

Nov. 16, 1948.

R. O. SHADDAY

2,454,259

SELF-CLEANING SCREEN STRUCTURE

Filed April 30, 1945

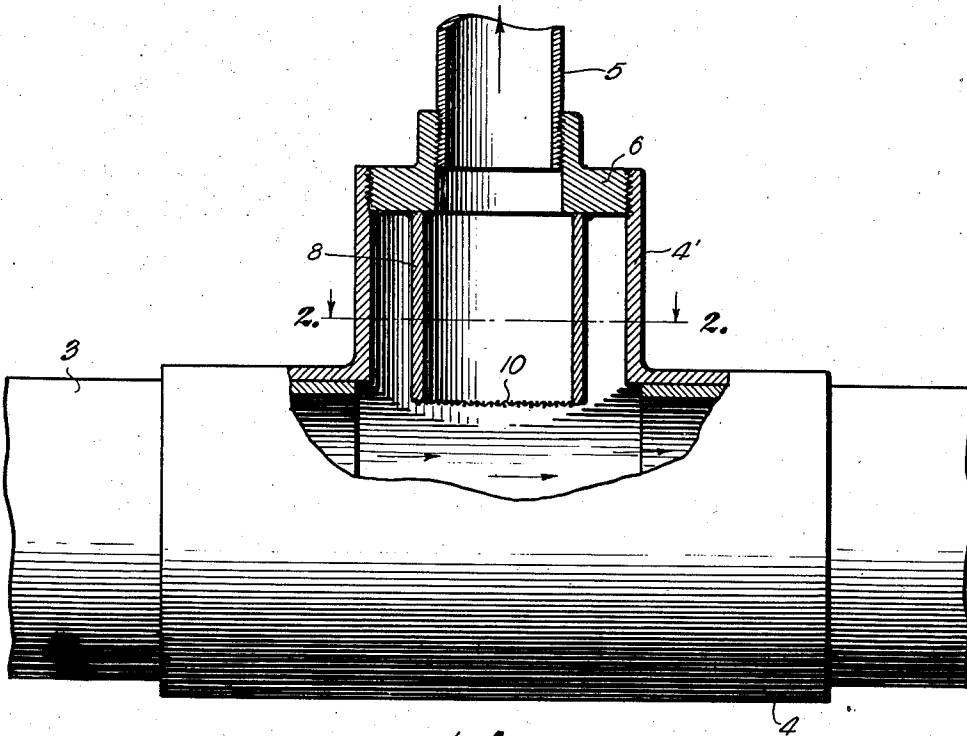


Fig. 1.

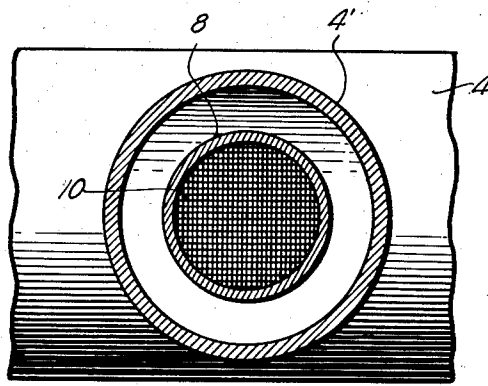


Fig. 2.

INVENTOR:
R. O. Shadday,
BY *Chas. W. G. ...*
ATTORNEY

UNITED STATES PATENT OFFICE

2,454,259

SELF-CLEANING SCREEN STRUCTURE

Rolland O. Shadday, Joplin, Mo., assignor to
Herbert Wolcott, Columbia, Mo.

Application April 30, 1945, Serial No. 591,129

2 Claims. (Cl. 210-167)

1

The present invention relates to screen devices, such as are used to screen or filter flowing liquids for the purpose of removing impurities and the like from the liquid.

The invention or improvement has particular reference to accessories for water treating equipment, and aims to provide an improved form of screen assembly for intercepting the sand or grit or other particles of matter which would have a tendency to obstruct the subsequent flow of the water through fine orifices or passages associated with such equipment.

A special object of the invention is to provide a screen structure or assembly in which the screen element is so related to the rest of the structure and the principal movement of the water flow as to be substantially self-cleaning in its operation.

In carrying out this object of my invention I have devised a screen structure in which provision is made for mounting the screen element in such relation to the water flow or movement as to effect a self-cleaning action by the combined action of gravity and a washing action of the principal water current in a direction across or substantially parallel with the face of the screen element.

The improved screen device is especially adapted for operations in which a branch pipe or outlet connection is made with a main water supply line for drawing off a portion of the water for testing purposes, in which relationship the screen element is so mounted at the juncture or connection between the main and branch or outlet pipes as to readily incorporate the aforesaid self-cleaning feature of my invention.

With the foregoing general objects in view the invention will now be described by reference to the accompanying drawing illustrating one form of construction which is adapted for the effective embodiment of my improvement, after which those features or combinations deemed to be novel and patentable will be particularly set forth and claimed.

