

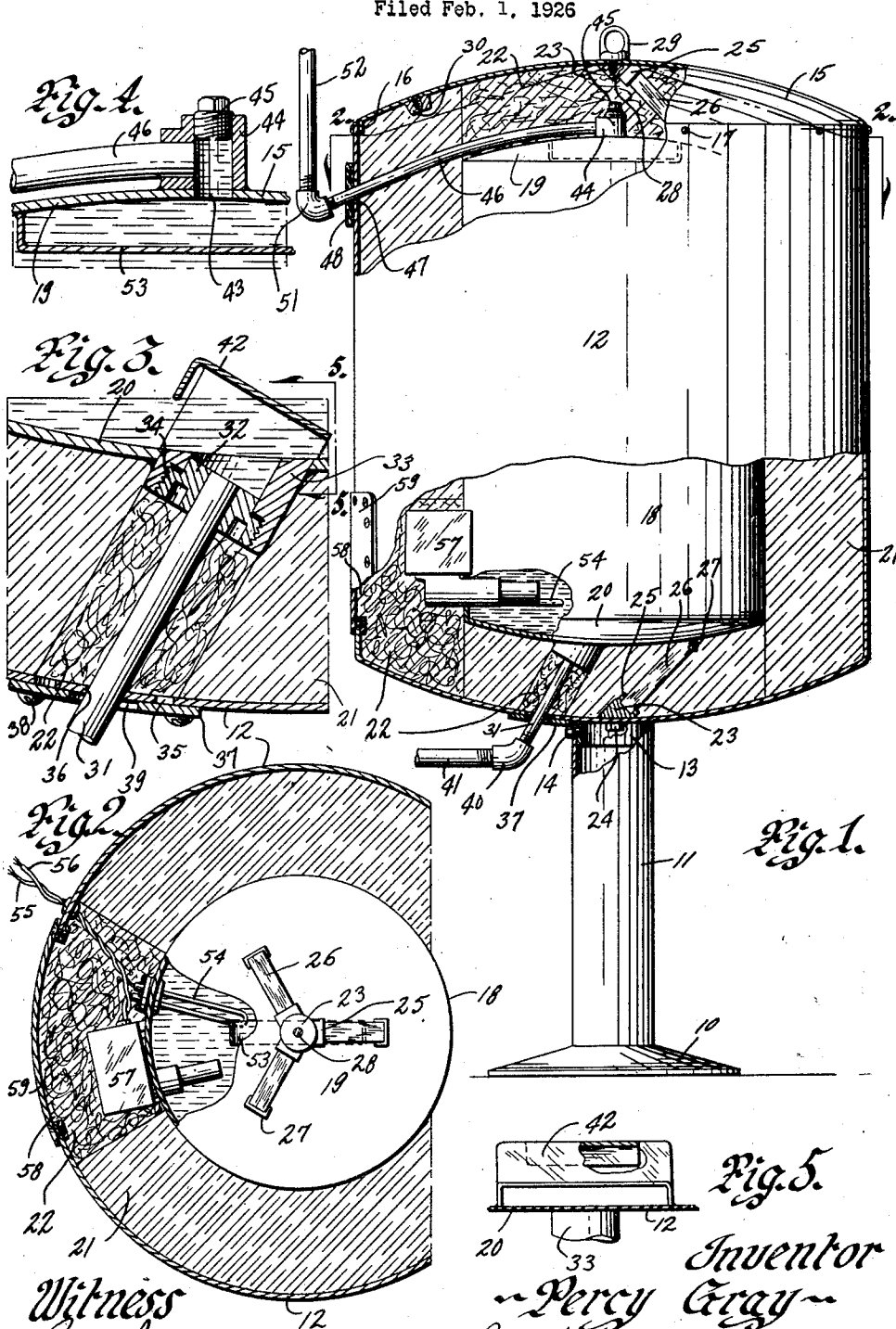
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WATER STORAGE TANK

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WATER STORAGE TANK.

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The object of my invention is to provide a water storage tank of simple, durable and inexpensive construction, involving the use of an electrical heating element.

5 More particularly, it is my object to provide a water storage device of the kind under consideration having a water container received in an outer container, which device is provided with insulation between the
10 two containers and has a number of novel features of construction, whereby the parts are connected and supported with relation to each other and provision is made for easy and convenient access to the inner parts for
15 purposes of replacement or repair.

Another object is to provide suitable, novel and convenient means for connecting the inlet pipe with the inner container in such manner as to permit the ready discon-
20 necting of the pipe for repair or replacement thereof and to permit convenient cleaning of the inner container.

