

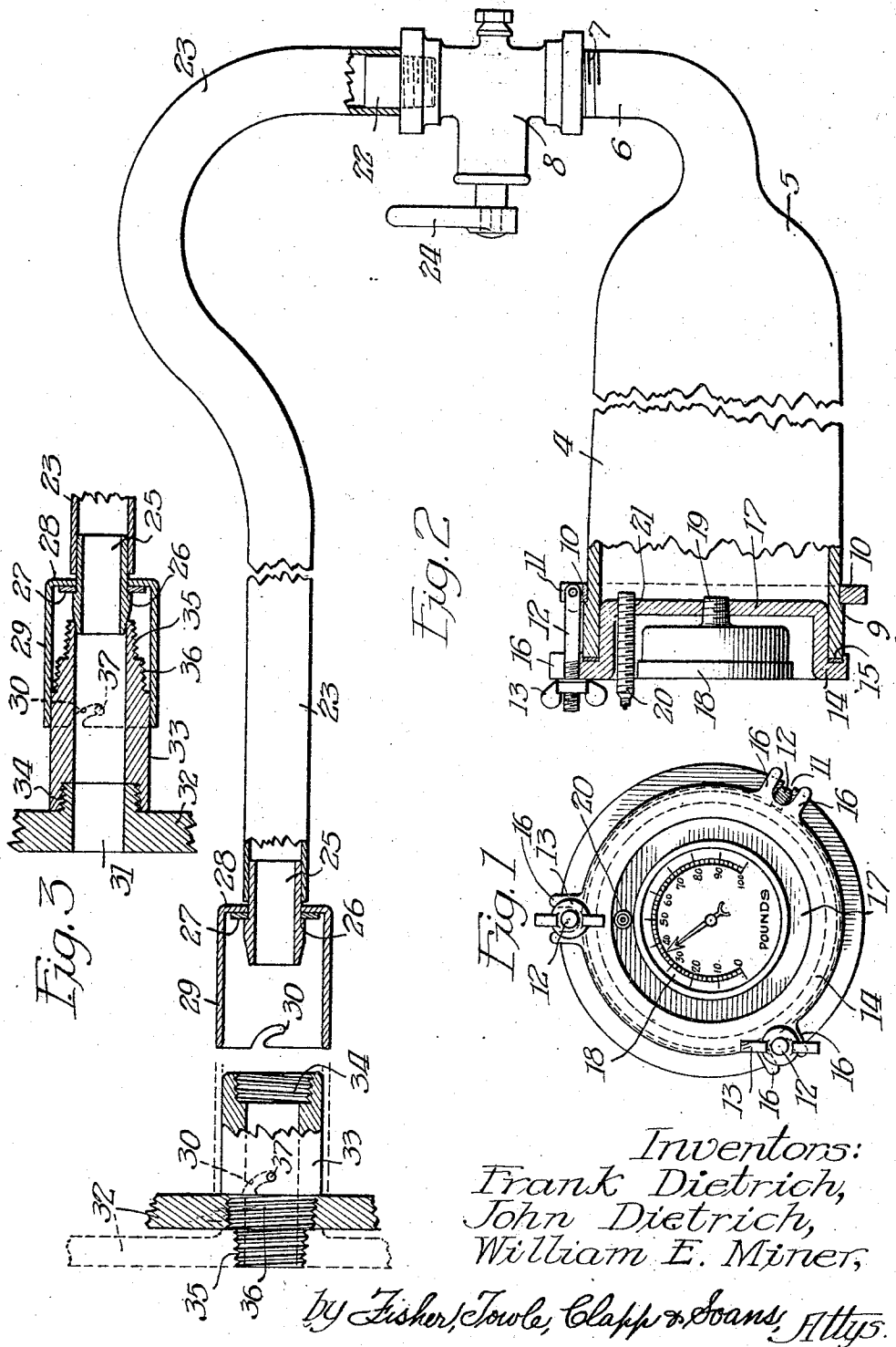
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DIRECT MIXER

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DIRECT MIXER.

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This invention relates to a direct mixer or apparatus for forcing a boiler liquid, i. e. "dope" or leak-preventing fluid, boiler cleaner or any liquid into a hot-water boiler, steam boiler, tank, or receptacle of any kind or nature to thoroughly mix with the water therein, whereby it becomes necessary to force said liquid or substance against an internal pressure without draining any of the water out or without lowering the pressure inside of the container in which the liquid or material is to be forced.

