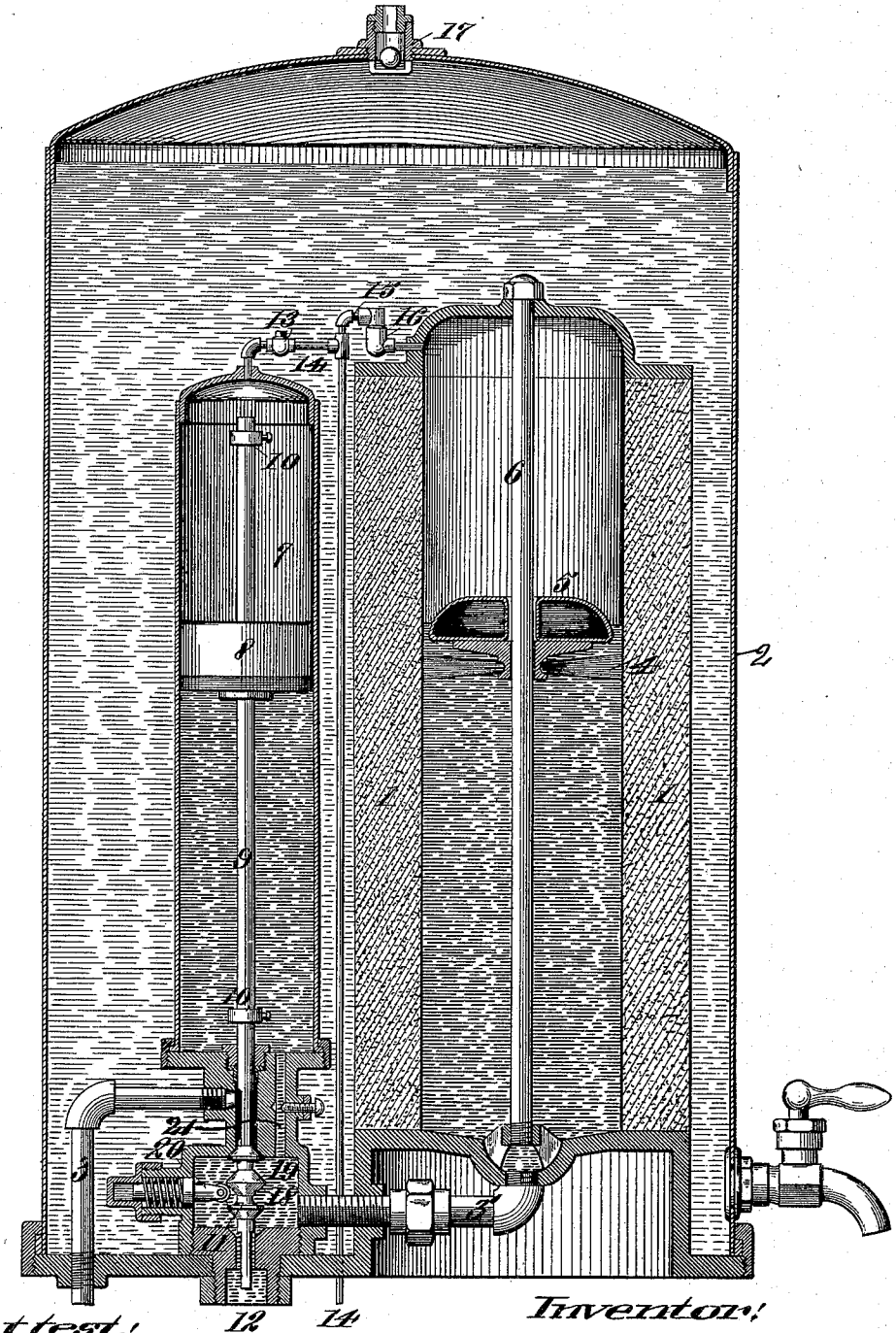
(No Model.)

W. H. WILCOX.

FILTER.

No. 598,190. Patented Feb. 1, 1898.



Attest:
Chas. A. Smith
Chas. E. Rice

Inventor:
Walter H. Wilcox, by
Carr & Carr, Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WALTER H. WILCOX, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO FRANK C. TABLER, OF SAME PLACE.

FILTER.

SPECIFICATION forming part of Letters Patent No. 598,190, dated February 1, 1898.

Application filed September 3, 1896. Serial No. 604,772. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. WILCOX, a citizen of the United States, and a resident of the city of St. Louis, in the State of Missouri, have invented a new and useful Improvement in Filters, of which the following is a specification.

My invention relates to filters, and has for its principal object to provide a device for removing the deposit from the surface of the filtering medium without having to open the filter-casing.

To this end my invention consists in a brush or like device mounted on a float arranged in a filter in position to wipe against the filtering medium in connection with a contrivance for operating said brush.

