Dec. 3, 1946. J. BILL, JR 2,412,032

DISTRIBUTION NOZZLE FOR FILTERS AND THE LIKE

Filed May 10, 1945

FIG. 1.

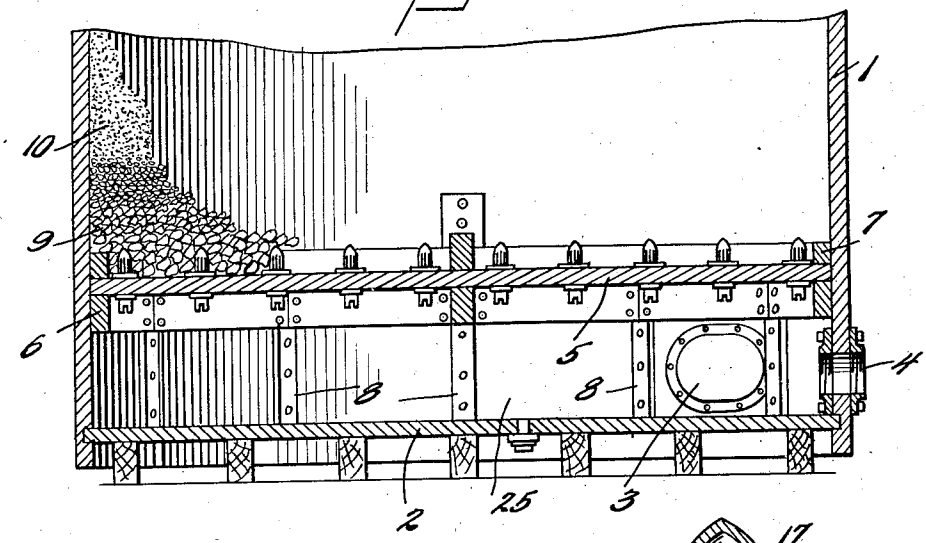


FIG. 2.

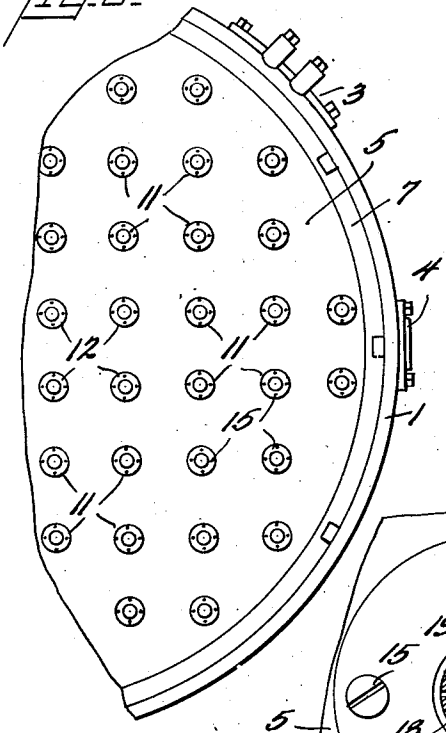


FIG. 3.

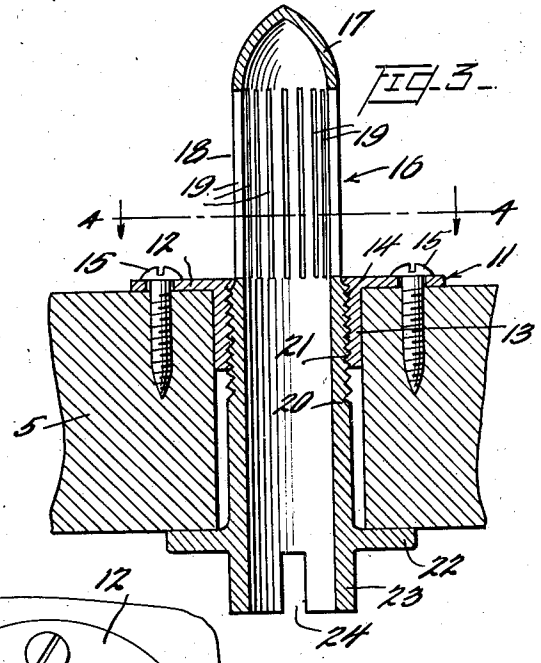
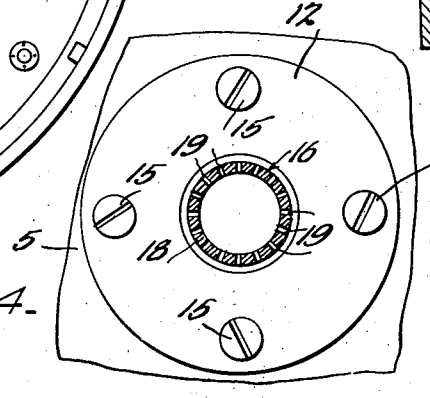


FIG. 4.



