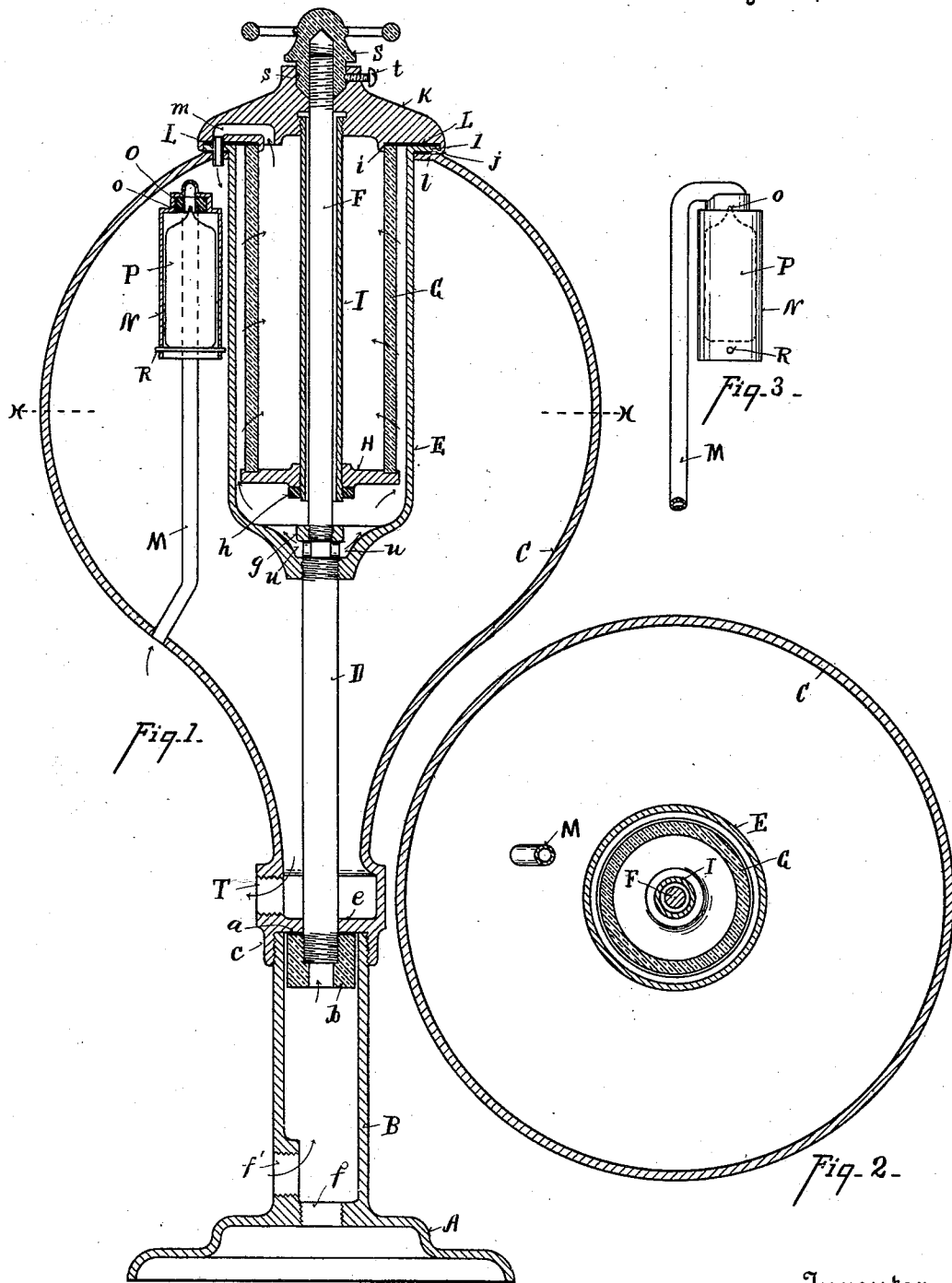


(No Model.)

N. O. GOLDSMITH.
COMBINED RESERVOIR AND FILTER.

No. 543,805.

Patented July 30, 1895.



Witnesses
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NATHANIEL O. GOLDSMITH, OF CINCINNATI, OHIO, ASSIGNOR TO FRED C. WEIR, OF SAME PLACE.

COMBINED RESERVOIR AND FILTER.

SPECIFICATION forming part of Letters Patent No. 513,805, dated July 30, 1895.

Application filed August 9, 1894. Serial No. 519,834. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL O. GOLDSMITH, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in a Combined Reservoir and Filter, of which the following is a specification.

The object of my invention is to combine a filter-cylinder with a reservoir in such a manner that the filter can be taken out of the reservoir without drawing off the filtered water stored therein.

The features of my invention will be more fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a central vertical section of my improvement. Fig. 2 is a section on line *x x*, Fig. 1. Fig. 3 is an elevation of the air-priming device.

A represents the base of the reservoir.

B represents a hollow column rigidly connected to said base.

C represents the reservoir; *c*, the neck of said reservoir which is detachably connected to said base.

