The present invention relates to improvements in domestic hot water tanks, and its principal object is to construct the conventional hot water tank in such a manner as to make the interior of the tank readily accessible for inspection, for removal of parts and for scrupling operations.

A further object of the invention is to arrange the tank in such a manner that the above operations may be readily carried out by any person of ordinary skill, without the aid of an expert plumber.

Tanks of the character described are apt, in the ordinary use thereof, to collect scale and other impurities along the inside walls thereof which eat into the tank material and which should be removed periodically to extend the useful life of the tank.

It is a fact that these impurities cannot be removed by mere spraying operations, but actually call for scrubbing off the inside wall of the tank by means of a hand-operated brush or scraper, with facilities allowing a person handling the brush to reach every part of the tank walls and to systematically scrape the inside of the tank from top to bottom.

For this purpose, I provide an opening in the top of the tank sufficiently large to allow the full length of the arm of the operator to pass therethrough, so that the operator is free to apply a brush carried in his hand to the bottom face of the top and the side wall of the tank down to the reach of his arm, and to then continue along the lower portion of the sidewall and the top face of the bottom by substitution of a longer-handle brush.

For this purpose it is necessary to make the opening in the top of the tank as large as possible, allowing the piping carried by the top, and to clear the inside of the tank as nearly as possible of piping extending thereinto.

In the conventional tank the top carries a water outlet pipe, a water inlet pipe which extends downward through the tank to within close proximity of the bottom of the tank, and also a flue pipe which extends clear through the bottom of the tank, this flue pipe usually extending centrally of the body of the tank.

In order to render as much space as possible available for the opening in the top, I re-arrange the pipes to come very close to the perimeter of the top and preferably within a half-section thereof so as to leave the other half-section free for enlarging the size of the hole.

Further, it is desirable to clear the inside of the tank as much as possible for freedom of hand operations, and for this purpose it is proposed to provide a structure in which that portion of the inlet pipe disposed within the tank is made in the form of an extension separable from the fixed portion of the inlet pipe, so that the extension may be withdrawn through the opening.

Further objects and advantages of my invention will be apparent as the specification proceeds, and the new and useful features of my hot water tank will be fully defined in the claims attached hereto.

The preferred form of my invention is shown in the accompanying drawing forming part of this application, in which:

FIGURE 1 shows a side view of my tank in normal operating conditions, parts being broken away to disclose interior construction;

FIGURE 2, a similar view, with the tank readied for scouring operation;

FIGURE 3, a vertical section through the intake pipe construction; and

FIGURE 4, a horizontal section taken along line 4-4 of FIGURE 2.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the claim hereto attached, without departing from the spirit of the invention.

Referring to the drawing in detail, the hot water tank may be of conventional construction, except for the modifications inherent in the present invention, and is intended principally for household use. It is cylindrical in form, stands upright on the base 6 and may be of the thirty gallon type, about four feet in height and fifteen inches in diameter.

The inlet pipe is shown at 7, and may be connected to any source of water under relatively high pressure such as usually is presented by a city water system, say about seventy pounds.

The outlet pipe is shown at 8 and may be connected to the hot water system of the residence which is served by the tank.

The tank is heated from the bottom, preferably by a gas burner, not shown, disposed in the base 6 and is provided with a flue 9 for the products of combustion, the flue extending through the top 10 and the bottom 11 of the tank and being welded at both ends.

The inlet 7 is controlled by a valve 12 and is connected to the inside of the tank by means of a short nipple 13 which extends through a neck 14 formed in the top of the tank and is clamped upon the neck by means of an upper flange 15 resting on the neck and a collar 16 bearing on the flange.

The nipple, which extends into the tank only a short distance, say about six inches, carries an extension 16', which is secured upon the bottom end of the nipple by means of a coupling 17 fixed upon the upper end of the extension and threaded upon the lower end of the nipple. The extension projects slightly downward to within a short distance of the bottom of the tank, and may be unthreaded by a mere turning movement.