Among the objects of the invention are to provide a simple device by which the dope or cleaner can be forced into the boiler under pressure and directly mixed with the water therein in connection with a hot-water or steam-heating system, without removing or draining the water or exhausting the steam from the boiler or system, thus obviating the objections to the old method and saving considerable time, labor, and cost; to provide a device by which the boiler liquid or the like can be readily placed in a tank or container under pressure; to indicate the pressure so that it can be seen when the inflation is complete; to provide a pressure gauge and protect the same from injury; to provide a construction which insures discharge of the boiler liquid ahead of and without displacing the air; to provide a control for the discharge of the boiler liquid; to provide a novel adapter or coupling to connect the device through its flexible hose or tube to a boiler drain opening or faucet in different positions or crowded places; and to generally provide an improved device of the character specified.

Other objects and advantages of the invention will be understood by reference to the following specification when considered in connection with the accompanying drawings, on which:—

Fig. 1 is a top plan view of the container comprising part of the mixer.

Fig. 2 is a sectional elevation of the complete device; and

Fig. 3 is a sectional view showing another form of connection.

Referring to the drawings in detail, the apparatus is shown as embodying a tank or container 4 in the form of a tubular-shaped casting of metal or other material adapted to withstand pressure and of such size as to hold the required volume of the boiler liquid or cleaner and to permit the same to

be placed under pressure. This tank at its open or cap end is machined square and tapering slightly toward its opposite end, which has a tapered or funnel-like discharge portion 5 drawn out to provide a laterally extending discharge opening or outlet 6 on which the device is adapted to rest when in use, with the tank or barrel in an upright position and threaded at 7 for connecting to a shut-off valve 8 for holding the liquid when under pressure until ready for its release and discharge.

The mouth or open end of the tank is formed with an external enlargement or shoulder 9 turned down or otherwise provided on the barrel, against which a ring 10 is fitted, the ring having slotted or bifurcated ears or lugs 11, preferably three in number, in which are pivoted the flattened ends of bolts or eye-bolts 12 on which wing or thumb nuts 13 are threaded, said bolts being adapted to swing toward and away from the container and when disposed alongside of the wall of the latter at the annular enlargement 9, to project beyond the mouth edge. A cap 14 is fitted against this edge and has a groove machined in the underside to receive an interposed lead packing washer or gasket 15 to form an air and liquid-tight joint when the cap or cover is bolted down. The cap also has a series of bifurcated lugs 16 corresponding in number and position to the lugs 11 and bolts 12, which latter are adapted to swing into the furcations of the lugs 16 whereby the cap may be tightly clamped into position by the nuts 13 with interposed washers, to seal the contents, as well as to permit easy and convenient removal of the cap for pouring the boiler liquid or cleaner into the tank and replacement of the cap to permit inflation, as will be subsequently described. Owing to the taper of the barrel, the ring 10 can be readily slipped over the same up to the shoulder 9.

The cap 14 preferably has a depressed portion 17 forming a recess in which a pressure gauge or indicator 18 is disposed and protected against injury, the gauge having a central bottom attachment stem 19 threaded in a central aperture in the depressed portion of the cap. An inflating valve 20 is threaded as at 21 in another threaded aperture in the depressed portion of the cap at one side of the gauge 18 and is of the usual or any preferred type adapted to be connected to an air line under pressure for

placing the liquid contents of the tank under pressure, which pressure may be readily ascertained from the gauge 18. The gauge and air valve are so placed that they do not project and will not be damaged by rough usage.

Connected to the shut-off or control valve 8, as through the medium of a threaded nipple 22, is a flexible tube or hose 23, preferably of composite flexible metal adapted to withstand proper pressure, the discharge of the fluid through which is controlled by the handle 24 of the valve. The opposite end of the tube 23 is fitted over or connected to a nipple 25 to which it may be brazed or otherwise permanently or detachably joined. This nipple has an enlarged portion or shoulder 26, against which a washer 27 is fitted for contact by the adjacent end wall 28 of a cup-shaped member 29 constituting a part of an adapter or special connection by which the apparatus may be connected to a boiler drain or other container. The end wall 28 is positioned between the washer 27 and the adjacent end of the tube 23 and the opposite end is freely open and provided with opposite curved or bayonet slots 30.

In order to connect the device to the drain opening 31 of a boiler or other tank 32, an adapter or coupling 33 is provided having one end provided with internal threads 34 and the other end provided with external threads 35 and 36 of different standard sizes and also formed intermediately and at diametrically opposite sides with pins or lugs 37 for co-action with the bayonet slots 30 in reverse positions. Flexible hose is used so that no matter in what position the opening for injecting into is located, connection can be made instantly and without the use of any auxiliary parts or tools whatever. Connection at the end of the hose consists of a solid steel piece of cylindrical material having a hole drilled through the center, one end having a shoulder turned down and threaded to receive either a one-half or three-quarter inch female drain connection, while the opposite end is tapped out to receive a one-half inch hose bibb. Two pins are located at right angles to the cylinder for receiving the coupling attached to the end of flexible hose. These pins are placed in such a position that coupling may be applied over either end.

