No. 614,209. Patented Nov. 15, 1898.

J. S. MILES.

FILTER.

(Application filed Jan. 17, 1895.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

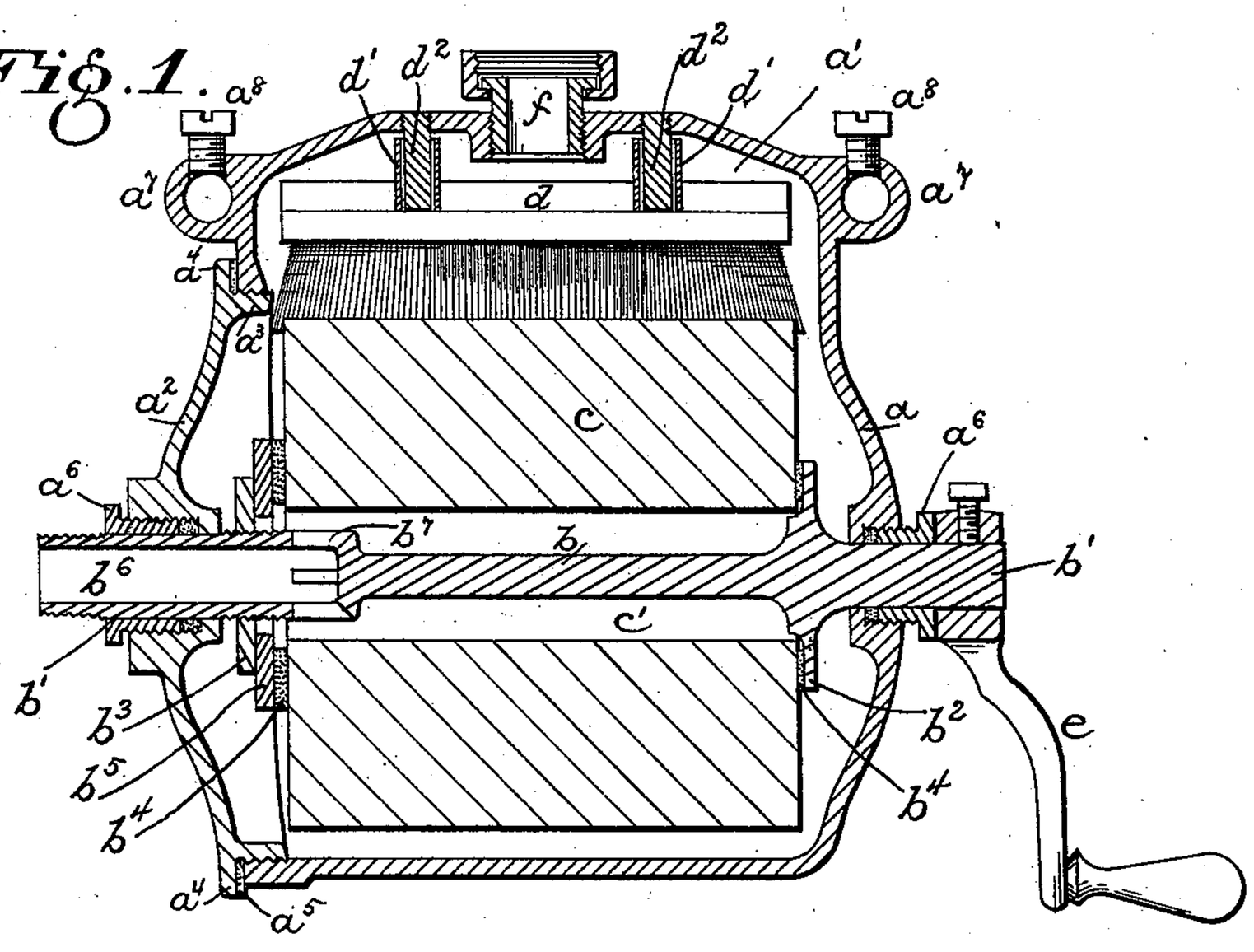
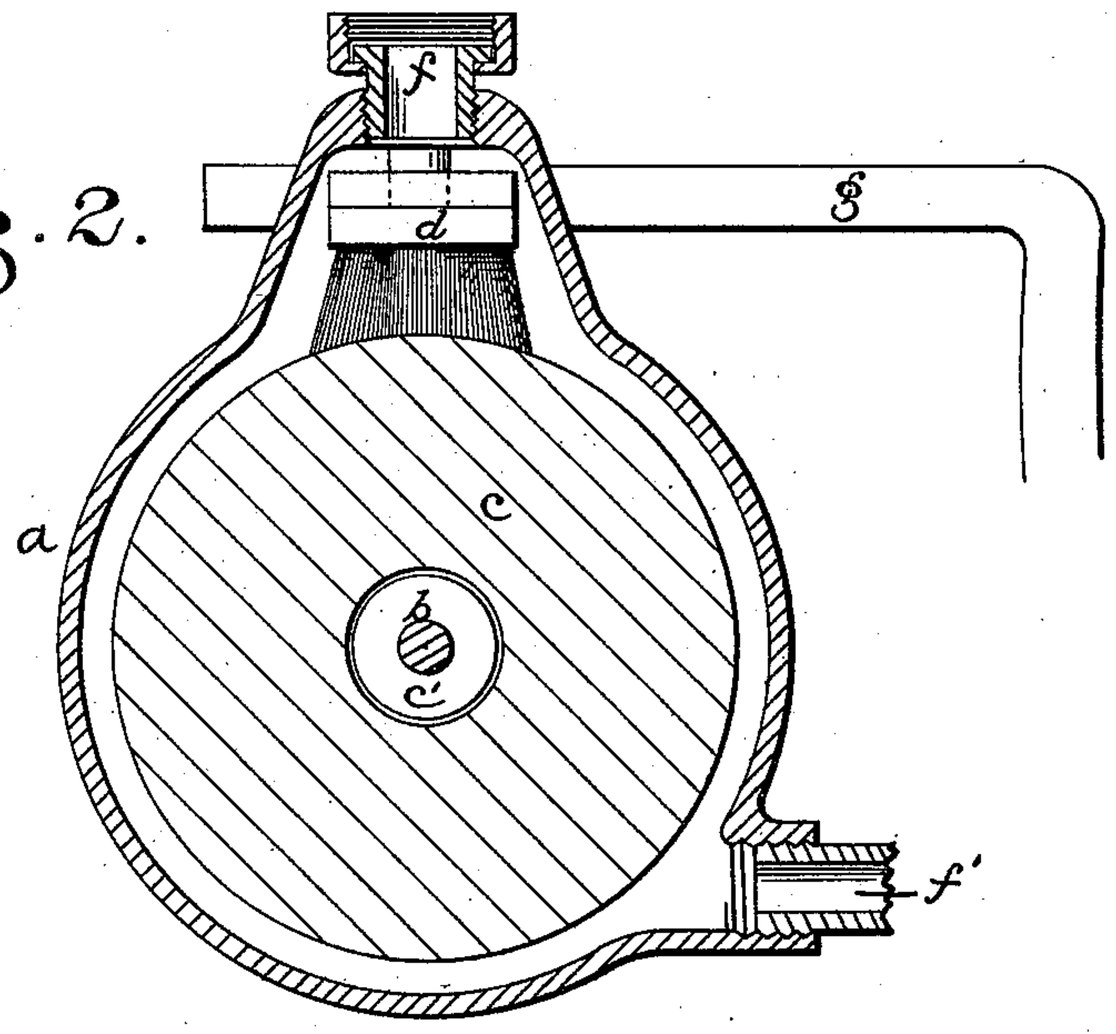