The extension carries a sack 18, the upper end of which is contracted and mounted upon the coupling 17 where it is held in place by a locking ring 19 bearing upon an annular groove 20 in the coupling.

The sack 18, which may be made of cheesecloth or similar material, encircles the extension 16' in widely spaced relation thereto, and has a closed bottom passing around the bottom of the extension in spaced relation. Its principal purpose is to quietly disperse the cold water discharged from the bottom end of the extension under high pressure and to eliminate an upsurge of cold water into the upper hot water region such as would be caused by the cold water discharge from the extension striking the hard bottom of the tank, or any similar metal surface. Such cold water upsurge dissolves the desirable hot water temperature while said water is partially withdrawn from the upper portion. A valve-controlled outlet 25 is provided at the bottom of the tank.

The principal feature of the present invention is the opening 21 in the top of the tank, this opening being preferably circular in shape, and defined by a circular neck 22 having a horizontal top face. This opening, in normal operation, is closed by a cap 23 and a suitable washer interposed between the cap and the neck.

Since the opening is intended to give access to the tank for inspection and for brushing and scavenging operations, and for removal and reinsertion of the inlet pipe extension, it should be made as large as possible, allowing for limitations placed upon the size by the pipe elements carried by the top of the tank.
In a conventional thirty gallon tank, with a diameter of fifteen inches, it is desirable that the opening be approximately eight and one-half inches. Allowing for the flue, which is approximately three inches in diameter, and the inlet and outlet pipes which are about one inch in diameter, and for suitable spacing of the pipe from the circumference of the top, say about two inches for the flue pipe and one inch for each of the other pipes, the arrangement shown in FIGURE 4 is well suited for this purpose.

It will be noted that the inlet and outlet pipes which are relatively small in diameter, are located in substantially diametrically opposed positions, while the larger flue pipe is located peripherally substantially midway between the other pipes. This leaves one-half of the top substantially unobstructed and allows the opening to come close to the rim in that region, as shown, with the result that the opening of eight and one-half inches is obtained, conveniently located near the edge of the tank top, and avoiding the piping.

In operation, when it is desired to inspect and brush the inside of the tank, the operator turns off the gas, closes the valve 12, then removes the cover 23 for the opening 21, and opens the outlet 25.

When the tank is empty, the operator may inspect the inside of the tank, possibly holding a light and illuminating the inner surface for a close inspection. Next, he may extend his arm through the opening to unscrew the coupling 17 from the nipple 13 and pull the extension 16' with the sack 18 through the opening. This clears the tank for the brushing operation, there being only the flue pipe left in the tank.

Now, the operator takes the brush and scrapes the entire tank, beginning from the top and following the side downwardly. As he reaches about halfway down, he will find his arm fully extended and changes to a brush with a longer handle which will reach clear to the bottom of the tank.

In this brushing operation, the operator will probably begin with a tank full of cold water and will allow the water to recede as his work progresses so that the water is available all the time for picking up and carrying off any particles loosened by the brushing.

Upon completion of the operation, the operator will again rinse the tank, apply the extension 16' to the nipple, and re-apply the cover 23 to the opening 21, whereupon the tank is ready for a new period of operation.

I claim:

A domestic hot water tank, comprising an elongated, cylindrical tank having means for vertically supporting the same and having a bottom with gas heating means for heating the same from below, the tank having a top with water inlet and outlet pipes mounted in said top and having a gas flue extending through the bottom and top thereof, the top having a circular opening sufficiently large to give access to the tank interior for inspection and brushing operations, the tank opening being drawn to a diameter in excess of one-half of the tank diameter and being off-set with respect to the center of the tank, and the flue being of a diameter in excess of the pipe diameters, with the flue centered on the diameter of the tank passing through the center of the opening to occupy the widest space available between the outer circumferences of the tank and the opening, and with the pipes mounted on opposite sides of the flue to occupy diminishing widths of the said space.

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