(No Model.)

T. LINKE.

FILTER.

No. 590,707. Patented Sept. 28, 1897.

Fig. 1.

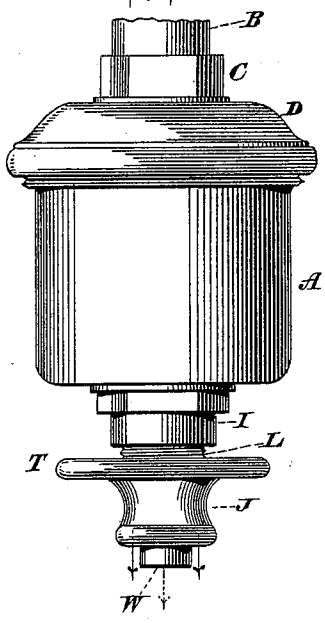


Fig. 2.

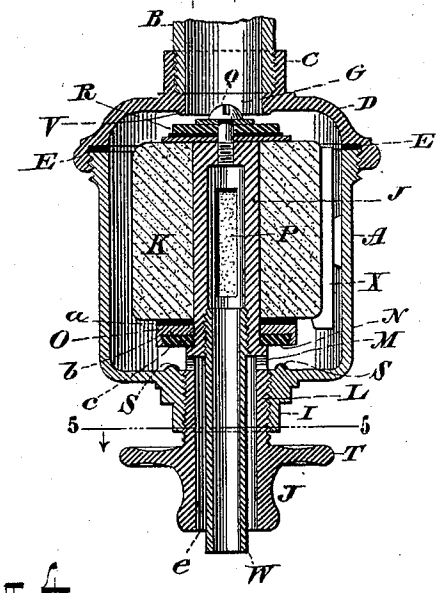


Fig. 4.

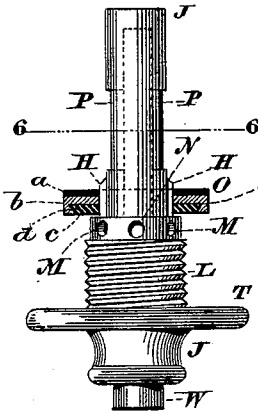


Fig. 5.

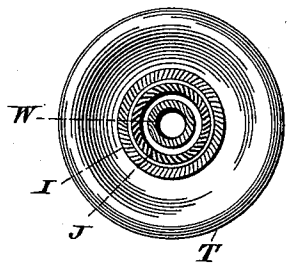


Fig. 6.

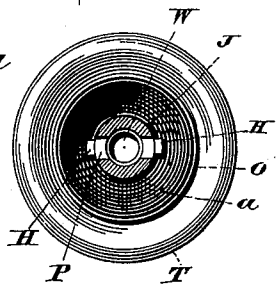
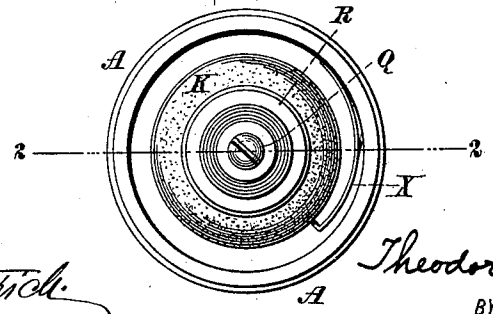


Fig. 3.



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FILTER.

SPECIFICATION forming part of Letters Patent No. 590,707, dated September 28, 1897.

Application filed March 2, 1897. Serial No. 625,694. (No model.)

To all whom it may concern:

Be it known that I, THEODORE LINKE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Filters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The invention relates to improvements in filters, and it consists in the novel features of construction and combinations of parts hereinafter described, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a side elevation of a filter constructed in accordance with and embodying the invention. Fig. 2 is a central vertical longitudinal section of same on the dotted line 2 2 of Fig. 3, the filtering media being shown in its intermediate position, in which it will permit the water from the supply to pass around the sides thereof instead of through the same and escape through the outlet for unfiltered water. Fig. 3 is a top view of same with the top or cap of the filter-casing removed. Fig. 4 is a detached side elevation of the tubes through which the water escapes from the filter-casing and which carry the filtering media, the packing on the said tubes being shown in vertical section. Fig. 5 is a horizontal section through a portion of the filter on the dotted line 5 5 of Fig. 2, and Fig. 6 is a horizontal section through a portion of the filter on the dotted line 6 6 of Fig. 4.