In the drawing—

Figure 1 is a sectional elevation illustrating a main water pipe or conduit provided with a branch or outlet pipe connection fitted with a self-cleaning screen structure embodying the present invention; and Figure 2 is a section on the line 2-2 of Figure 1.

Referring now to the accompanying drawing in detail, this illustrates the improved screening device as installed in connection with a water supply pipe 3, which may be a water service line through which water is being supplied from a

2

water purifying equipment, such as a water softening unit. It is a common practice to test such water at intervals, as to its desirable properties, including freedom from hardening ingredients, for which purpose some water must be drawn off from the supply line 3, for use in the testing apparatus. As illustrated, this may be done by means of a suitable T fitting 4, the stem portion 4' of which is connected with the branch pipe or outlet connection 5 which conducts the water to be tested to the testing unit (not shown).

As the branch or outlet pipe 5 is ordinarily of somewhat smaller diameter, the connection with said T 4 may be readily established by means of an adapter fitting 6 having conventional reducer element portions and suitably tapped for making threaded connection with the pipe 5 and the stem 4' respectively, as illustrated.

The present improvement consists in providing a screen structure for filtering or screening the flow of water from the line 3 into the branch pipe 5 by means of a screen element so arranged as to subject the same to the combined action of gravity and a washing action taking place by virtue of the current movement of the water in the line 3 across the face of said screen element. I accomplish this by arranging said T fitting 4 so that its stem portion 4' projects vertically upward, and providing a short pipe section or nipple 8 and securing the same centrally to the reducer 6 and in alinement with the passage through the branch pipe 5, as illustrated. This pipe section 8 is made of such length that its lower end terminates substantially flush with the internal diameter of the pipe line 3, and across this lower or inlet end of said pipe section 8 I provide a screen element 10 of appropriate mesh, the margin or which is firmly secured (as by soldering) to the lower margin or inlet end of the pipe 8.

With the construction thus provided for locating the screen element 10 in the particular relation illustrated and described, it follows that the double cleaning action and effect are produced for producing a thorough and most efficient self-cleaning function. For it is apparent that the screen mesh is subjected not only to the direct action of gravity—which tends to prevent any adherence of waste matter to the under surface of the screen, but also to the effective washing action of the main water flow through the pipe line 3 which takes place directly across and parallel with the bottom face of the screen 10, which is in such a manner as to effectively flush and clean the mesh of the screen. For this main water current is of course in a direction which tends

to carry any foreign or waste matter or particles on past and free of the screen, instead of a direction into or through the mesh of the screen, with the liability of being enmeshed or trapped therein.

It will thus be seen that the foregoing construction provides a very practical and highly effective accessory device for water or other liquid conduits, for screening or filtering purposes and which will at the same time operate with a thorough self-cleaning action by virtue of the novel operative position and relationship of the screen element of the device. It is furthermore to be noted that the structure required for embodying this feature of improvement is extremely simple, comprising a minimum number of parts adapted to be constructed and assembled at relatively small cost for either labor or material.

While I have illustrated and described what I now regard as the preferred form of embodiment of the improvement, I desire to be understood as expressly reserving the right to make such changes or modifications as may fairly be deemed to fall within the spirit or scope of my invention as defined by the appended claims.

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

1. A self-cleaning screen assembly comprising, in combination with a main conduit for conducting a liquid flow and having a branch pipe portion, a connector fitting attached to said branch pipe portion and having an exterior nipple for connection with a branch pipe outlet and also an interior pipe section in alinement with said nipple and terminating substantially flush with the interior wall of the main conduit, and a screen element carried by the inner end of the said pipe section in substantially parallel relation to the direction of the main liquid flow through said main conduit.

2. A self-cleaning screen assembly comprising, in combination with a main conduit for conducting a liquid flow and having a branch pipe portion tapped for a branch pipe connection, an adapter fitting having a body portion threaded into said branch pipe portion and formed with an exterior nipple for connection with a branch pipe and also an interior pipe section of relatively larger inside diameter than the inside diameter of said exterior nipple and projecting in alinement therewith, whereby the inner end of said pipe section is positioned by turning of said body portion of the fitting in substantially flush relation with the interior wall of the main conduit, and a screen element carried by the inner end of said pipe section in substantially parallel relation to the direction of the main liquid flow through said main conduit.

ROLLAND O. SHADDAY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
363,120	Cummings	May 17, 1887
396,799	Beauregard	Jan. 29, 1889
719,913	Wackerow	Feb. 3, 1903
743,091	Loop	Nov. 3, 1903
1,424,197	Gebhard	Aug. 1, 1922
1,565,380	March	Dec. 15, 1925
1,573,067	Holland	Feb. 16, 1926
1,593,082	Keating	July 20, 1926
1,649,241	Lewis	Nov. 15, 1927
1,843,242	Rafton	Feb. 2, 1932
1,876,439	Whaley	Sept. 6, 1932
2,158,080	Montgomery et al.	May 16, 1939