Still a further object is to provide in such a heating device, such a structure as will
25 trap the hot water at the top of the inner container.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various
30 parts of my water storage tank, whereby the objects contemplated are attained, as herein-after more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

35 Figure 1 shows a side elevation of a water storage device embodying my invention, parts being omitted and parts being shown in vertical section.

40 Figure 2 is a detail, sectional view taken on the line 2—2 of Figure 1, parts being omitted and parts being shown in section for the purpose of showing the location and arrangement of the heating unit.

45 Figure 3 is a detail, sectional view illustrating the manner of assembling the intake water pipe.

Figure 4 is a detail, sectional view illustrating the connection of the outlet water pipe with the inner container; and

50 Figure 5 is a detail, sectional view taken on the line 5—5 of Figure 3.

In the drawings herewith wherein there is illustrated a form in which my improved water heating device may be embodied, I
55 have used the reference numeral 10 to indicate generally a base supporting the upright

pillar or the like 11. The base 10 and pillar 11 form a support for my water heating device.

Supported on the pillar 11 is the outer container 12 which is provided at its lower, central portion with a downwardly projecting cylindrical extension 13 received within the upper hollow end of the pillar 11 and fastened thereto by means of screw bolts 14.
60 The container 12 is preferably cylindrical in its general shape and has a removable dome-shaped top 15 provided with a peripheral flange 16 secured to the body of the container 12 by means of screws or the
70 like 17.

The bottom of the container 12 is of similar shape to that of the top, except that its concave face is up.

Received within the container 12 and substantially spaced from the wall thereof and from the top and bottom is an inner water container 18, having the dome-shaped top and bottom 19 and 20.

Between the two containers are sections of insulation 21 except in certain places where loose insulation 22 is provided, where it is desirable to have convenient access to the inner container.

In order to rigidly support the container 18 within the container 12 in such manner as to cause as little heat to be conducted from the inner to the outer container as possible, I mount on the inside of the bottom 12 at the center thereof a casting or the like
90 23, which is held in place by means of a screw bolt 24 extended through the bottom 12 and into the casting 23.

The casting 23 is provided with three sockets 25 to receive strong arms or legs 26
95 of non-heat conducting material, such for instance as wood, which are inclined away from the sockets 25 and upwardly for supporting the container 18, which is provided with three-sided sockets 27 to receive the
100 arms 26. The ends of the arms are beveled as shown in Figure 1.

A similar casting 23 is mounted on the inside of the top 15 at the center thereof and is held in place by means of a screw
105 bolt 28 which is extended through the top 15 into the casting 23 under consideration.

The screw bolt 28 has a handle 29 for conveniently manipulating it or lifting the entire device, and the top 15 is provided
110 with what may be called a spare socket 30 to receive and hold the screw bolt 29 when the

screw is removed from the casting 23. The screw bolt 28 and handle 29 can then be used for lifting the top 15.

The upper casting 23 is rigidly connected with the top 19 of the inner container 18 by wooden arms 26 similar to those already described and similarly arranged and connected.

I use wooden arms because they have little heat conductivity.

It will be noted that the upper screw bolt 28 can be readily removed and thereupon the top 15 can be taken off and the insulating material 22, which is above the container 18 can be removed for providing access thereto.

For supplying water to the container 18, I provide a short section of pipe 31, which has soldered or sweated on to its inner end a closure plug 32, which has a screw-threaded connection with a cylindrical extension 33 on the bottom 20 of the container 18. This connection is by free running threads, and a gasket 34 is interposed between the plug 32 and the socket of the extension 33 to keep out water and protect the threads from rust and scale. The plug 32 is provided with spaced holes or recesses 34 in its outer surface to receive a spanner wrench.

The container 12 has at its bottom an opening 35 large enough to permit the removal of the plug 32.

Fixed on the tube or pipe 31 is a disc or plate 36 received in the opening 35 when the parts are assembled, but of less diameter than that opening. This disc or plate should preferably be of some non-metallic substance so as not to injure the galvanizing in the thin wall of the inlet tube.

A cover plate 37 is fastened to the bottom of the container 12 for covering the opening 35, by means of screws 38. The plate 37 has a central hole 39 therein of substantially larger diameter than the pipe 31.

By the arrangement just described, some play of the pipe 31 with relation to the bottom of the container 12 is permitted. I preferably use a galvanized steel tube 31, as thin as is proper, to avoid loss of conducted heat. The described arrangement of the plate 36 will help to save the thin tube 31 from injury if its outer end is moved, as during transportation. The pipe 31 is connected by a fitting 40 with a water supply pipe 41. An inclined baffle plate 42 is spaced upwardly and inwardly from the inner end of the pipe 31, so that the water supplied to the container 12 will be spread laterally instead of being permitted to flow directly upwardly.