In the drawings, A designates the casing of the filter, this casing being illustrated in a vertical position and connected to the supply pipe or faucet B by means of the internally-threaded nozzle C at the upper end of the cap D, the latter, as more clearly illustrated in Fig. 2, being adapted to be screwed upon the upper edges of the body of the filter-casing. The casing of the filter comprises, essentially, the body A and cap D, a washer E being preferably provided intermediate the said body and cap to insure the formation of a liquid-tight joint.

In the center of the cap D is provided the free entrance opening or aperture G, surrounding which is the threaded nozzle C above referred to. The opening or aperture G is entirely unobstructed, so as to permit a free passage of the liquid into the filter-casing A.

The lower end of the casing A is provided with the internally-threaded nozzle or flange I, which receives and permits of the vertical adjustment of the externally-threaded tube J, carrying at its upper contracted end the porous stone or other proper filtering media K, which is of cylindrical shape and is formed with a central aperture fitting upon the upper portion of the said tube J. That portion of the tube J which enters the threaded flange I is threaded and lettered L and is more clearly illustrated in Fig. 4, and above this threaded portion L the said tube J is provided with the series of apertures M and shoulder N.

Above the shoulder N the tube J is provided with the vertical ribs H to receive the packing-disk O, and above this disk O the tube J passes upward within the porous stone or filtering media K, within which the sides of said tube are formed with the entrance-slots P for the filtered water. The upper end of the tube J is closed with the exception of an internally-threaded aperture provided therein to receive the lower end of the screw Q, upon which is provided the packing-disk R. The porous stone or filtering media K is firmly secured upon the tube J and against the packing-disk O by means of the screw Q, and upon loosening this screw Q the said porous stone or filtering media K may be readily removed when desired. The packing-washer R, held upon the screw Q, is adapted to engage the annular depending flange V, formed around the entrance-opening G in the top of the cap D. When the tube J and filtering media K are in their extreme upward position, the said washer R will engage the said flange V and positively close the said opening G, and thereby cut off the water, the latter being thereby absolutely prevented from entering the filter. This means for cutting off the supply of water from the filter is of advantage when the filter is connected with a supply-pipe which is not provided with a cut-off valve; but when the filter is applied to an ordinary faucet or to a supply-tube having a

cut-off valve the water may be cut off by means of the valve in the faucet or pipe, and at such time it will be unnecessary to employ the washer R and flange V for cutting off the water.

The packing-disk O is at the base of the filtering media K and upon the shoulder N, and said disk O comprises the soft packing-washer *a*, which is directly in contact with the filtering media K, the intermediate metal disk *b*, which supports said disk *a*, and the lower soft packing-disk *c*, which binds upon the said shoulder N, and is held within the recess *d*, formed in the lower face of said metal disk *b*, the edges of said disk *b* being undercut to aid in preventing the displacement of the packing-disk *c*. The disk O at opposite sides of this central aperture conforms to and is engaged by the vertical ribs H, whereby said disk O is prevented from turning axially upon the tube J, and the latter is prevented from turning axially within the said disk O. The disk O, as illustrated in Figs. 2 and 4, is above the apertures M, which are employed only when it is desired to permit unfiltered water to pass through the filter. The lower packing-disk *c* of the main disk O is adapted, when the tube J is in its lower position, to engage the annular seat or flange S at the lower inner part of the filter-casing and surrounding the opening through the flange I at the lower end of said casing, whereby the water entering the filter-casing is entirely prevented from finding an outlet through said apertures M, the water thus excluded from the apertures M being compelled to find its outlet by passing through the filtering media K and thence through the slots P to the interior of the upper end of the tube J.

