opposite sides of the connecting piece or partition D. The tube to be connected is then inserted in the nipple b^2 until the nozzle *a* projects through the coupler E and the partition D. It will be seen that as the pressure comes against the coupler the sides of the nipple b^2 and the flange *b'* will be pressed against the nozzle of the tube and the partition respectively, thus effectually closing the opening through which the coupler passes and at the same time binding the said coupler firmly against said tube and effectually prevent any leakage around the same. The flange *b'* and the nipple b^2 are made of sufficient length or width to allow for any expansion or contraction due to the insertion of the nozzle or the pressure against the same without exposing the opening in the partition or connecting-piece D.

It will be seen that by this construction the tubes will be held firmly in their position and may readily be inserted or removed from the couplers, while the couplers will thus be held firmly in position in the connecting piece or partition by reason of the flanges *b* and *b'* on opposite sides of the same.

The advantages of this form of coupler will be obvious, since by its use it is only necessary to form a plain opening in the partition or connecting-piece, which may be of a plain or uniform thickness.

It is obvious that the openings through which the couplers are inserted may be of any other desired shape than cylindrical, the coupler being correspondingly shaped to suit the same.

Having thus described my invention, I claim—

1. A tube-coupling, substantially as set forth, formed of flexible material, and provided with the upper and lower flanges of a larger diameter than the opening into which said coupler is adapted to be inserted, and the projecting nipple, substantially as and for the purpose set forth.

2. The combination, in a filter having a main chamber and a filtering-chamber separated by a partition, of one or more filtering-tubes passing through the said partition, said tubes or pipes being each provided with a coupler having the projecting flanges of larger diameter than the opening in said partition on opposite sides of said partition, and the extending nipple, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 14th day of March, A. D. 1888.

FRANK. K. WAY.

Witnesses:
DAVID F. CONKLIN,
CHASE STEWART.