It will be seen from the foregoing that I have provided a large clean-out opening for the container 18 which can be made available for cleanout purposes by removing the plate 37, disconnecting the pipe 31 from the

pipe 41 and taking out the plug 32 and the pipe 31 and the loose insulating material 22 around the pipe 31. A short cleanout pipe can be screwed into the extension 34.

In the top 19 of the container 18 is a hole 43. A tubular extension 44 is welded to the top 19 around the hole 43 and has a screw plug 45 in its outer end.

An outlet pipe 46 is sweated and soldered into the extension 44 and is curved from thence downwardly and laterally therefrom as shown in Figures 1 and 4. The pipe 46 passes outwardly through a hole 47 in the wall of the container 12.

A guide collar 48, of material which will not least injure the galvanizing on the pipe 46, is fastened on the container 12 around the hole 47 so that the pipe 46 can be slid into this collar. The lower end of the pipe 46 is connected by a fitting 51 with an upwardly extending take-off pipe 52.

A baffle plate or strip 53, U-shaped in outline, is arranged with its central portion below the opening 43 to prevent the direct up flow of the water from the container 18 into the outlet pipe.

It will be seen that the dome shape of the top 19 and the downward inclination of the pipe 46 serves to trap hot water in the top of the container 18, which thus counteracts the tendency of the warm water to flow out of the container 18 and dissipate heat by warming the pipe during the periods when the water is not otherwise moving or being drawn out through the pipe 52.

I provide a thermostat controlled heating unit, the construction of which does not in itself form part of my invention, comprising the ordinary resistance unit 54 connected with the wires 55 and 56 of a circuit. Interposed in one of the wires is a thermostat 57 mounted in the wall of the container 18 adjacent to the point where the heating element is mounted on such wall.

The container 12 has a large opening 58 covered by a removable plate 59 to permit access to the heating unit and the thermostat, which are surrounded outside the casing 18 by the removable insulation 22.

It will be seen from the foregoing that when my device is assembled, it has a number of features of construction that make for convenience in assembling and disassembling, especially for the purposes of repairing and replacing parts.

For example, by removing the screw 28 and taking off the top 15 and taking out the insulation above the tank 18, it is possible to have access to the top of the tank 18 for replacing or repairing or cleaning the pipe 46 or the extension 44.

The manner of supporting the container 18 in the container 12 by means of the casting 23 and wooden legs minimizes the loss of heat by conductivity, while affording means

for holding the inner container in proper rigidly spaced position. The insulation used might be hair felt which is quite soft, and will not support much weight unless compressed. Compression of the hair is impractical, because it reduces its insulating properties.

I have already mentioned the convenience of the structure for cleanout purposes.

It will be noted that access can be had to the heating unit and the thermostat and to the inlet and outlet pipes.

Some changes may be made in the arrangement and construction of the various parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

By the use of the terms "wood" or "wooden" in my claims, I intend to include any strong material of very small heat conductivity.

I claim as my invention:

1. In a device of the class described, an outer container, an inner container received therein and spaced from the walls thereof, a member secured to the bottom of the inner container on the inner side thereof provided with a plurality of sockets, heat insulating arms received in said sockets and inclined upwardly in diverging relation, sockets on the underside of the inner container receiving said arms, spaced sockets on the top of the inner container, heat insulating arms received therein and converging upwardly, a removable cover for the outer container, and a detachable member secured on the under side thereof having sockets receiving

the ends of said last-described arms, and a member accessible from outside the cover for securing said last-described member in position.

2. In a device of the class described, an outer container, an inner container received therein and spaced from the walls thereof, insulating material between said containers, rigid heat insulating arms between the bottoms of the containers, a removable cover member for the outer container, rigid heat insulating arms projecting upwardly from the top of the inner container and converging toward each other at their upper ends, a member on the under side of said cover having sockets for receiving the ends of said last-described arms, and means accessible from outside the cover for detachably holding said last-named member in position with relation to the cover.

3. In a device of the class described, an outer container, an inner container received therein and spaced from the walls thereof, heat insulating means for holding said containers in spaced relation, a cylindrical extension projecting from the bottom of the inner container, a plug having a screw-threaded connection therewith, a pipe projecting through said plug and extending through the wall of the outer container, said outer container wall having an opening, a plate on said pipe of smaller diameter than the opening, and a second plate secured to the wall of the outer container for covering said opening, having a central opening to receive the pipe of less diameter than said first opening.

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PERCY GRAY.