

Oct. 24, 1944.

J. F. MacSORLEY

2,360,958

DISTRIBUTING HEAD FOR THE MANIFOLDS OF FILTERS OR LIKE DEVICES

Filed Aug. 12, 1942

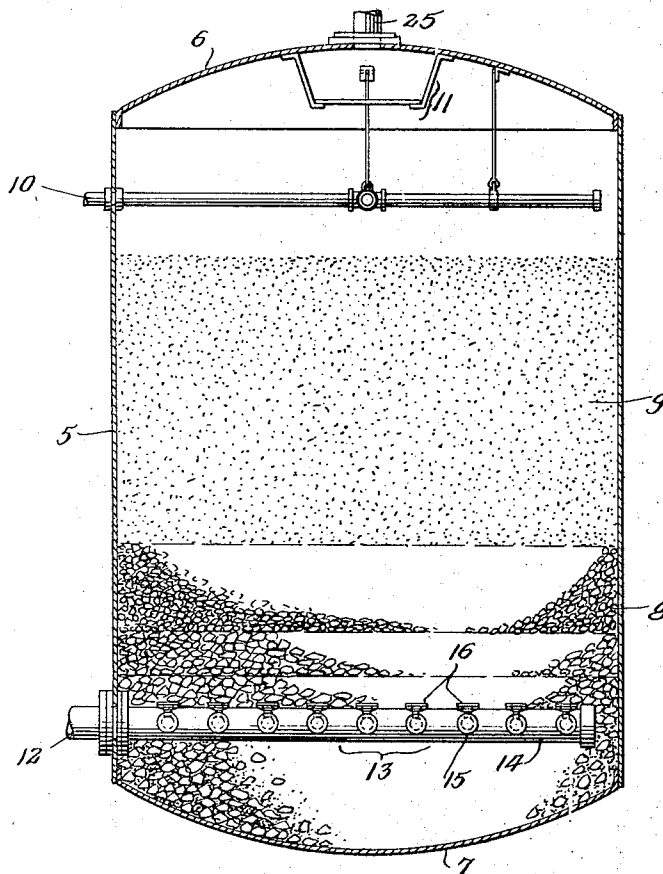


Fig. 1.

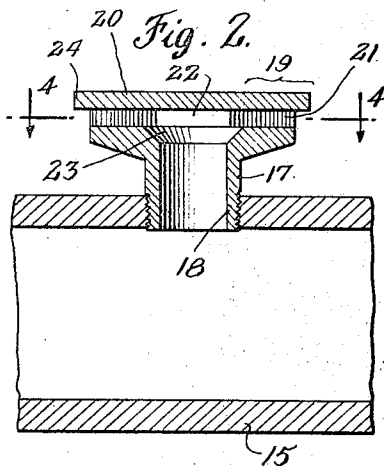


Fig. 2.

Fig. 3.

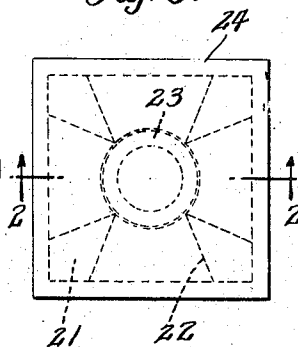
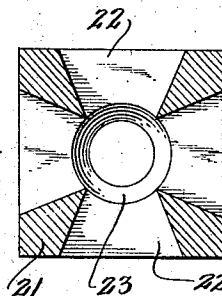


Fig. 4.



INVENTOR:  
J. Francis MacSorley  
BY *Symantec & Lechner*  
ATTORNEYS.

## UNITED STATES PATENT OFFICE

2,360,958

DISTRIBUTING HEAD FOR THE MANIFOLDS  
OF FILTERS OR LIKE DEVICESJohn Francis MacSorley, Wenonah, N. J., assign-  
or to Hungerford & Terry, Inc., Clayton, N. J.,  
a corporation of Delaware

Application August 12, 1942, Serial No. 454,486

4 Claims. (Cl. 210—171)

This invention relates to filters, water softeners, or like devices, in which a fluid is passed through a granular medium for the purpose of cleaning, straining, or chemically treating the same, and is especially designed for use in devices of this kind where distribution takes place from the bottom to the top and vice versa through the granular medium.

More specifically, the invention relates to an improved head or distributing device for the manifolds used in equipment of the character specified. Water softeners are typical of the equipments to which the invention is particularly applicable, and I will illustrate the invention in connection therewith.

The primary objects of the invention are to provide a head which can be very quickly and easily applied to the pipes of the manifold without danger of interfering with the flow of the fluid in the manifold passages; the provision of a readily replaceable head; the provision of a head which is provided with means for preventing the gravel or other granular material from entering the distributing passages and partially closing or choking them; the provision of a head which will ensure the widest possible and most uniform distribution of the fluid through the granular material with the elimination of the detrimental "channeling" which is often encountered with present equipment; the provision of a head in which the flow passages for the fluid are arranged to ensure true orifice action; and the provision of a head which can be simply formed by a casting operation, and subsequently drilled to provide the proper size passage calculated to give the desired true orifice action for the particular installation at hand.

