T. LINKE.

SELF CLEANING LIQUID FILTER.

APPLICATION FILED SEPT. 24, 1914.

1,149,926. Patented Aug. 10, 1915.

Fig. 1

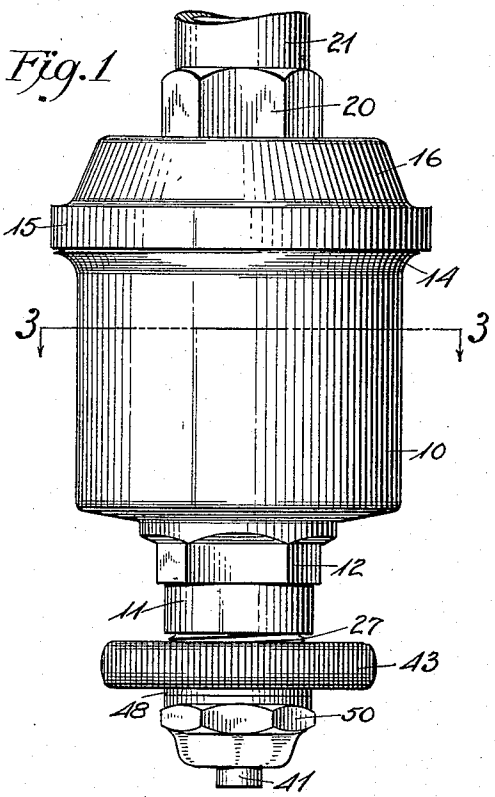


Fig. 2

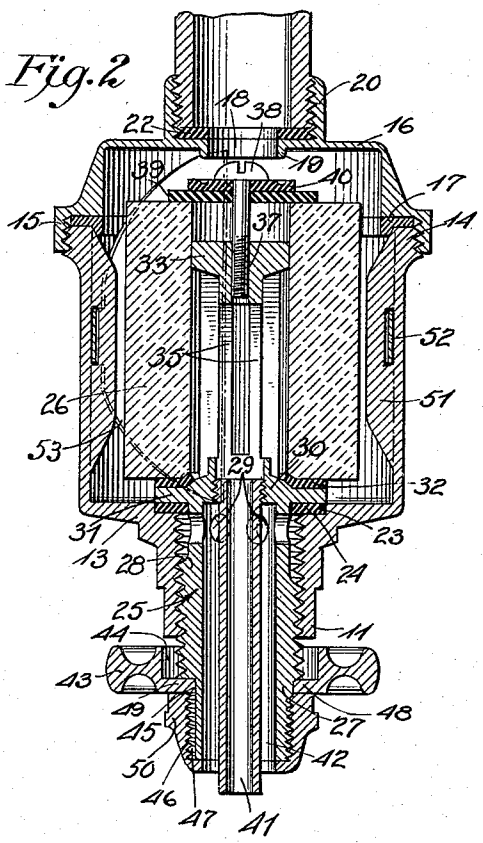


Fig. 3

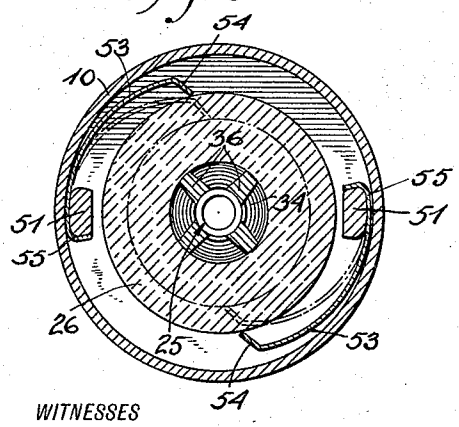
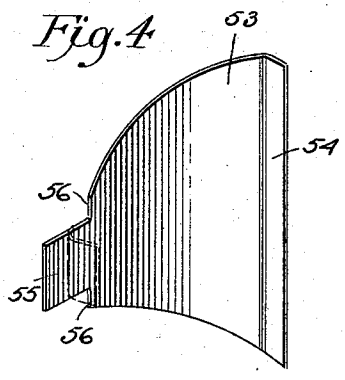


Fig. 4



WITNESSES

J. F. Wells.

John E. Busch.

INVENTOR

Theodore Linke

BY Munn & Co

ATTORNEYS

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THEODORE LINKE, OF NEW YORK, N. Y.

SELF-CLEANING LIQUID-FILTER.

1,149,926. Specification of Letters Patent. Patented Aug. 10, 1915.

Application filed September 24, 1914. Serial No. 863,272.

To all whom it may concern:

Be it known that I, THEODORE LINKE, a citizen of the United States, and a resident of the city of New York, Douglaston, borough of Queens, in the county of Queens and State of New York, have invented a new and Improved Self-Cleaning Liquid-Filter, of which the following is a full, clear, and exact description.

This invention has special reference to improvements in filters and more particularly to a self-cleaning liquid filter which is an improvement upon my prior Patent No. 590,707, dated the 28th day of September, 1897.

