

(Model.)

H. F. ATWOOD & J. SIDDONS.

FILTER

No. 250,331.

Patented Dec. 6, 1881.

Fig. 1.

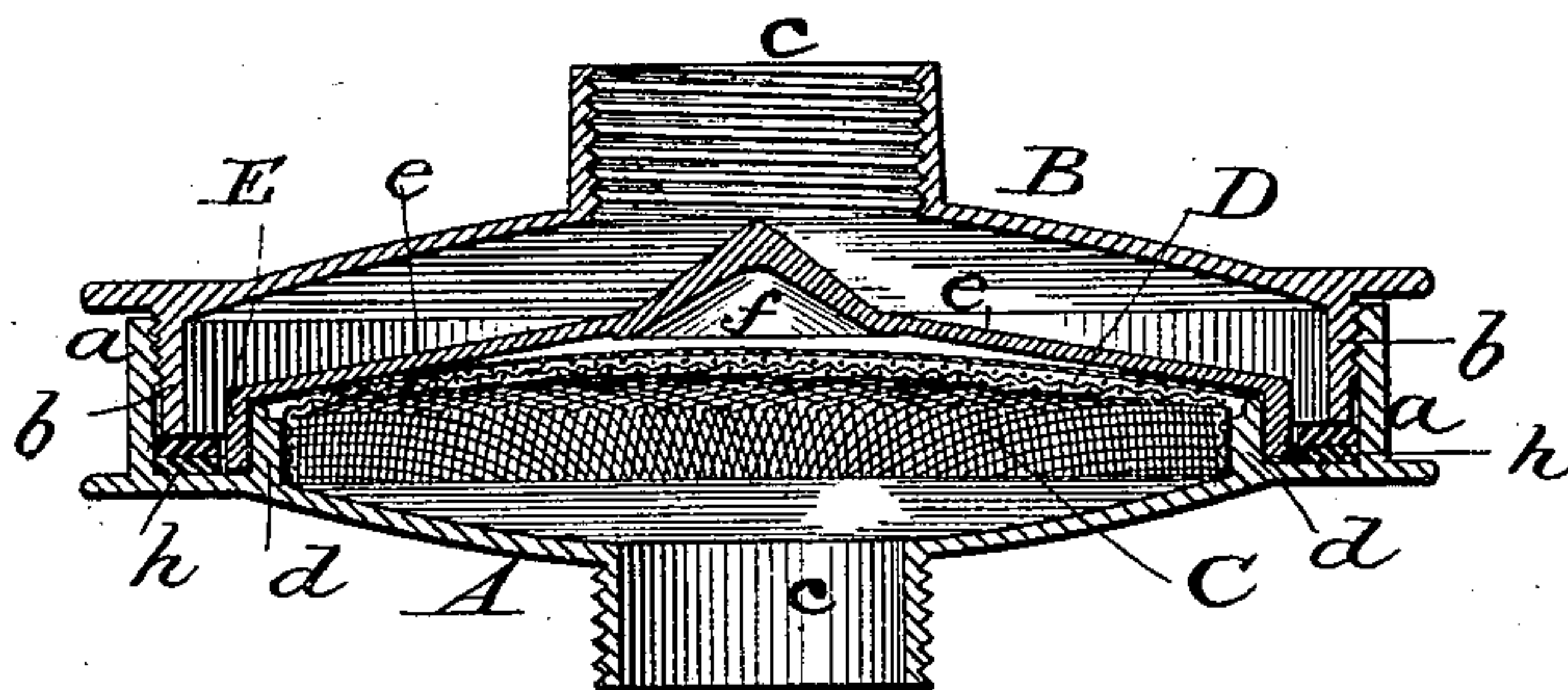


Fig. 2.