In Fig. 2 the threaded portions 35 and 36 are shown engaged with plug openings, although the connection may be made with a valve or faucet usually provided on boilers, hot-water tanks and the like, for draining purposes. In Fig. 3 the internal threaded portion 34 is shown engaged with an externally threaded projection of the boiler wall, although it is to be understood that the internally threaded portion 34 may be engaged with external threads on a faucet

or the like. In either instance the tapered end of the portion 26 will extend into the coupling or adapter 33 and provide for the proper expulsion of the boiler liquid or cleaner under pressure from the container 4 upon opening the valve 7.

In the use of the device or apparatus, it is merely necessary to remove the cap of the tank or container, pour the boiler or leak-preventing liquid or cleaner into the cylindrical chamber to about half fill the same, attach the cap, and connect an inflating pump or air line to the inflating valve 20. Sufficient air is forced above the liquid through the air valve to expel all of liquid when stop-cock 8 is opened but leaving sufficient reserve air to equal the pressure existing inside of the boiler or object receiving the injection. When the proper pressure is obtained as indicated by the gauge 18, with the stop-cock or valve 8 closed, the pump or air line is disconnected. It is then only necessary to stand the device in an upright position, connect the same to the boiler, and open the valve 8, when the contents of the tank will be entirely forced into the boiler for direct mixing with the water therein and without the necessity of emptying or draining the heating system, boiler, or other container. Under the old practice, draining of the boiler and exhaust of steam, as well as opening of the radiator valves, is required, in addition to shutting down the heating system and refilling and firing. The present device obviates these and many other objections and furnishes a handy appliance by which steamfitters or others can readily force the boiler liquid or cleaner into a boiler or the like.

While we have shown and described our invention in a preferred form, we are aware that various changes and modifications may be made without departing from the principles of the invention, the scope of which may be determined by reference to the appended claims.

We claim as our invention:

1. A mixer of the type described, comprising a container adapted to hold a leak-preventing fluid and having a relatively large filling opening in the top thereof, a detachable closure for said opening, said closure having means permitting air under pressure to be supplied to the container, said container being symmetrically tapered from top to bottom to facilitate the discharge of fluid therefrom, the bottom portion of said container converging to a funnel-shaped member, the discharge end of which extends laterally from said container and is provided with a valve to control the discharge of fluid from the container.

2. A mixer of the type described, comprising a container adapted to hold a leak-preventing fluid, a filling opening at the top of

the container, a closure for said opening, said closure having means permitting air under pressure to be supplied to the container, said container being symmetrically tapered from top to bottom to facilitate the discharge of fluid therefrom, the bottom portion of said container having symmetrically converging walls to form a funnel-shaped portion leading to a discharge element integral with the container and extending laterally therefrom, and a valve in the discharge element for controlling the discharge of fluid from the container.

3. A direct mixer for instantaneously discharging and forcing a leak-preventing fluid, boiler cleaner, or the like, into a hot water or steam boiler or tank against an internal pressure or pressure head therein for mixing therewith, comprising a hollow container adapted to hold the fluid and having a relatively large filling opening in the top thereof, a quick detachable closure for said opening having means permitting air under pressure to be supplied to the container, said container being symmetrically tapered to a rigid horizontal outlet at the bottom extending continuously outwardly substantially at right angles to the container and adapted to support the container in an upright position in use, a quick opening valve in the outlet to control the discharge of fluid from the container, a flexible pipe connected to the outlet, and means at the free end of the pipe to connect the same to a boiler or tank drain.

4. A device of the class described, comprising a pressure tank having a tapered outlet end, a valved discharge tube leading therefrom, said tank having a relatively large filling opening, a cap over said opening, clamping members detachably securing

said cap in air and fluid-tight connection with the tank, said cap having a depression, a pressure indicator set in the depression for indicating pressure within the tank and an inflating valve connected to the cap.

5. A mixer of the class described, comprising a tapered container having a valved outlet and a tube leading therefrom, a fitting on the end of the outlet tube for connecting the same to a boiler drain or the like, said container having an open end and a shoulder adjacent thereto, a ring on the container and abutting the shoulder, a cap over said open end, quickly detachable means carried by the ring and engaging the cap to secure the latter in fluid-tight connection with the container, pressure-indicating means for the container and an inflating valve on the container.

6. A mixer of the class described, comprising a container having a valved outlet and a tube leading therefrom, a fitting on the end of the outlet tube for connecting the same to a boiler drain or the like, said container having a shoulder, a ring on the container and abutting the shoulder, eye-bolts connected to the ring to swing toward and away from the container, a cap on the container having a recess, a pressure gauge set in the recess and connected to the cap for communication with the interior of the container, an inflating valve also connected to the cap in the recess, said cap having bifurcated lugs for receiving the bolts and nuts on the bolts for clamping the cap in air-tight connection with the container.

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