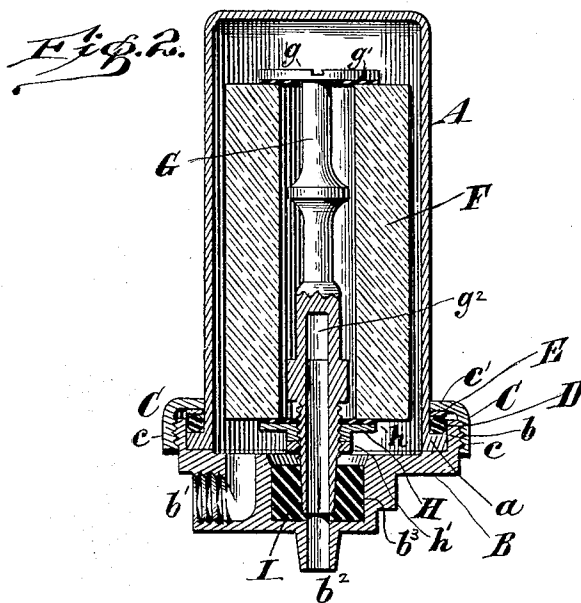
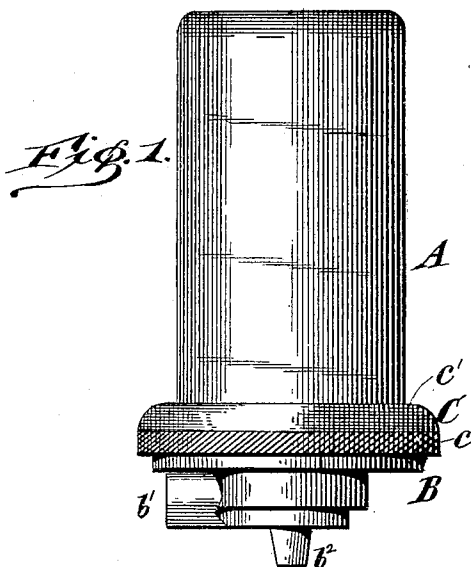


No. 813,429.

PATENTED FEB. 27, 1906.

W. A. HULL.
FILTER.

APPLICATION FILED MAR. 26, 1904, RENEWED AUG. 11, 1905.



Witnesses
C. Mitchell
W. Ashleys

Inventor
Wolcott A. Hull

UNITED STATES PATENT OFFICE.

WOLCOTT A. HULL, OF NEW YORK, N. Y.

FILTER.

No. 813,429.

Specification of Letters Patent.

Patented Feb. 27, 1906.

Application filed March 26, 1904. Renewed August 11, 1905. Serial No. 273,846.

To all whom it may concern:

Be it known that I, WOLCOTT A. HULL, a citizen of the United States, residing at No. 2135 Seventh avenue, in the borough of Manhattan, county of New York, and State of New York, have invented certain new and useful Improvements in Filters, of which the following is a specification.

My improvement is especially intended for filters which are connected to faucets or bibs of houses and other buildings.

I will describe a filter embodying my improvement and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a side view of a filter embodying my improvement. Fig. 2 is a central vertical section of the same.

Similar letters of reference designate corresponding parts in both figures.

The casing of my filter comprises two parts A B. The part A constitutes the body of the casing and the part B the base. The body A is shown as of cylindric form, closed at the upper end and provided at the lower end with an outwardly-turned flange *a*.

The base B of the casing has a surface upon which the flange *a* of the body A may rest, and outside of that an upturned flange or rim *b*, which, as here shown, closely surrounds said flange *a* and is externally screw-threaded.

The two parts A B of the casing are shown as united by a coupling-ring C, which consists of a ring-shaped or cylindrical portion *c* and an inwardly-turned flange-like portion *c'*. The portion *c* is internally screw-threaded and engages with the screw-thread of the base B of the casing. The inwardly-turned flange-like portion of the coupling-ring extends close to the cylindric body A of the casing.

Intermediate of the top of the flange *a* of the casing-body A and the inwardly-turned flange-like portion of the coupling-ring C is a ring D of suitable packing material, preferably surmounted by a ring of metal E. By screwing the coupling-ring into place after the body A shall have been mounted upon the base B of the casing the packing D may be compressed so as to make a tight joint, and the flange *a* of the body A will be forced down upon the base B of the casing, whereas in filters as ordinarily constructed the packing material is located between the parts of the casing. In mine the packing material is not so located, but is placed between one part of the casing and a

ring or other equivalent device connected to the corresponding other part of the casing, whereby when the parts of the casing separate, due to the pressure of the liquid within the casing, the packing material instead of being subjected to diminished pressure is subjected to all the greater pressure and the joint made proportionately tighter. The ring D should be made of packing material that is easily compressible. For example, rubber is a suitable material, whereas soft metal is not suitable.

The base of the casing will have an inlet passage or duct *b'*, provided near the outer extremity with an internal screw-thread or otherwise adapted to be united with a supply-pipe. It also has a discharge-opening, which, as here shown, is made in the form of a nozzle *b''*.

The filtering material is shown as made in the form of a tubular cylinder of suitable substance F, such as a very porous stone, natural or artificial. As shown, a rod G passes through this cylinder of filtering substance and has a flange *g* at its upper end overlapping the top of the filtering substance, a piece of packing material *g'* being preferably interposed between the said flange and the filtering substance to prevent flow of liquid between these parts. The lower part of the rod G is tubular and is provided with openings *g''*, extending from its exterior to its interior, so that liquid after having passed through the filtering substance may enter the tubular portion of said rod. The lower portion of the rod is externally screw-threaded and has engaged with it a flanged ring H, which is internally screw-threaded for that purpose and has a flange extending across the lower end of the cylindric filtering substance, a ring of suitable packing material *h* being interposed to make a tight joint. Below the ring H a check-nut *h'* may be engaged with the rod G. The lower extremity of the rod G is longitudinally tapered, so that it may be forced into tight engagement with a cylindric ring I, of packing material, which is fitted into a recess *b''*, formed in the base B.