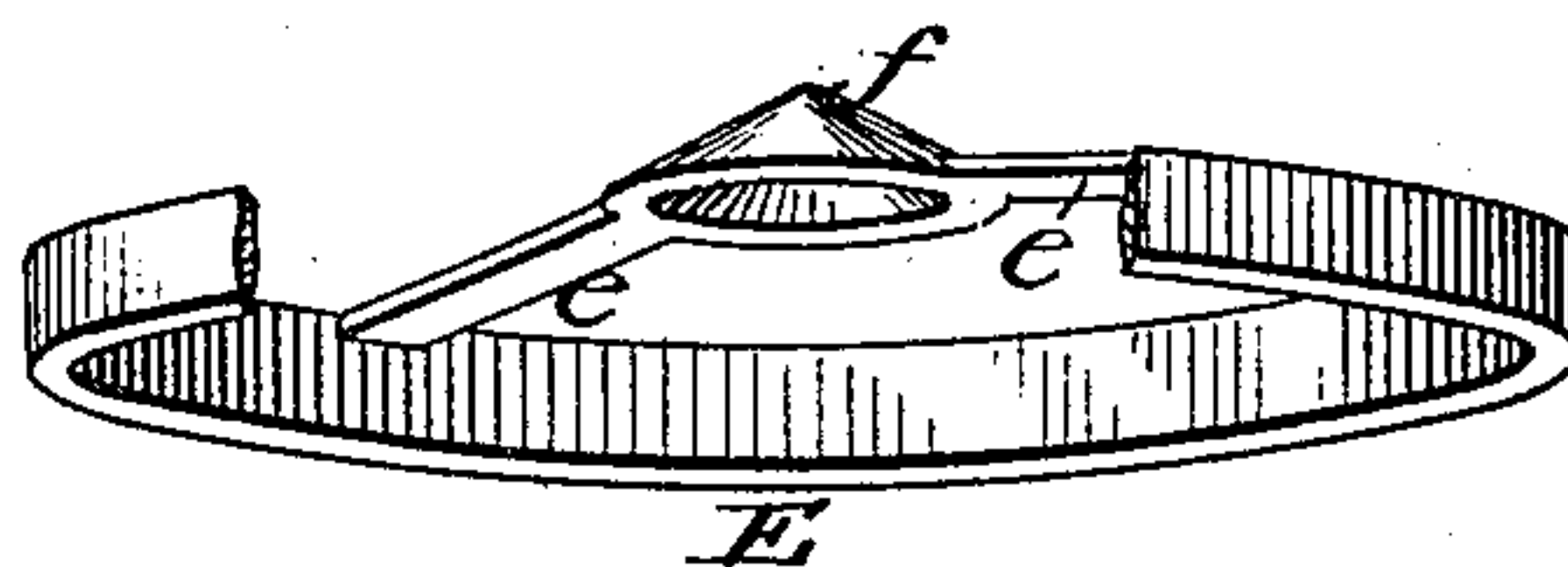
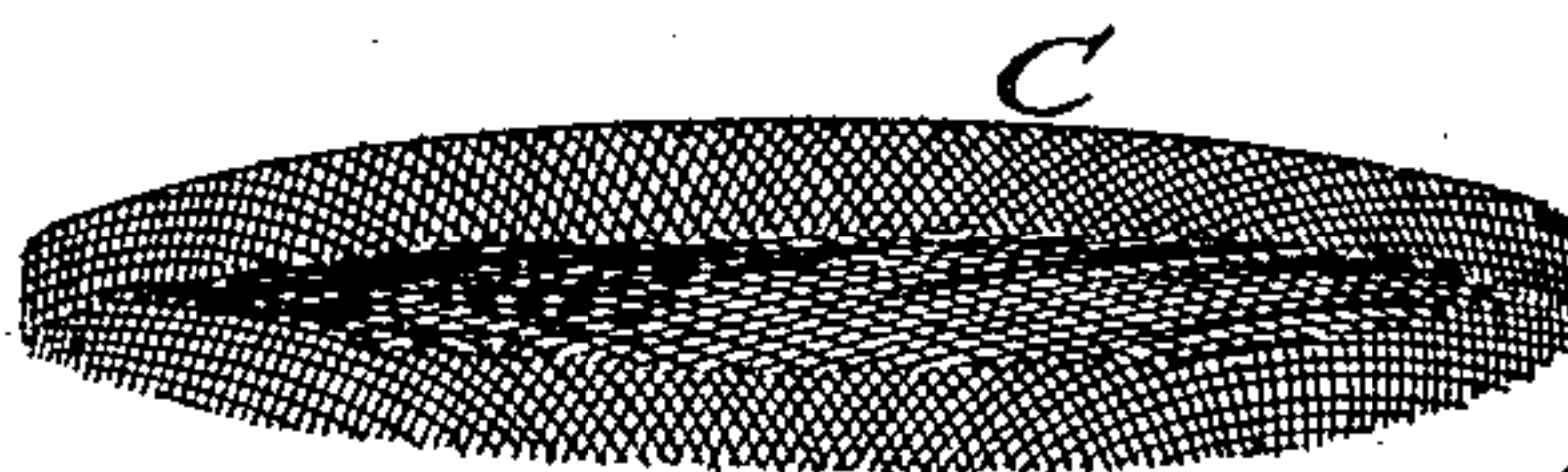


Fig. 3.



Fig. 4.



Attest.

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UNITED STATES PATENT OFFICE.

HORACE F. ATWOOD AND JOHN SIDDONS, OF ROCHESTER, NEW YORK.

FILTER.

SPECIFICATION forming part of Letters Patent No. 250,331, dated December 6, 1881.

Application filed July 18, 1881. (Model.)

To all whom it may concern:

Be it known that we, HORACE F. ATWOOD, and JOHN SIDDONS, of Rochester, in the county of Monroe and State of New York, have invented certain Improvements in Filters, of which the following is a specification.

This invention relates more particularly to that class of filters which are intended for domestic use, to be applied to faucets or other water-conductors; and the object of the invention is to produce a device which shall be at once simple and efficient, and the filtering medium of which may be removed and renewed quickly at a trifling expense.

To this end the invention consists in a separable body or case containing a diaphragm of canton-flannel or equivalent material, a wire-gauze diaphragm to sustain the same, and a removable frame which serves the twofold purpose of straining and holding the flannel and of distributing the water evenly over the diaphragm.