Fig. 2.



WITNESSES:

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Fig. 3.

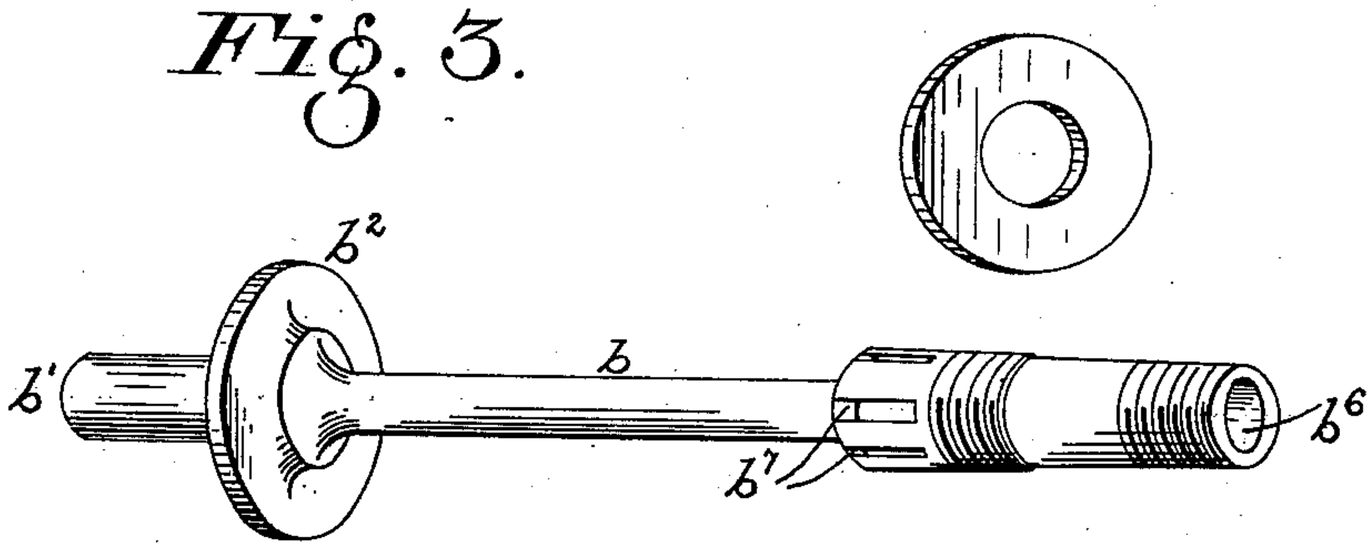
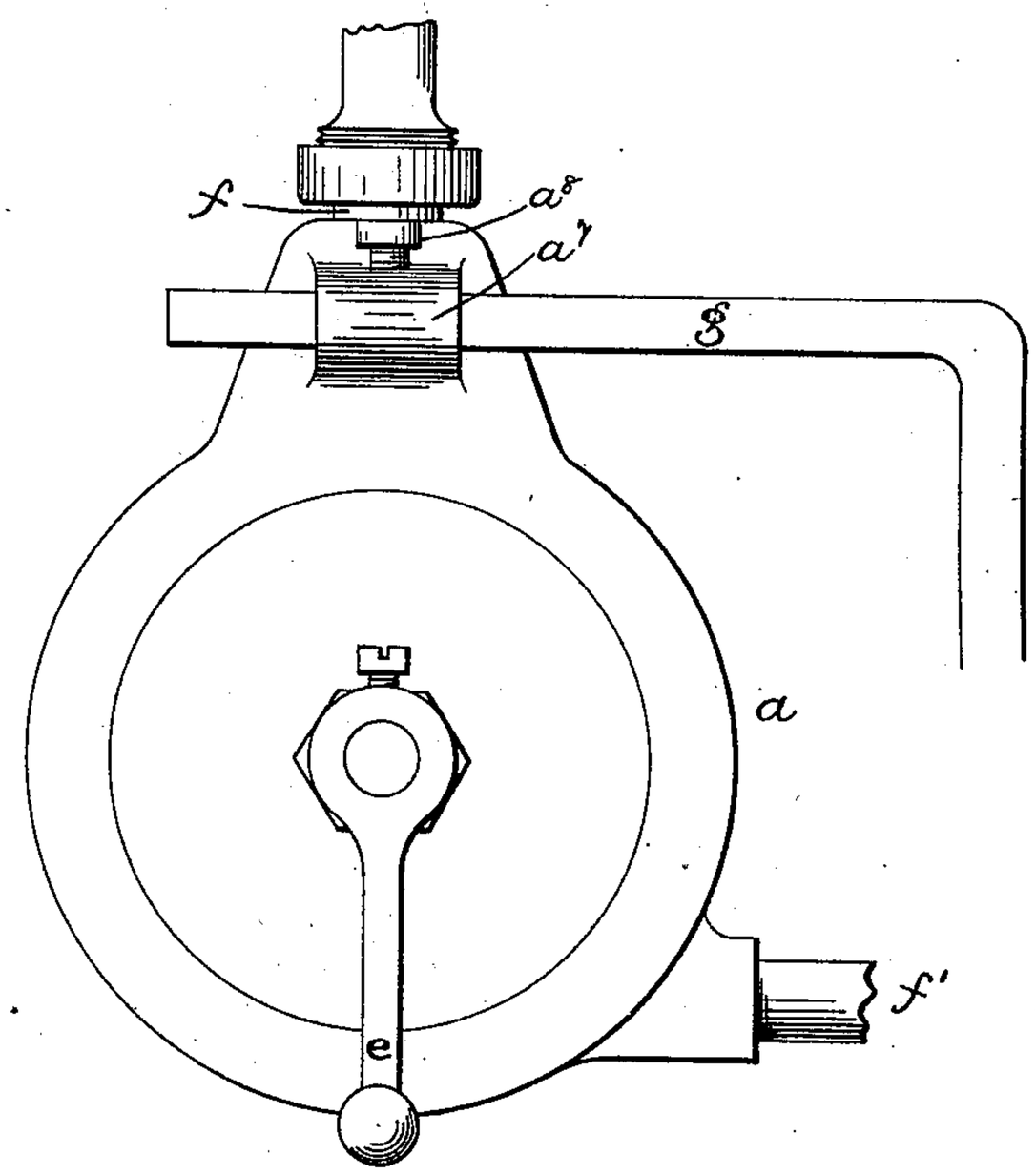