The lower portion of the tube J is formed with the wheel or circular flange T, by which said tube may be conveniently turned for the purpose of elevating or depressing the same and the filtering media K carried thereby. Within the tube J is secured the smaller tube W, which is threaded at its upper end to engage threads cut within the upper contracted portion of the tube J, as illustrated in Fig. 2. The upper end of the tube W terminates above the apertures M and below the inlet-slots P, and, as illustrated in Fig. 2, all water entering the tube J through the apertures M may pass around the exterior surface of said tube W and find a free outlet at the lower end of the tube J. The space between the lower portion of the tube J and the outer surface of the tube W is lettered *e*, and this space constitutes the outlet for unfiltered water. The water which passes through the stone or other filtering media K and reaches the interior of the upper portion of the tube J through the slots P will find a convenient outlet through the tube W, which is provided to establish an independent outlet for filtered water and an independent outlet for unfiltered water, the filtered water passing exclusively through the tube W and the unfiltered water passing exclusively around said tube W and through the space *e*. Whether the escaping water shall be filtered water or unfiltered water will be determined by the position of the tube J within the filter-casing A, and this tube will be adjusted within the casing A by being turned axially to the right or left by means of the flange or wheel T. When the tube J is adjusted to its intermediate position, (shown in Fig. 2,) it will be apparent that the water entering the filter-casing may readily flow around the exterior surface of the filtering media K and escape through the apertures M into the outlet *e* for unfiltered water. When filtered water is not desired, the tube J may be adjusted to the position shown in Fig. 2. When it is desired to cut off the entrance of water to the casing A, (and there is no valve in the pipe B,) the tube J will be turned until it reaches to the extreme upward position, which will cause the washer R to engage the seat or flange V and prevent thereby the water from passing into the filter. When filtered water is desired, the tube J will be turned to the left until it reaches its lower position, in which position the disk O will have come into contact with the annular seat or flange S and prevent the water from reaching the apertures M. Under this condition of the parts it is apparent that the water will be compelled to pass through the filtering media K and slots P and find its outlet through the inner tube W.

Within the casing A, I provide a spring-scraper X, secured at one end to the casing and having its other or free end flanged to engage the vertical surface of the stone K. The scraper X is in the form of a spring flexed against the stone K and will operate to scrape the vertical surface of the latter as said stone is rotated during the upward and downward adjustments of the tube J, carrying the same.

By means of this invention the filtered water has one outlet and the unfiltered water another outlet, and this fact serves to guide the user in the adjustment of the tube J and filter-stone K, since if filtered water is desired and the water issues from around the tube W it will indicate that the tube J has not been lowered sufficiently to close the apertures M, or if unfiltered water is desired and the water is found to be issuing from the tube W it will denote that the tube J has not been sufficiently elevated. The lower end of the tube W may be extended to any desired length below the tube J, and to this tube W may be connected a convenient rubber tube should it be desired to feed the filtered water to any suitable containing-receptacle.

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

1. In a filter, the casing adapted to be connected with the supply-pipe, and the main tube within said casing and having the inlet for filtered water thereto and the inlet for un-

filtered water thereto, combined with the filtering media carried by said tube and covering the said inlet for filtered water to the said tube, and the delivery-tube within said main tube and separating the outlet-passage for filtered water from the outlet-passage for unfiltered water; substantially as set forth.

2. In a filter, the casing adapted to be connected with the supply-pipe, and the tube within said casing and having the inlet for filtered water thereto and the inlet for unfiltered water thereto, combined with the filtering media carried by said tube and covering the said inlet for filtered water to the said tube, the delivery-tube within said main tube and separating the outlet-passage for filtered water from the outlet-passage for unfiltered water, and the spring-scraper flexed against said filtering media; substantially as set forth.

3. In a filter, the casing adapted to be connected with the supply-pipe and having the internally-threaded flange at its lower end and the cap at its upper end, and the revoluble tube adapted to be inserted upward into said casing through said flange and having the flange or wheel integral therewith and by which it may be revolved, the inlet for unfiltered water, the inlet for filtered water and the threaded portion to engage said internally-threaded flange, combined with the packing-disk on said tube above the inlet for unfiltered water, the filtering media on said tube above said packing-disk and covering said inlet for filtered water, and means for separating the outlet-passage for filtered water from the outlet-passage for unfiltered water; substantially as set forth.

4. In a filter, the casing adapted to be connected with the supply-pipe, and the tube revoluble therein, said tube having the wheel T, threaded portion L, openings M, shoulder N, ribs H and openings P, combined with the packing-disk O on said ribs and shoulder, and the filtering media K on said tube above said disk; substantially as set forth.

5. In a filter, the casing having the cap at its upper end and the threaded flange at its lower end, and the tube threaded to engage said flange and adapted to be inserted upward into said casing through said flange and having separated inlets thereto for filtered and unfiltered water, combined with the filtering media adapted to be inserted downward upon said tube from the upper end of said casing and covering said inlet for filtered water, and means for separating the outlet-passage for filtered water from the outlet-passage for unfiltered water; substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THEODORE LINKE.

Witnesses:

CHARLES C. GILL,

E. JOS. BELKNAP.