The improvements forming the object of this invention reside in the general structure of the filter so as to greatly facilitate the assembling of the parts thereof besides to obviate the necessity of applying the holder for the filtering medium or porous stone from one end while the filtering medium is applied at the opposite end and afterward secured in position, by permitting the stone which is in the form of a tube or cylinder with an axial bore, to be mounted on the holder and identified as a whole, provision being also made for attaching an operating part for the holder in order to control the discharge of filtered or unfiltered water or to entirely cut off the same; to secure said operating member in position and to provide novel means for the removable attachment of a pair of scraping blades forming a self-cleaning means for the filtering medium or porous stone whereby the impurities which lodge on the surface thereof may be conveniently removed to prevent retardation to the filtering of the water therethrough.

With the above and other objects in view, the invention resides in the peculiar combination and arrangement of parts to be hereinafter more fully described, illustrated and claimed, it being also an object to provide a device which is simple in construction, durable and efficient in operation.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views and in which—

Figure 1 is a side elevation of my improved self-cleaning liquid filter; Fig. 2 is a central vertical sectional view thereof; Fig. 3 is a horizontal cross sectional view taken on the line 3—3 of Fig. 1 looking downward; and Fig. 4 is a perspective view of one of the scraper blades.

As illustrated, the improved filter embodies a cylindrical casing 10 having a reduced interiorly threaded bottom extension 11 provided with a wrench engaging face or portion 12. By means of this reduced extension a bottom wall 13 surrounding the same is provided but the upper end of the casing is open and formed of an enlarged exteriorly threaded portion 14 adapted for engagement by an interiorly threaded flange 15 of a cap or cover 16 with an interposed packing washer or gasket 17 to form an airtight joint between the connected parts. The cap is provided with a central inlet opening 18 having a depending valve seat 19 surrounding the same, while extending upwardly from the cap concentrically of the opening and enlarged relative thereto, is an interiorly threaded flange 20 having a wrench engaging face as shown. The purpose of this flange is for coupling the device to a supply pipe or faucet 21 with an interposed packing ring or washer 22 to form an airtight joint. The bottom wall of the casing is provided with an annular recess 23 providing a seat for a packing gasket 24, all of said washers or gaskets being preferably of rubber.

Insertible through the top of the casing, before the application of the cap 16, is a holder 25 carrying the filtering medium or porous stone 26 and as shown, said holder embodies an exteriorly threaded part 27 engaged with the interior threads of the extension 11 and provided thereabove with a reduced portion 28 smooth externally and provided with a plurality of apertures 29 therethrough spaced apart around the same in horizontal alinement. Above the reduced portion 28, which has a bore of corresponding diameter to the bore of the portion 27, the holder is formed with an internally threaded and inwardly extending flange 30 and an outwardly extending flange 31 integral therewith to overlie the gasket 24 while the flange 31 in turn carries a packing ring or gasket 32. The upper portion of the holder is in the form of a skeleton-like member 33 having a plurality of vertical recesses 34 of substantially V-shaped cross section with slots 35 communicating with the bore

of the holder, or in other words, cast to provide said slots and intervening spaced vertical web portions 36.

The upper end of the member 33 is provided with a threaded aperture 37 so that when the filtering medium or porous stone 26 is engaged over said skeleton-like member to seat upon the gasket 32, it may be secured in position as by means of a fastening screw 38 threaded into the aperture 37 with a washer 39 engaged thereon to close the upper end of the bore of the porous stone, while a washer 40, also mounted on the screw in contact with the head thereof, serves to coöperate with the seat 19 for preventing the discharge of water into the filter casing. Engaged with the interior threads of the flange 30 is a discharge tube or spout 41 for the filtered water, the same extending through and depending from the holder to provide a surrounding annular space 42 constituting an independent discharge passage for unfiltered water or liquid.

In order to turn or rotate the holder to move the same vertically so as to engage the washer 40 with the seat 19 to prevent the discharge of water into the filter casing; to move said holder to an intermediate position with the washer 40 unseated or disengaged from the seat 19 and the flange 31 unseated from the gasket 24 so as to permit the discharge of water into the filter casing whereby the same will escape through the aperture 29 and out through the annular space or passage 42 without passing through the filtering medium, or to unseat the washer 16 and to seat the flange 31, as shown in Fig. 2 of the drawings, whereby the discharge of water into the casing will be permitted so that such water must first pass through the filtering medium or stone 26, through the slots 35 and be discharged through the tube 41, an operating member 43 is provided, the same being in the form of a hand wheel, preferably having a knurled periphery or edge portion and having a recess 44 in its upper face to receive the extension 11 and allow a greater range of movement for the holder with respect thereto. The lower end of the portion 27 of the holder is provided with an unthreaded portion 45 and a reduced exteriorly threaded portion 46 therebeneath, both having a flattened portion 47 so that the operating member or wheel 43, when mounted on the smooth portion through the medium of its relatively thin hub portion 48, will be held against rotation by engagement of a flattened wall 49 with the portion 47 so that said wheel or operating member will be removably keyed to the holder. A jam nut 50 is engaged on the threaded portion 46 to bind against the operating member or wheel and prevent loosing thereof, and as shown, said nut is designed to extend beneath the lower end of the holder to form a contiguous bore or discharge passage for the unfiltered water around the discharge tube for the filtered water.

