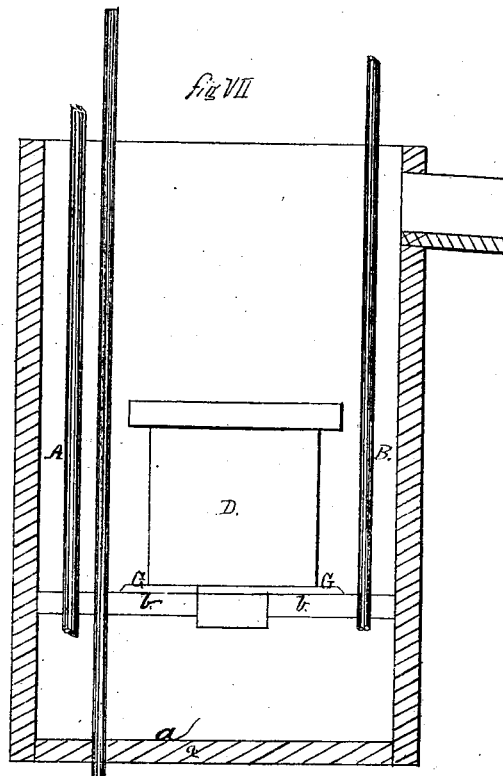
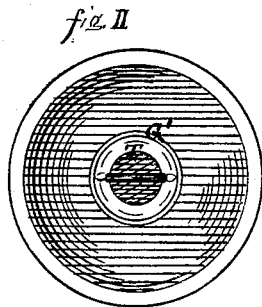
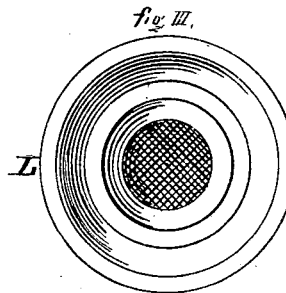
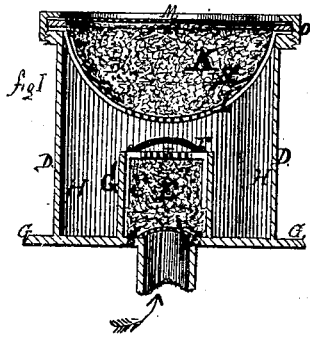
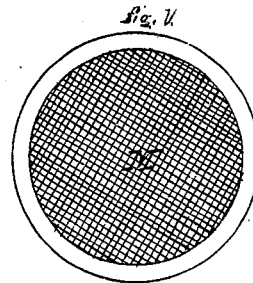


G. CURTIS.
FILTER.

No. 109,593.

Patented Nov. 29, 1870.



Inventor, George Curtis

Witnesses, J. W. Gardner
Chas. S. Joplin

United States Patent Office.

GEORGE CURTIS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND EDMUND BIGELOW, OF SAME PLACE.

Letters Patent No. 109,593. dated November 29, 1870.

IMPROVEMENT IN FILTERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, GEORGE CURTIS, of Springfield, Hampden county, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Filters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 shows a section of my improved filter;
Figure 2, a plan view of the same, with the upper sponge and deflector removed;

Figure 3, a plan view of the deflector;

Figure 4, the lower sponge-case;

Figure 5, the upper sieve;

Figure 6, the ring for holding the same in place;

and

Figure 7 is a sectional view of the tub to which the filter is attached.

My said invention relates to the filter described in my application for patent now pending in the Patent Office, and consists of new arrangements of the parts and additional devices, to adapt the invention therein shown to the use of paper manufacturers and others requiring large filters.

The tub, shown in fig. 7, is of the ordinary construction used in paper-mills, and provided with pipes, A and B, so that two or more kinds of water can be introduced between the bottom *a* of the tub and the false bottom *b*.

To the false bottom *b* the filter is attached, so that the water flows upward through it and into the tub.

The construction of my improved filter I will now describe.

G is the flange, by which it is attached to the false bottom *b* of the tub.

D is the surrounding case, which contains within its lower part the sponge E, arranged inside of a case, F, which is of a considerably less diameter than the outside case D, and fitted to a tube, G', extending up from the bottom, and leaving an annular receptacle, H, between the tube G' and the surrounding case D, for the collection of the impurities that pass through the first sponge, E.

Above this sponge E, in the upper part of the case, I arrange the compressed sponge K, held between the deflecting-case L and the sieve M, similar in arrangement to my previously-mentioned filter described in my pending application.

These parts are secured within the case D by the

ring O, which screws on the outside of the case D, or may be fastened by pins and slots or similar devices.

The inner surface of the deflector is provided with a projecting flange or rim, S, which I prefer to incline downward, the office of which is to prevent the water from passing upward between the inner surface of the deflector and the sponge K.

The object attained by the use of the additional sponge is that coarse matter, such as gravel, sticks, and straws, and other coarse impurities, are stopped by this sponge, and the water is presented to the second sponge in a comparatively clean state, the recess H assisting the filtration by collecting such coarse matter as may pass through the first sponge.

By combining a first sponge with the second, with the deflector interposed, I avoid the action of a strong current through the second sponge, and thus cause the water to rise gradually and steadily in the filter-case and to pass evenly through the upper or second sponge.

In order to enlarge the capacity of my filter I often arrange two or more sponges, K, and accompanying devices, in connection with a single sponge, E.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in filters to be used in purifying water under a head or pressure, of the two sponges E and K, so arranged as to present to the water successive filtering media of unequal density, with the interposed deflector and the flange or rim S, projecting inward from the inner surface of the deflector, substantially as and for the purpose set forth.

2. The combination, in filters for purifying water under a head or pressure, of the sponges E and K, so arranged as to present to the water successive filtering media of unequal density, the deflector, the flange or rim S, the surrounding case F, the space H, and the surrounding box D, and the false bottom, substantially as and for the purposes set forth.

3. The combination, in filters for purifying water under a pressure or head, of a sponge, K, a deflector, and a rim or flange, S, substantially as and for the purpose set forth.

GEORGE CURTIS.

Witnesses:

J. B. GARDINER,
D. M. WELLS.