June 1, 1954 E. H. BRYANT 2,679,853

TANK WASHING APPARATUS

Filed July 12, 1951

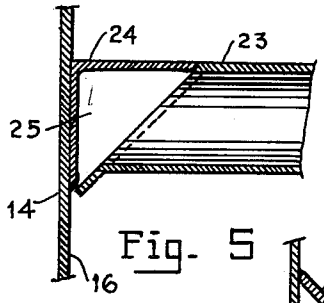


Fig. 5

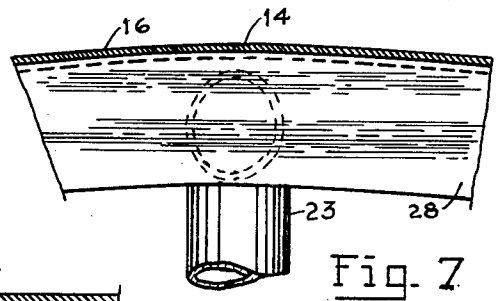


Fig. 7

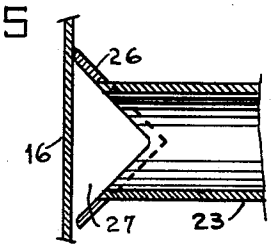


Fig. 6

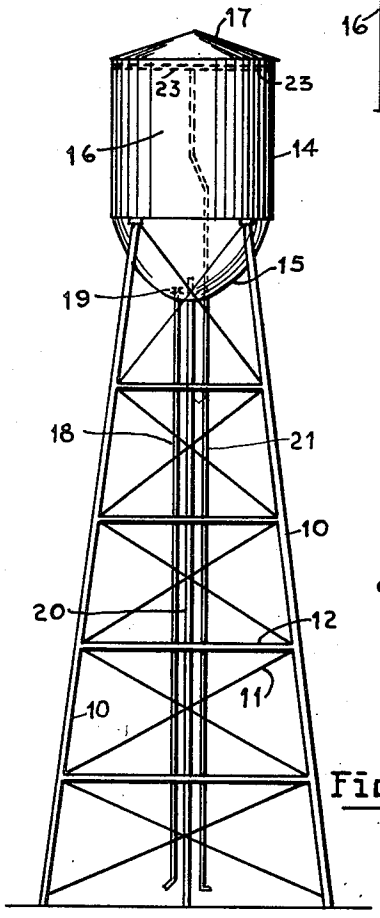


Fig. 1

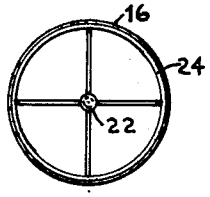


Fig 3

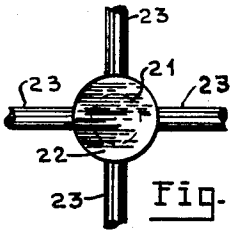


Fig. 4

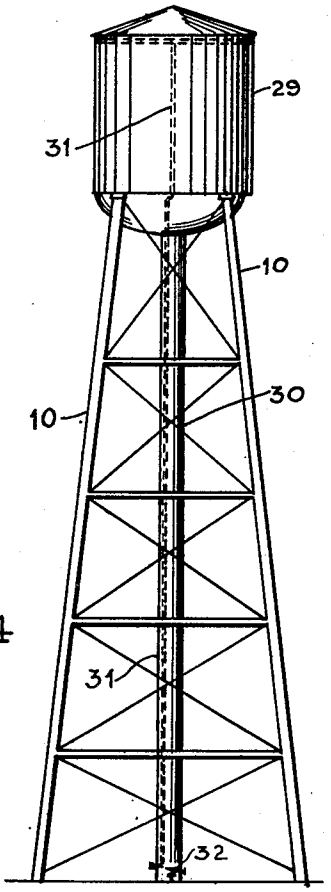


Fig. 2

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TANK WASHING APPARATUS

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4 Claims. (Cl. 134—166)

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This invention relates to an elevated water tank, and more particularly to a means for washing or cleaning the interior of an elevated water tank, particularly muncipal elevated water tanks.