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DISTRIBUTION NOZZLE FOR FILTERS AND THE LIKE

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2 Claims. (Cl. 210—171)

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My invention relates to new and useful improvements in filters and more particularly to a removable distribution nozzle and means for holding the same that may be readily installed in water filters, softeners or the like.

As is well known to those skilled in the art, in both the high pressure filters or the gravity type of filters the usual arrangement is to provide a tank in which gravel, sand or Zeolite is placed in the tank while in the bottom thereof there are placed nozzles, but when it is desired to clean the nozzles, it is necessary to remove the sand and the different layers of gravel, etc.

In other instances, tanks have been made with false bottoms but the distribution nozzles have been hard to remove or to renew.

Another object, therefore, of the present invention is to provide a false bottom for the filter tank in which there are to be located a plurality of internally threaded sockets, each socket in turn to receive a distribution nozzle that is relatively small in cross-section and provided with a pointed nose. The nozzle follows the shape of a projectile so that when it is desired to clean a nozzle or nozzles, it is a relatively simple matter to enter the tank through a manhole under the false bottom and withdraw, that is, draw downwardly the projectile shaped nozzle, thoroughly cleanse the same and then insert it again in the false bottom and force the nose of the nozzle upwardly through the layer of rocks or gravel where it will be finally tightened in place.

Still another object of the invention is to provide a distribution nozzle which is cylindrical in shape having a pointed nose together with a plurality of longitudinally extending slots or orifices through which the water or liquid may pass into the nozzle and then downwardly into the distribution chamber. The nozzle is threaded externally about midway of its length to engage the internally threaded socket, while the lower end of the nozzle is provided with a flange so that it can be pulled up tightly against the undersurface of the false bottom. The rear end of the nozzle is slotted so that it is a simple matter to put a wrench or bar within the slot to pull the nozzle tightly up in place.

Still another object of the invention is to provide a false bottom with the plurality of sockets secured therein, this false bottom being shaped to fit within the wooden tank, metal tank or concrete tank depending on the form of tank installation.

Still another object of the invention is to provide a special form of socket and distribution

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nozzle so that with tanks already installed it will be a relatively simple matter to build a false bottom, install the sockets therein and then install the false bottom and the quickly removable and replaceable distribution nozzles.

With these and other objects in view, the invention consists in certain new and novel arrangements and combination of parts as will be hereinafter more fully described and pointed out in the claims.

Referring now to the drawing showing one form of installation:

Fig. 1 is a fragmentary sectional view of a water filter or softener having a false bottom therein in which are fitted the distribution nozzles;

Fig. 2 is a fragmentary top plan of the false bottom showing the sockets arranged therein;

Fig. 3 is an enlarged fragmentary sectional view showing a portion of the false bottom, socket and distribution nozzle in position; and

Fig. 4 is a sectional view taken on line 4—4 of Figure 3.

Referring now more particularly to the several views and to Fig. 1 for the moment, there is fragmentarily shown a filter tank 1 having the bottom 2, the manhole 3, and the outlet 4. There is also shown the false bottom 5 which is supported by the inner ring 6, while above this may be seen the ring 7, and the uprights and supports 8.

It will be understood that if the tank is made of concrete or wood or metal, this false bottom will be installed in the best manner to support it. Also, if the wooden or concrete tank is not provided with a manhole, this will be done so that an operator can climb under the false bottom, or in other words, in the resultant distribution chamber, and insert or readily remove the distribution nozzles about to be mentioned.

In Fig. 1, I have also shown layers of gravel 9 and above these layers of gravel may be the sand or Zeolite 10 or any desired filtering medium forming the filter bed.

It will be understood that in Fig. 1, I have only shown the filtering material or bed in one corner but this is only for simplicity of illustration.

Referring for the moment to Fig. 2, I have fragmentarily shown the false bottom 5 together with the rows of sockets 11. Each socket, as may be seen in Figures 3 and 4, consists of the circular top plate 12 with a depending hub 13 which is internally threaded as at 14, while preferably four screws 15 are passed through spaced holes in the plate 12 to tightly hold this socket in place.