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN S. MILES, OF DAYTON, OHIO.

FILTER.

SPECIFICATION forming part of Letters Patent No. 614,209, dated November 15, 1898.

Application filed January 17, 1895. Serial No. 535,293. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. MILES, a citizen of the United States, residing at Dayton, in the county of Montgomery 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 especially relates to that class of filters which employ as a filtering medium a porous homogeneous substance capable of resisting ordinary pressures at which water or other liquids are filtered, such as natural stone and similar substances, which have heretofore been used for filtering media.

The object of my invention is to provide a filter of this character the parts of which are so adapted as to permit ready access to the interior of the same for examination or repairs, as occasion requires, and, further, to provide means for readily cleansing the same. I attain these objects by the constructions shown in the accompanying drawings, which form a part of this specification, in which—

Figure 1 is a longitudinal sectional elevation of a filter embodying my invention. Fig. 2 is a transverse section of the same. Fig. 3 is a detail view of some of the parts in perspective. Fig. 4 is an end elevation of the filter.

Like parts are represented by similar letters of reference in the several views.

In carrying out my invention I employ a casing a of substantially cylindrical form, said casing being enlarged at one end, preferably at the top, to form a chamber a'. This casing is provided at one end with a removable cap or cover a^2, preferably provided with an inwardly-projecting flange a^3, which is screw-threaded to fit into the open end of the casing, which is correspondingly screw-threaded, the cap or cover being further provided with a laterally-projecting flange a^4, adapted to bear against a gasket a^5, of rubber or other suitable packing, to form a tight joint. The cap or cover a^2 really forms one end of the casing, substantially the whole end thereof being removable. The respective ends of the casing a are each provided with a suitable stuffing-box or gland a^6, through which are adapted to extend the respective ends of a supporting rod or bar b, to which the filtering medium c is secured and on which it is supported, this rod or bar b being extended at the ends to form bearings b' b', which are seated in the glands a^6 and adapted to turn therein, these glands serving the double purpose of bearings for the journals thus formed and to prevent the escape of the liquid being filtered.