The object of the invention is to provide a mechanism for washing the interior of elevated water tanks from the ground whereby the tank will be kept free of mud, sludge, and mineral salts which collect on the interior of the tank walls, bowl, and riser pipe.

Another object of the invention is to provide a mechanism for facilitating the cleaning and washing of the interior of elevated tanks to insure a clean water supply so that mud, sludge, and mineral salts will not remain on the walls of the tank and corrode or otherwise damage the tank walls, the mechanism of the present invention being readily operated from the ground by unskilled persons so that injuries to workmen will be prevented, the mechanism being ruggedly constructed and arranged so that it will operate under all climatic conditions.

A further object of the invention is to provide a tank washing apparatus which is extremely simple and inexpensive to manufacture, easily accessible to permit repair or servicing.

Other objects and advantages will be apparent during the course of the following description of certain novel details of construction.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a side elevational view of an elevated water tank with the washing mechanism of the present invention installed therein;

Figure 2 is a side elevational view of a modified or different type of elevated water tank having a washing mechanism installed therein.

Figure 3 is a plan view showing the washer head;

Figure 4 is a fragmentary enlarged plan view showing the pipes for conveying water to the outer rim;

Figure 5 is a fragmentary vertical sectional view showing the connection of one of the pipes with the annular rim;

Figure 6 is a modified fragmentary sectional view showing the outer extremity of the water supply pipe; and

Figure 7 is a horizontal fragmentary sectional view showing a water supply pipe welded to an angle iron rim.

Referring in detail to Figure 1 of the drawings, the numeral 10 designates each of a plurality of upstanding uprights or standards which may be fabricated of any suitable material. Mounted on the upper ends of the standards 10 and secured thereto is an elevated tank 14 which is adapted to hold a quantity of water. Suitable braces 11 and 12 extend between the uprights 10 and are secured thereto for maintaining the uprights in their proper spaced position. The tank 14 includes an annular side wall 16, a bottom 15, and a top 17.

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Extending from the bottom 15 is a vertically disposed drain pipe 18 which has a suitable valve such as a gate valve 19 arranged contiguous to its top. Thus, by opening or closing the valve 19 sludge or dirty water will be permitted to drain through the pipe 18.

For supplying water to the tank 14, a vertically disposed main supply pipe 20 is provided, and the pipe 20 may lead from any suitable source of supply of water.

The present invention is directed to a mechanism for cleaning and washing the interior of the tank 14 so as to prevent mud, sludge, mineral salts, and the like from corroding or otherwise damaging the tank 14. The washing and cleaning mechanism includes a vertically disposed riser pipe 21 which has its lower end terminating adjacent the bottom of the uprights 10, Figure 1. The upper portion of the riser pipe 21 extends through the tank 14 and terminates just below the top 17 of the tank 14. A cap or collar 22 is arranged on the upper end of the riser pipe 21, and extending outwardly from the collar 22 is a plurality of horizontally disposed radially extending pipes 23. The pipes 23 communicate with the pipe 21 whereby water will be conveyed therefrom. Various means may be provided for supporting the outer ends of the pipes 23. Thus, as shown in Figure 5 an annular rim 24 which may have an L-shape may be secured to the wall 16 of the tank 14 as by welding. Thus, water will flow through the pipes 23 and then through the space 25 whereby it will wash down the sides or interior of the tank 14. Also, when the valve 19 is open when the tank is being washed or cleaned, the dirty water will flow down through the drain pipe 18.

Referring to Figure 6 of the drawings, there is shown a modified connection between the outer ends of the pipes 23 and the wall 16. Thus, a body member 26 is provided for each of the pipes 23, and the body member 26 may be secured as by welding to the inner surface of the wall 16. Thus, water will flow through the pipes 23, then through the space 27 and this will result in the interior of the tank being

washed. In Figure 7 there is shown another modified means of connecting the pipes 23. Thus, as shown in Figure 7 an annular rim 28 is secured to the side wall 16 in any suitable manner, as for example by welding, and the pipes 23 can be welded to the rim 28. Suitable conventional valves or fittings may be provided for the lower ends of the riser pipe 21 and for the main supply pipe 20 so as to permit the flow of water to be controlled that flows therethrough.