The number of sockets employed depends upon the size of the tank and they are generally placed in close proximity as may be seen from Fig. 2.

Referring now to the distribution nozzles and a description of one is a description of them all, as may be seen in Fig. 3, each nozzle **16** is cylindrical in shape and is provided with a pointed nose **17** so that it can be readily forced up into the gravel as shown in Fig. 1. Just beneath the nose may be seen what I term the upper body portion **18** which is provided with a plurality of vertical extending slots or orifices **19** that extend down to the level of the top plate of the socket **15** when the nozzle is in place. These orifices are distributed around the circumference of the nozzles so that the liquid may filter through these relatively narrow openings.

About centrally of the length of the nozzle is what I term a lower body portion **20**, slightly larger in diameter and externally provided with a screw thread **21** to engage the internal threads of the socket. Near the rear end of the lower body portion **20** is the flange **22** so that the distribution nozzle may be pulled up tightly to seat against the bottom of the false bottom as well as be secured in the socket.

Below the flange **22** the body extends down slightly as at **23** and this portion is provided with a kerf or slot **24** so that a bar or wrench may be put within the kerf and the distribution nozzle quickly threaded up into its socket, or in a like manner may be quickly removed. Thus, the filtered liquid, after passing through the sand and the gravel or other filtering material, may pass in these distribution nozzles and out the bottoms thereof into the distribution chamber **25**, or in other words, the space between the true bottom and the false bottom.

As is well known, to ordinarily clean the filter after it has been run a certain length of time, the pressure is reversed so that the nozzles will be cleansed as well as the filtering material, but it is also well known after this has been done for a certain length of time, it is necessary to remove the nozzles as they are in time bound to clog or fill with lime, salts, or other foreign material.

With my installation just above outlined, should it be found that the filtering is not progressing as rapidly as it is supposed to, it is a simple matter for an artisan or workman after the distribution chamber has been emptied, to climb in through the manhole **3** and take out any or all of the sockets by simply placing a bar or wrench in the kerf **24** and turning the nozzle in an anti-clockwise direction. The orifices **19** then may be quickly cleaned and it is a simple matter to again install the nozzles as their dome or pointed shape noses will easily force themselves up, when turned, into the adjacent layers of gravel.

Thus, it will be seen an installation of this kind saves several hours of time over the ordinary

form of filter or water softener installation, as the workman does not have to get in the tank and shovel out all the filtering material to get at the distribution nozzle.

Also, with the other form of filter nozzles that I am familiar with, the filter nozzles are rather large in cross-section and difficulty would be encountered in trying to force a nozzle up into the gravel or filtering material.

From the foregoing it will be seen that I have provided new and novel distribution nozzles together with receptive sockets, these sockets in turn to be installed in a support or false bottom that in turn may be readily built into new tanks or be accommodated in tanks already made, whether of the high pressure type or the gravity type or whether they are made of wood, concrete or metal.

The sockets and nozzles may be made of a standard size so that if one corrodes or wears, or becomes damaged, it is a simple matter to install one from extra stock. It will also be understood that these nozzles may be of any desired metal or may be made of an alloy, if the tank is to contain a liquid that might otherwise affect the nozzle.

Many slight changes may be made without in any way departing from the spirit or scope of the invention.

Having thus described what I claim is new and desire to secure by Letters Patent is:

1. In a filtering tank, a false bottom, a plurality of internally threaded cylindrical sockets fitted therein and a plurality of cylindrical shaped distribution nozzles threaded in said sockets, each of said nozzles provided with a pointed nose, the upper portion of the nozzle also having openings adapted to permit the liquid to pass into and out of the nozzle, the lower portion of the nozzle provided about centrally of its length with external threads and a flange near its bottom to thus bind the nozzle from the opposite side of the false bottom and the said nozzles adapted to be inserted and removed from the undersurface of said false bottom.

2. In a filtering tank having a false bottom, an internally threaded cylindrical socket fitted in the top surface of the said bottom, a cylindrical projectile-like shaped nozzle closed at it upper end, the nozzle provided with a plurality of slots extending around its circumference, the lower portion of the nozzle being slightly larger in diameter than the upper portion and provided with external threads adapted to fit within the threads of the socket, a flange near the lower end of the nozzle and adapted to seat against the undersurface of the false bottom to thus bind the nozzle from the opposite side of the false bottom the lower end of the nozzle also provided with receptive means adapted to receive a tool for threading the said nozzle into and out of its receptive socket, from the undersurface of said false bottom.

JAMES BILL, JR.