D represents a hollow stem on which the filter-case E is mounted.

b represents a nut with threads on the stem D.

Neck *c* is provided with a diaphragm *e*.

a represents a gasket between nut *b* and diaphragm *e* to form a water-joint.

f f' represent pipe connections for introducing water into the standards B, either of which may be employed, as desired.

F represents a rod rigidly secured to the bridge *g* of case E.

G represents the filter-cylinder secured to head H at the base.

I represents a hollow shaft secured at one end to said head H by nut *h*.

K represents the cap of the reservoir C, and it serves as the apex head of the filter-cylinder and of the filter-case E. Shaft I is tapped or rigidly secured to said cap K. The other end of filter G seats firmly in an annular groove *i* in said cap K and nut *h* clamps and holds the filter-cylinder firmly to the cap and head H, so that these parts can be taken out and put into the reservoir from the top.

L represents a gasket for making a tight joint of the cylinder and cap.

The filter-case E is provided with an overhanging annular flange *l*, which seats on gasket *j*, that rests on the top of flange *l*, around the circular opening in reservoir C. Instead of the gasket *j*, the flange of the case E may be soldered to the flange *l* of the reservoir, as the filter-case is not necessarily removable, and it is better to be fixed in position.

m represents a water-passage connecting the filter-chamber with the reservoir-chamber.

M represents an air-tube piercing the reservoir-chamber C and connected to the top of air-chamber F. In the preferred form the air-chamber is suspended on tube M.

O represents a valve-seat on the inside of air-chamber N and at the mouth of pipe M.

P represents a float, the upper end of which forms a valve and when raised closes the orifice in the valve-seat. The upper end of said float has a stem *o*, which is within the valve-port when the float is down, so as to serve as a guide to the valve-float.

R represents an outlet-orifice admitting air into the reservoir-chamber and for admitting water into the float-chamber, as will be hereinafter described.

S represents a nut engaging with the threads of rod F. The lower end of said nut is conical and steps in a concave seat in cap K. Said nut is swiveled to the collar of cap K by means of set-screws *t*, tapping through said collar and the point seating in an annular groove in nut S. The nut S, engaging with the threads of rod F, will when turned clamp the cap K firmly down upon the flange of the filter-case and close the reservoir C.

Mode of operation: The apparatus is connected to a supply-pipe which admits water through base B and stem D, thence through one or more orifices *u* into the filter-case E, and which by pressure is forced through the filter-cylinder G, which removes the impurities suspended in the water which passes through passage *m* into the chamber of reservoir C. As the water rises in the reservoir, it will enter the float-chamber N through orifice R and raise the valve and close the mouth of air-tube M, and the air in the top of the reservoir will be compressed. Filtering will

cease when the pressure inside the chamber equals the pressure of the supply. The filtered water is drawn off by a faucet connected to orifice T. Float P will fall and admit air through tube M, float-chamber N, and orifice R, and prevent the formation of a vacuum, so that the reservoir may be entirely emptied. As reservoir C is filled by filtered water slowly, as compared to the speed with which it is desired to be drawn for use, it is desirable to have a supply of filtered water on hand which is not lost by the removal of the filter-cylinder for cleaning.

My construction allows the filter-tube to be taken out and cleaned without losing the stored supply of filtered water and without disturbing the connection of the reservoir with the service-pipe. Both of these advantages are important.

I claim—

1. The combination with the reservoir C, and the filter case E secured thereto, of the cap K, and the filter cylinder G secured to said cap and removable therewith, substantially as described.

2. The combination with the reservoir C, and the cap K, of the hollow stem D, the filter case E, and the filter cylinder G suspended from the cap K, within the filter case, and having a passage M communicating with the reservoir, substantially as described.

3. The combination with the reservoir and the cap, of the filter suspended within the reservoir and from said cap and provided with a passage leading into the reservoir, and a filter case surrounding the filter, within the reservoir, and having a passage for entrance of water, substantially as described.

4. The combination with a reservoir and a filter and its casing suspended within the reservoir, the said casing being provided with an inlet passage for water and the filter having an outlet passage to the reservoir, of a valved air chamber suspended within the reservoir and communicating therewith and with the atmosphere, substantially as described.

5. The combination with a reservoir, a removable cap for the reservoir, and a filter cylinder suspended from said cap and having a passage leading into the reservoir, of a filter case surrounding the filter cylinder and having an inlet for water, and a valved air chamber located in the reservoir, substantially as described.

6. In combination with a reservoir, a filter and filter case suspended within said reservoir and detachably removable therefrom, and a water passage *m* leading from the inner filter chamber around the filter case and terminating in the reservoir chamber, substantially as specified.

7. The combination with the reservoir C, of the filter case E suspended within said reservoir, the filter cylinder G within the filter case and means for supplying water to the chamber between the case and filter, and the water passage *m* leading from the interior of the filter chamber around the filter case and terminating in the reservoir, substantially as specified.

In testimony whereof I have hereunto set my hand.

NATHANIEL O. GOLDSMITH.

Witnesses:

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