Referring to Figure 2 of the drawings, there is shown another type of elevated water tank 29 which is adapted to be cleaned by the mechanism of the present invention. Thus, the tank 29 is supported by the uprights 10, and leading from the bottom of the tank 29 is a main supply pipe 30 which may be relatively large in diameter. Extending through the main supply pipe 30 is a riser pipe 31, and arranged contiguous to the lower end of the main supply pipe 30 is a valve 32 which permits liquid to be drained from the bottom of the supply pipe 30. Connected to the upper end of the riser pipe 31 is a plurality of radially extending horizontally disposed pipes 23 which serve the same purpose as the previously described pipes 23 as in Figure 1. Thus, when the tank 29 is to be cleaned water can be supplied or fed to the lower end of the riser pipe 31 and this water will then flow up through the riser pipe 31 and out through the pipes 23. This water will then wash down the interior of the tank 29 and also this water will wash down the interior of the main supply pipe 30. This dirty water can then be drained off through the valve 32.

From the foregoing, it is apparent that a mechanism has been provided for facilitating the washing of elevated tanks. Thus, by means of the present invention it will be possible to keep tanks clean and free at all times of mud, sludge, and mineral salts which ordinarily collect on the interior of the tank walls, bowl and riser pipe. It is necessary that these foreign matters be removed because if they are permitted to remain on the steel surface for any length of time, they have a tendency to corrode the steel and in many cases cause a considerable amount of damage to the tank. The tank washing mechanism of the present invention will remove all of this foreign matter from the tank and the washer is operated from the ground with unskilled labor. The only equipment necessary is a high pressure pump or fire truck which can be connected to the lower end of the riser pipe 21 or 31. The average tank can be washed in approximately thirty minutes. Also, the mechanism of the present invention will eliminate the necessity of hoisting a heavy fire hose to the top of the tank with the ever present hazard of the hose bursting under pressure and causing injury to the workmen. Also, it will be unnecessary for workmen to climb to the top of the tank which is a dangerous task. Further, the washer will last as long as the tank itself and due to the built in

drainage feature, the danger of freezing will be eliminated. Thus, the washer will operate under all climatic conditions. The various pipes may be of any size and the washer can be used for water tanks, stand pipes and the like. The muddy water will flow out of the tank 14 through the drain pipe 18. If desired, the washing mechanism can be suspended from the top of the tank. Above the overflow pipe.

From the foregoing it is believed that the construction and operation of the tank washer for elevated water tanks will be obvious, and that a further description as to the operation and utility of the tank washer is unnecessary.

It may also be stated that the drawings are for the purpose of illustration only and that various changes in construction, operation and position of mounting various parts may be made without departing from the spirit and scope of the invention as recited in the appended claims.

Having thus described the invention, what is claimed is:

1. Apparatus for the interior washing of an upright tank having a bottom drain, comprising in combination, a channel member imperviously fastened along its top edge to the inner periphery of the tank wall and disposed with its lower edge closely clearing said wall, thereby forming with said wall a duct having a continuous narrow orifice downwardly-directed, and means for supplying liquid under pressure to said duct.

2. Apparatus as in claim 1, wherein said means for supplying liquid comprise a supply pipe, and branch pipes all of substantially equal length connecting said supply pipe to said duct at substantially equal intervals.

3. Apparatus for interior washing of an upright tank having a bottom drain, comprising in combination, an angle bar continuously welded along its top edge to the interior surface of the tank and with its lower edge closely clearing said surface, forming with the included portion of said surface a peripheral duct with a continuous narrow downwardly-directed orifice above the normal water level of the tank, and means for supplying water with substantially equal force all along said duct, thereby projecting a fast-moving sheet of water directly down said interior surface.

4. Apparatus as in claim 3, wherein said water-supplying means comprises a supply pipe centrally located with respect to said duct and vertically disposed, and horizontal radial branch pipes connecting said supply pipe and duct.

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