It also consists in the combination, in a filter, of a floating brush or similar device arranged to wipe off the filtering medium with an automatically-acting device for causing the movement of such brush periodically.

It also consists in the arrangements and in the combinations of parts hereinafter described and claimed.

The accompanying drawing, which forms part of this specification, is a vertical section of a filter embodying my invention.

In this construction the filtering medium consists of a hollow cylindrical porous stone 1 inside of the tank 2 and standing endwise on the bottom thereof. The feed-pipe 3 opens into this cylinder through a hole in the bottom of the tank, and the top of the cylinder is closed, so that the water fed into the hollow interior of the stone percolates through its walls into the tank. A deposit is thus formed on the inner surface of the stone, and the deposit is removed by a brush or like device inside of said cylinder and adapted to wipe against the surface thereof. As illustrated, the brush 4 is a circular brush fitting inside of said stone and mounted on a float 5, adapted to rise and fall with the level of the water. A central hole in the float allows the tie-rod 6 for holding the cylinder cap in place to extend therethrough without interfering with the action thereof.

As the action of the brush-float depends on the variation of the level of the water inside of the stone some convenient means is provided for emptying and refilling the stone—as, for instance, the following, which, however, are not shown in the drawing. A very simple means is a supply-pipe for filling the stone and an exhaust-pipe for emptying the same, each provided with an ordinary cock, or the two pipes may be united by an ordinary three-way valve. Such cocks can be arranged to be turned by hand from the exterior of the filter, and have the advantage of effecting the flushing of the stone as often as desired and whenever desired. Obviously also such valves may be operated automatically, as by a float or by a clockwork or by other automatic devices, depending upon the height or pressure of the water.

The drawing illustrates an automatic device operating to determine the periodic operation of the brush. This device consists of a vertical cylinder 7, having a weighted piston 8 therein which slides up and down on a rod 9, provided with tappets 10 near its ends. The rod 9 is a prolongation of the stem of a double-seated valve 11, one of whose ports opens to the supply-pipe 3 and the other to the waste-pipe 12, the chamber of said valve being permanently connected to the chamber of the filter-stone by a pipe 3′, and having also a connection 21 to the lower end of the cylinder 7.

The operation is as follows: The water from the supply-pipe enters the valve-chamber and flows thence partly to the filter-stone through the pipe 3′ and partly to the cylinder 7 through the connection 21, raising the brush in the stone and the piston in the cylinder. The filling of the cylinder is retarded by an automatic valve 13 in the air-vent pipe 14, connected to the top of said cylinder and arranged to almost close said pipe against the escape of air from the cylinder, but to open wide for the admission of air thereto, whereas the vent-pipe 15 of the stone is provided with an overflow-valve 16 only, such as the one shown at the top of the tank, wherein a ball-float 17 is raised against its seat by the water. The stone is thus filled much faster than the cylinder 7. When the piston 8 strikes the upper tappet on the rod, it raises the valve-seats, thereby seating the supply-valve and opening the exhaust-port, where-

upon the water running out of the stone and of the cylinder causes the brush and the piston to fall, the brush cleaning off the stone and the piston striking the lower tappet to restore the valve-seats to their former positions to repeat the operation. To quicken the movement of the valve-stem, it has an angular enlargement 18, and against one or the other surface thereof bears a roller 19, mounted on a spring-pressed pin 20, which works in a socket in the valve-casing, whereby the spring resists the first tendency of the valve-stem to move, but aids the movement after it is begun.

Obviously my device is susceptible of considerable modification without departing from my invention. For instance, instead of the filtering medium being a cylindrical stone with the float inside thereof it may be a flat stone, but in either case the float is located in the filtering-chamber—that is, the chamber containing the unfiltered water and of which the filtering medium forms a wall. The float thus rises and falls with the level of the unfiltered water.

It is also apparent that the filter may be provided with both automatic and positively-acting valves arranged to operate independently.

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

1. A filter having a vertically-arranged filtering medium, a float in the filtering-chamber, a brush on said float arranged to wipe against said filtering medium and means for feeding and exhausting the chamber containing said float, substantially as and for the purpose set forth.

2. A filter having a vertically-arranged filtering medium, a float in the filtering-chamber, a brush on said float arranged to wipe against said filtering medium and automatically-acting means for feeding and exhausting the chamber containing said float, substantially as and for the purpose set forth.

3. A filter consisting of a tank, a hollow porous stone inside thereof, a feed and exhaust pipe opening into the bottom of said stone, a float inside of said stone, a brush on said float arranged to wipe the inner surface thereof and a double-seated valve in said feed and exhaust pipe and means for actuating said valve to feed and exhaust the chamber of said stone alternately, substantially as and for the purpose set forth.

Signed at St. Louis, Missouri, August 29, 1896.

W. H. WILCOX.

Witnesses:
F. C. TABLER,
T. PERCY CARR.