As designated by the title of the invention, means are provided to clean the filtering medium or porous stone such as tripoli, of foreign matter and impurities held in the water, and which when the water is forced through the filtering stone or the like are caused to lodge thereon, in order to prevent retardation to the filtering of the water. For this purpose the filter casing carries or has formed therewith at diametrically opposite sides of its inner surface, vertical ribs 51 which taper toward their ends, as shown in Fig. 2. Each of these ribs is provided with a relatively narrow transverse slot 52 flush with the inner surface of the casing, or substantially so. A pair of scraping blades 53 is provided, each blade or scraper being made from a section of flexible metal of a springy or resilient nature and having an end forming the scraping edge thereof bent inwardly as shown at 54, while each blade tapers toward its opposite end and is provided with a reduced portion 55 producing shoulders 56 above and below the same. These blades are removably secured to the ribs 51 by passing the reduced portions 55 through the slots 52 and bending said reduced portions against the sides of the ribs in the manner shown in Figs. 3 and 4 of the drawings so that the scrapers are held from displacement by the shoulders 56 on one side of each rib and by the bent portions on the other sides, and owing to the resiliency of the metal forming the same their scraping edges are positively held in contact with the outer face or periphery of the cylindrical stone forming the filtering medium, as shown in full lines in Fig. 3, and caused to move inward as the stone wears in the scraping action, as indicated in dot-and-dash lines in Fig. 3.

Considerable importance is placed upon the manner of attaching the scraping blades to the interior of the casing, owing to the fact that the blades in constant use become worn by the action of the stone or filtering medium. In this manner the blades become short and inefficient for scraping the latter of impurities and foreign matter, and as these blades must necessarily be renewed, and as they are usually soldered to the casing, it requires the services of one skilled in this art to apply new blades, with considerable inconvenience and expense to the user. By the improvement, that is, by the provision of a detachable metal cleaner or scraper in the form of the blades as specified, the blades can be obtained and applied by the user without the necessity of skilled help.

It will be obvious that greater facility is permitted in assembling the parts of the

filter, for renewing a stone or applying new blades than has heretofore been provided and especially in connection with the device of which this application is an improvement.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a filter of the class described, in combination, a casing having provision for connection with a supply pipe or faucet, means mounted in the casing for cutting off or permitting the discharge of water thereinto and having independent discharge passages for filtered and unfiltered water, a filtering stone carried by said means around which the water passes within the casing to be discharged in an unfiltered condition and through which the water is forced to be discharged in a filtered condition, a plurality of ribs vertically at the inside of the casing and having vertical slots therethrough and scraper blades of resilient metal having reduced portions passed through the slots and bent to removably anchor the same to the ribs, said blades being curved and bent inward to constantly contact with the surrounding surface of the stone and to remove impurities therefrom when the latter is turned.

2. The combination with a filter including a casing and a cylindrical filtering stone mounted therein and through which water is adapted to be forced for filtering the same; of a rib on the inside of the casing having a slot therein and a scraper blade of resilient metal having one end provided with a tongue to pass through the slot for securing the blade in position when the tongue is bent against the rib and away from the inner face of the casing, the free end of the blade being designed to frictionally engage the stone for scraping the same.

3. A self cleaning liquid filter, comprising a casing having a reduced bottom extension interiorly threaded, a cap for the casing and having provision for connection with a supply pipe or faucet, a holder comprising an upper part and a lower part, said lower part having exterior threads engaged with said interiorly threaded extension and having a smooth portion thereabove of uniform diameter throughout its length and reduced diameter with respect to the threaded portion, said smooth portion having openings therethrough for disposition in the threaded bottom extension of the casing, said holder above said threaded part being formed with an inwardly extending flange with an upwardly extending part, and an outwardly extending flange in alinement with the last named flange, the upper part of the holder having a plurality of closely adjacent sector-shaped openings therethrough with beveled top and bottom walls and the outwardly extending flange being formed with a beveled portion contiguous with the bottom beveled walls of said openings, said casing having a rabbeted seat in the bottom thereof communicating with the extension at the inside, a packing gasket mounted in said seat and permitting free movement of the reduced smooth portion therethrough, said holder through the medium of said openings being provided with spaced and tapered web portions and slots inwardly thereof communicating with the bore of the holder, a packing washer seated upon the outwardly extending flange and beveled portion thereof, a tubular filtering medium supported on said outwardly extending flange and contacting with the washer, means at the top of the holder for removably securing the filtering medium in position and forcing the same against said washer, means removably mounted at the inside of the casing to scrape said filtering medium, a discharge tube for filtered water having engagement with said inwardly extending flange and an operating member removably fixed to the holder below the exteriorly threaded part thereof and limited against movement upward by said part, said operating member serving to permit rotation of the holder with respect to the casing to seat and unseat the outwardly extending flange with respect to the gasket, whereby the fluid or water discharged into the casing will pass out in a filtered or unfiltered condition, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THEODORE LINKE.

Witnesses:

JOHN E. BURCH,

PHILIP D. ROLLHAUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."