The objects and advantages of the invention will appear more fully when considered in connection with the accompanying drawing, wherein—

Figure 1 is a vertical section through a water softener equipped with a manifold having the heads of the present invention;

Figure 2 is a vertical section on a very much enlarged scale through one of my improved heads showing it in place on a manifold pipe, the section being taken approximately as indicated by the line 2—2 of Figure 3;

Figure 3 is a plan view of my improved head; and

Figure 4 is a section on the line 4—4 of Figure 2.

By referring to the drawing, it will be seen that I have illustrated a water softener comprising a treating tank 5 having convex top and

bottom ends 6 and 7. In its bottom portion the tank is filled with gravel or sand 8 or some similar distributing medium familiar to the art, upon which is carried a bed of water softening or filtering material 9 of any desired type.

The raw water to be softened comes in at the top through the pipe 25 and is distributed by any suitable structure indicated as a whole by the reference character 11. The details of this structure, however, are not illustrated because they form no part of the present invention and may take any one of numerous forms familiar to those skilled in this art.

The softened water, after passing downwardly through the water softening or filtering material 9 and the gravel 8, is discharged from the unit through the pipe 12 which communicates with the manifold 13 near the bottom of the tank. The manifold 13 can be made in any desired manner, but generally consists of a central large diameter pipe 14 in direct communication with the pipe 12 and a plurality of smaller laterally extending pipes 15 which extend therefrom on both sides so as to provide a spider-like pattern familiar to those skilled in this art and the details of which it is unnecessary to more fully illustrate or describe because they are very well known.

The improved heads 16 of my invention are best illustrated in Figures 2 to 4 inclusive, from inspection of which it will be seen that they have a shank portion 17 which is externally threaded so as to be readily screwed into correspondingly threaded openings in the top of the lateral pipes 15 of the manifold 13. The shanks are in the nature of hubs and are relatively short, so that they do not extend into the pipes sufficiently far to in any way interfere with the flow of the fluid. The interior of the shank is provided with a passage 18 which provides true orifice action and which communicates at the bottom with the pipe 15 and at the top with the passages in the enlarged upper end 19, which is now to be described.

A protecting top or cap portion 20 is supported upon a plurality of diamond-shaped spacers 21—in this instance four—the sides of which form the walls of a plurality of flaring channels or openings 22, the narrower ends of which openings are in direct communication with the upper end of the internal passage 18 in the shank 17 and the wider outer ends of which flaring openings are in open communication with the granular material in the tank 5.

The spacers 21 are relatively shallow so that the flaring passages 22 are narrow in vertical

dimension. The flare, therefore, of the passages 22 extends horizontally outwardly from the central passage 18 and forms a fan-like distributing area which provides for maximum coverage of the granular treating material.

While fewer or more of the flaring passages 22 may be employed than the four which are illustrated, I prefer the arrangement shown because it makes possible a very uniform distribution of the fluid.

At its upper end the passage 18 is flared out into the form of a surrounding ring-like depression 23 which forms an accumulating or interconnecting space for the fluid in its transit from the passage 18 to the flaring openings 22.

The top or cap portion 20 is arranged to project somewhat beyond the wide outer openings of the passages 22 so as to provide a hood-like overhang 24 which serves to obviate the possibility of the supporting gravel 8 or other granular material lodging in front of the openings 22 and choking or partially closing them against a full flow of the fluid.

The preferred method of making my improved head is to cast it with a solid shank 17 which shank is subsequently drilled to provide the passage 18. In this way I can readily adjust the size of the passage 18 to that which may be necessary for the particular installation in hand to yield the true orifice action referred to above. In other words, I can make the passages 18 of such a size that their total flow area in all of the heads needed for any given installation is less than the total flow area of the inlet passage to the manifold. When the fluid is passing upwardly through the heads, this then provides the true orifice action which is needed for successful distribution.

It might be pointed out that, in the equipment illustrated, the back washing flow takes place in the reverse direction to the softening, filtering or regenerating flow, with the wash water coming in through the pipe 12 and being passed upwardly through the gravel and softening or filtering material after leaving the heads of the present invention, discharge at the top taking place through the pipe 25.

I claim:

1. A head for the manifold of filters, softeners or the like, said head comprising a shank portion having an internal passage, an enlarged upper end, and a channel in said enlarged end adapted to establish communication between said internal passage and the exterior of the head, said channel being defined by laterally projected walls extending from the internal passage to the periphery of the head, which walls diverge outwardly to provide an outwardly flaring passage which extends from said internal passage to the periphery of the head, and a top portion supported on said walls.
2. The structure of claim 1 including a plurality of outwardly flaring channels formed as described and arranged to radiate from said internal passage.
3. The structure of claim 1 in which a plurality of flaring channels are formed as described and arranged to radiate from said internal passage, and in which an enlarged interconnecting space is provided in surrounding relation to said shank passage and in direct communication with the smaller inner openings of said flaring channels.
4. In a structure of the character described, a manifold and a plurality of distributing heads mounted on said manifold, each of said heads comprising a shank portion having an internal passage in communication with the manifold, an enlarged upper end, and a plurality of channels in said enlarged end adapted to establish communication between the internal passage and the exterior of the head, each of said channels being defined by laterally projected walls extending from the internal passage to the periphery of the head, which walls diverge outwardly to provide an outwardly flaring passage which extends from the external passage to the periphery of the head, the total flow area through the internal passages of all of said heads being less than that of said manifold.

J. FRANCIS MACSORLEY.