It is advantageous to provide the rod of the filtering substance with a tapering conduit entering packing material inserted in the base rather than to provide the base with an externally-tapering tubular upward projection entering packing material attached to the filtering substance or to an appurte-

nance thereof, because all incidental liability of splitting the filtering substance is avoided, and wearing of the filtering substance by repeated engagements is also avoided. Moreover, when the packing material is of rubber, which is generally the case, and is inserted in the base it will by chemical action become secured there, so that it will not be pulled out when the filtering substance is removed, because the cementation due to said chemical action will extend over the greater surface where the rubber packing contacts with the base than where the rubber packing contacts with the extremity of the rod G, which is mechanically connected with the filtering substance. Another advantage due to my improvement is that any water remaining upon the base after the removal of the filtering substance will drain off.

By making a joint between the base and body of the filter-casing comprising a rim on the base, an outwardly-extending flange upon the body, packing material outside the body and above its flange, and a coupling-ring closely surrounding the body above the packing material, and engaging with the rim of the base, I secure important advantages. The pressure of water will not oppose the engagement of the parts as it will do in former constructions. Indeed, the coupling-ring C may be forced down with little effort.

What I claim is—

1. In a filter the combination of a base, forming part of a filter-casing, provided with an upwardly-extending rim, a cylindric body also forming part of the casing and provided with a flange fitting within the rim of said base, a filtering substance arranged within the casing, an inlet and an outlet for the flow of water, a ring of easily-compressible packing material surrounding the cylindric body and resting against the upper side of its flange, a ring surrounding the cylindric body above the packing material and also extending down outside the rim of the base and provided outside said rim with means for engaging it with said rim.

2. In a filter the combination of a base, forming part of a filter-casing, provided with an upwardly-extending rim, a cylindric body also forming part of the casing and provided with a flange fitting within the rim of said base, a filtering substance arranged within the casing, an inlet and an outlet for the flow of water, a ring of easily-compressible packing material surrounding the cylindric body and resting against the upper side of its flange, a ring surrounding the cylindric body above the packing material and also extending down outside the rim of the base and provided outside said rim with a screw-thread for engaging it with said rim.

3. In a filter the combination of a base, forming part of a filter-casing, provided with an upwardly-extending rim, a cylindric body

also forming part of the casing and provided with a flange fitting within the rim of said base, a filtering substance arranged within the casing, an inlet and an outlet for the flow of water, a ring of easily-compressible packing material surrounding the cylindric body and resting against the upper side of its flange, a ring surrounding the cylindric body above the packing material and also extending down alongside the rim of the base and provided alongside said rim with means for engaging it with said rim.

4. In a filter the combination of a base, forming part of a filter-casing, provided with an upwardly-extending rim, a cylindric body also forming part of the casing and provided with a flange fitting within the rim of said base, a filtering substance arranged within the casing, an inlet and an outlet for the flow of water, a ring of easily-compressible packing material surrounding the cylindric body and resting against the upper side of its flange, a ring surrounding the cylindric body, adapted to compress the packing material, and provided with means for engaging it with the rim of the base.

5. In a filter, the combination of a filter-casing comprising two separable parts coöperating with each other, a filtering substance arranged within the casing, an inlet and an outlet for the flow of water, a ring surrounding the casing and provided with means for connecting it to one of said parts of the casing, and easily-compressible packing material surrounding the casing and located between said ring and said other part of the casing.

6. In a filter the combination of a casing comprising two separable parts coöperating with each other, one part being provided with a rimmed flange and the other part with a flange adapted to fit within the rimmed flange of said first-named part, a filtering substance arranged within the casing, an inlet and an outlet for the flow of water, a ring surrounding the casing and provided with means for engaging it with the rim of said first-named part, easily-compressible packing material surrounding the casing and located between said ring and the flange of the other part of the casing.

7. In a filter, the combination of a base forming part of a casing and provided with a cavity which is wholly above the exterior bottom surface of said base and contracted so as to be smaller near the exterior surface than near the interior surface of said base, a body forming part of the casing, means for securing the base and body of the casing together, an inlet and an outlet for the flow of water, a filtering substance within the casing, a nozzle or conduit extending from the filtering substance, and packing material snugly fitting in the cavity in the base and wholly above the exterior bottom surface of the base,

said packing material having the shape of a cork with a hole extending through it to snugly receive said nozzle or conduit.

5 8. In a filter, the combination of a base forming part of a casing and provided with a cavity which is wholly above the exterior bottom surface of said base and contracted so as to be smaller near the exterior surface than near the interior surface of said base, a
10 body forming part of a casing, means for securing the base and body together, an inlet and an outlet for the flow of water, one of which consists of an orifice leading from said cavity, a filtering substance within the casing,
15 a nozzle or conduit extending from the filtering substance, and a ring of packing material snugly fitting in the cavity in the base and wholly above the exterior bottom sur-

face of the base, the hole in said ring of packing material being adapted to snugly receive 20 said nozzle or conduit, and said ring of packing material being of such solidity and of such thickness between opposite faces that inserting the nozzle into the hole in the ring, forms a water-tight joint between the nozzle 25 and the packing material and also operates to expand the packing material and thereby to insure a water-tight joint between it and the walls of the cavity.

In testimony whereof I have signed this 30 specification in the presence of two subscribing witnesses.

WOLCOTT A. HULL.

Witnesses:

K. G. LE ARD,
A. L. O'BRIEN.