The invention consists, also, in the peculiar formation of the various parts and their combination with each other, as hereinafter described.

Referring to the accompanying drawings, Figure 1 represents a central cross-section of the improved filter; Figs. 2, 3, and 4, views of the component parts.

The body of the filter consists of a hollow casing, A B, provided with peripheral flanges *a b*, threaded and screwed together in the manner represented in the drawings, to permit the ready separation of the parts. The two parts of the body are provided, as shown, with central necks or mouths, *c*, for the admission and delivery of the water. The body-section A is provided on its inner face with an annular flange, *d*, located at a short distance from the outer flange. In the section A, closely within the flange *d*, there is mounted a diaphragm of wire-gauze or perforated metal, C, having its edge flanged or turned downward for the purpose of sustaining it in the required position. Above and across the diaphragm C there is a tightly-stretched diaphragm, D, which constitutes the main filtering medium, this diaphragm being composed of one or more sheets of canton-flannel or similar material, the canton-flannel being, however, considered preferable

to any other material known, for the reason that the body of loose fibers lying upon its surface serves to catch and retain the fine impurities and foreign matters which will pass through other woven fabrics.

We find in practice that by the use of a single thickness of canton-flannel we are enabled to secure much better results than by the use of the large bodies of charcoal, gravel, felt, and like substances ordinarily employed, the flannel being peculiarly adapted for this use, as before described, because of the existence of the body of loose fibers upon its surface. The flannel diaphragm is strained and secured in position by means of an encircling band or ring, E, the flannel being applied by first laying it across the flange *d*, with its edge extending beyond the same, and then forcing the ring F down snugly around the outside of the same, thereby bending and drawing the edges of the flannel down tightly around the outside of the flange *d*. The ring E is retained firmly in position by means of the upper section, B, of the body, which bears upon the ring, as represented in the drawings.

For the purpose of distributing the water within the casing, that it may flow with practically equal force through all portions of the diaphragm, the ring F is provided with a central cross-bar, *e*, having a conical or rounded enlargement, *f*, at the center. The water, on entering the body, impinges against the diffusing or spreading comb, and is thus distributed uniformly throughout the interior of the body.

In order to prevent the water from flowing through the filter past or around the edges of the filtering material, rubber or other suitable packing-rings, *h*, are inserted within the body, as represented in the drawings, in such position that in screwing the two parts of the body together the flange of the part B will bear firmly upon and compress the packing, this compression serving the twofold purpose of preventing leakage between the two parts of the body, and also of preventing leakage between the ring F and flange *d*.

In practice it is found that the canton-flannel retains nearly all the impurities contained in the water which may be passed through the filter. When the surface of the flannel becomes heavily laden with the foreign matters

it is only necessary to separate the two parts of the body and remove the ring F, whereupon the flannel may be removed and a new sheet substituted.

5 We are aware that filters have been constructed in a great variety of forms, with separable or divisible bodies with filtering-diaphragms and substances of various kinds confined therein. We are also aware that felt,
10 cloth, and other like fabrics have been employed; but we are not aware that any one has hitherto discovered or made available the facts that the existence of a body of loose unwoven fibers upon the receiving-surface of the
15 filtering-sheet would catch and retain the finer impurities contained in the water.

Having thus described the invention, what is claimed is—

1. In a filter, the body-section A, provided
20 with the neck *c*, the internal flange, *d*, and the external threaded flange, *a*, in combination with the gauzediaphragm C, the filtering-sheet D, the ring E, applied as shown, and the body-section B, provided with neck *c* and threaded
25 flange *b*.

2. In combination with the body-section A, provided with the two flanges, the filtering medium, and the ring E, applied to secure the filtering medium, as shown, the elastic packing
30 *h*, inserted between the two flanges of the body A around the outside of ring E, and the body-section B, constructed and applied as shown, serving to compress the packing around and against ring E, as shown.

35 3. In combination with the two-part body constructed with the flanges *a*, *b*, and *d*, the

diaphragm C, filtering-sheet D, ring E, and packing *h*.

4. The combination of the body-section A, having the internal flange, *d*, the filtering-sheet
40 applied over and around said flange, the ring E, encircling the flange, and provided with a cross-arm bearing, central diffusing-cone, and body-section B, as described and shown.

5. In a filter, a body-section provided with
45 two concentric flanges, in combination with a packing located between said flanges, and a second body-section provided with a flange seated between the two flanges of the first section and against the packing.
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6. The combination, in a filter, of an annularly-flanged body, a filtering medium stretched over and around said flange, a ring encircling the edge of the filtering-sheet, an elastic packing encircling the ring, and a second body-section
55 having a flange arranged to compress the packing against the exterior of the ring, as described and shown.

7. In a filter, a filtering medium consisting of a fabric having a closely-woven body and a
60 thick body of loose unwoven fibers upon one surface.

8. In a filter, the combination of a perforated supporting-diaphragm and a filtering-diaphragm thereon, the latter consisting of a woven fabric having a body of loose unwoven
65 fibers upon the receiving side.

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Witnesses:

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