The filtering medium c, which may be of natural stone or other suitable substance, is cylindrical in form and provided with a bore c', through which the rod or bar b is extended. This support b is provided near one end with a projecting flange or collar b^2, preferably formed integral therewith. The opposite end of said bar, on its outer periphery, is screw-threaded and provided with an adjustable screw-threaded collar b^3, adapted in connection with the stationary collar b^2 to clamp the filtering-cylinder c firmly on said support, suitable gaskets of rubber or other suitable packing material b^4 being employed between the respective collars and the ends of the filtering medium to insure a tight joint. I have shown in Fig. 1 an intermediate washer b^5 between the movable collar b^3 and the gasket b^4. This is the preferable construction, though it is obvious that this washer may be dispensed with, if desired.

The bar or support b at one end is preferably enlarged, as shown, and is bored out to form an outlet b^6 from the interior c' of the filtering medium c. This is accomplished by providing in said support a suitable number of openings b^7, which extend through the walls of the hollow portion b^6 of said support b and open into the central chamber c' of the filtering medium c.

The liquid to be filtered is admitted to the chamber a on the outside of the filtering-cylinder c and passes through the walls of said filtering medium to the central chamber c', whence it escapes through the openings b^7 and hollow portion b^6 of the support.

To provide for cleaning the filter as thus described, I place within the chamber a' a movable brush d. This brush may be formed of any suitable material to secure the proper scouring effect on the outer periphery of the filtering medium and is provided with upwardly-projecting tubes d', adapted to fit over guide rods or pins d^2, secured to the cas-

ing and adapted to project inwardly, as shown, so as to permit the brush to readily adjust itself to the outer surface or periphery of the cylinder.

Means is provided for revolving the filtering medium. This may be accomplished by a handle *e*, adapted to be secured to the projecting end *b'* of the support *b*, so that every portion of the outer periphery of the cylinder may be brought in contact with the brush by simply revolving said cylinder.

To increase the effectiveness of the scouring, I place the inlet-opening *f* to the filtering-casing at a point immediately opposite the brush *d* and provide a flush or discharge opening *f'* at a suitable point in the casing, preferably opposite said brush. By this arrangement the water or other liquid which enters the filtering-casing under pressure comes in contact with the brush and is deflected by the back of the brush, which is made solid—that is, without openings—to the sides of the chamber in which the brush is inclosed, so as to be distributed on the periphery of the cylinder on each side of said brush, thus assisting materially in the process of cleaning. In addition to this the location of the brush is such that the force of the water entering the casing may be utilized to force the brush with greater or less pressure against the periphery of the stone, as occasion may require, this being determined by regulating the quantity of water admitted through the inlet-opening in proportion to the discharge through the flush-pipe.

By the constructions thus described the cleansing of the filter may be effectively secured without the necessity of opening the filtering-chamber.

The arrangement of the casing with the removable covering permits the same to be readily removed at any time for inspection or repairs, as may be required or found desirable.

On each side of the casing, preferably opposite the chamber *a'*, I construct perforated lugs a^7, adapted to receive the projecting ends of supporting rods or brackets *g*, suitable set-screws or other clamping devices a^8 being provided for attaching said lugs to the rods or brackets. By this means the outer casing may be sustained at any convenient point, so as to be readily accessible. At the same time by loosening the set-screws it may be readily removed, as desired.

Having thus described my invention, I claim—

The combination in a filter such as described of an outer casing having an inlet and an outlet, of a cylindrical filtering medium movably supported in said casing, and a solid-backed brush loosely but positively mounted by means of guides secured to the back of said brush in an auxiliary chamber connected to the main filtering-chamber in said casing, said brush being arranged in front of said inlet-opening whereby the entering liquid is directed against the back of said brush and by the pressure thereof, when said outlet is open, holds said brush against said filtering medium, substantially as specified.

In testimony whereof I have hereunto set my hand this 20th day of December, A. D. 1894.

JOHN S. MILES.

Witnesses:
H. J. CHANCELLOR,
CHAS. I. WELCH.