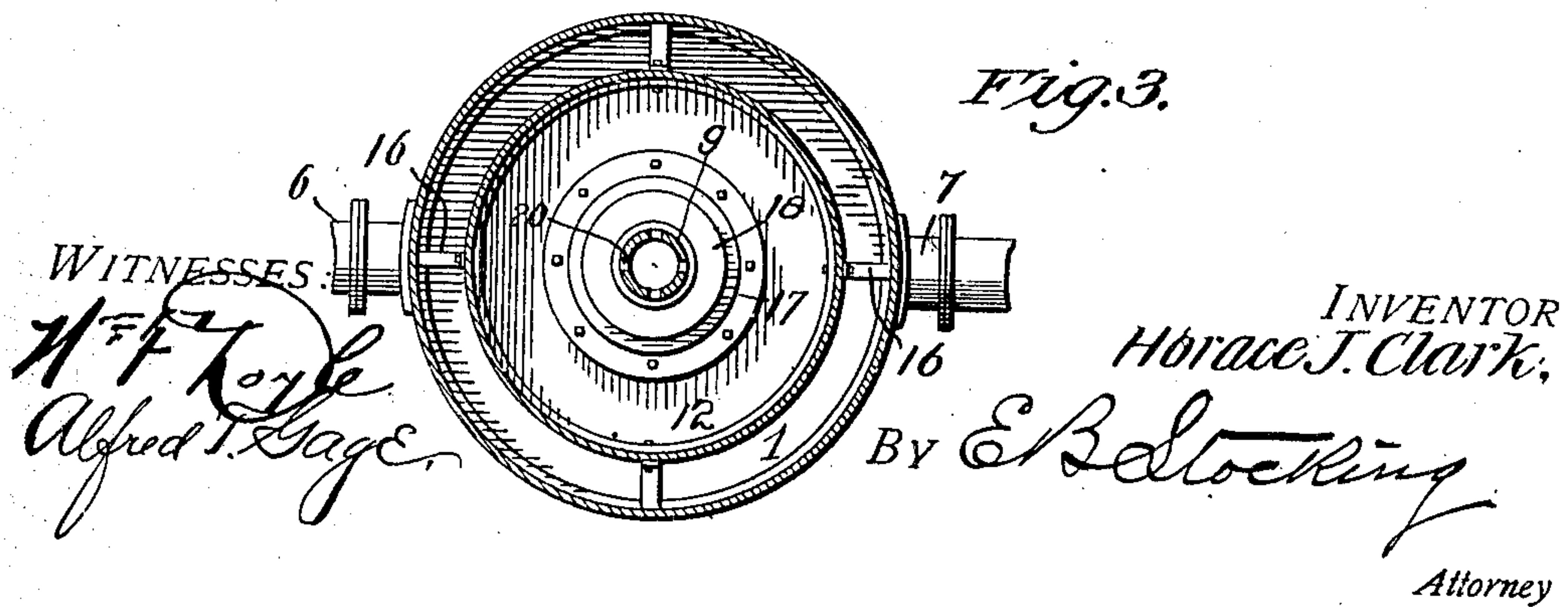
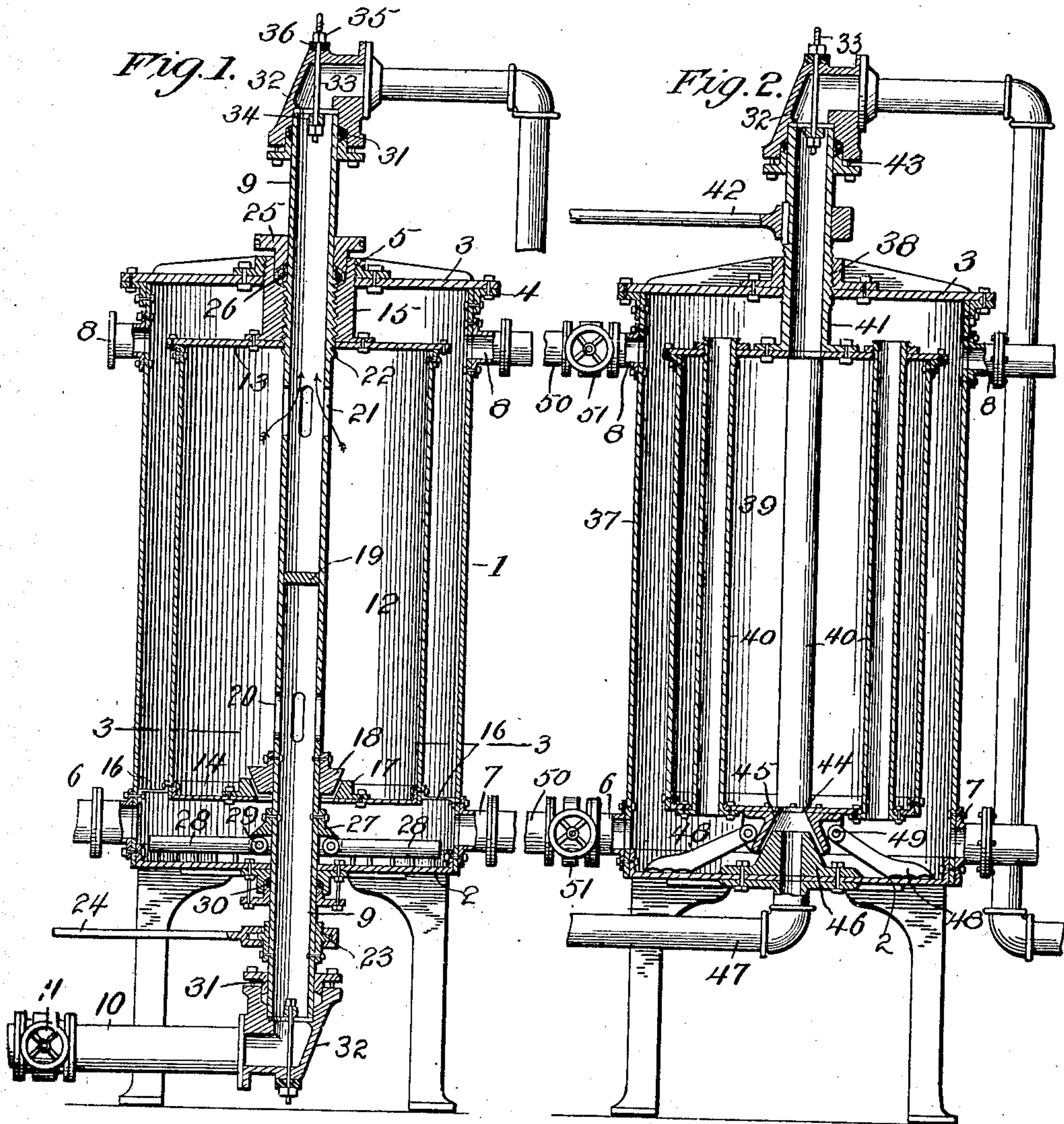


No. 872,222.

PATENTED NOV. 26, 1907.

H. J. CLARK.
BOILER WASHOUT SYSTEM.
APPLICATION FILED MAR. 27, 1907.



UNITED STATES PATENT OFFICE.

HORACE J. CLARK, OF CHICAGO, ILLINOIS.

BOILER WASHOUT SYSTEM.

No. 872,222.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed March 27, 1907. Serial No. 364,922.

To all whom it may concern:

Be it known that I, HORACE J. CLARK, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Boiler Washout Systems, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to a boiler washout system, and particularly to a heating apparatus whereby the water from the boiler heats that to be injected therein.

The invention has for an object to provide 15 an outer drum adapted to receive heated water from the engine boiler, and an inner drum to receive water to be heated and provided with means adapted to be rotated and carrying scrapers bearing upon the lower 20 head of the outer drum.

A further object of the invention is to provide a valve connection between the feed pipe and the lower portion of the inner drum so that the pipe may be lifted therefrom to 25 permit a flow of clear water against the bottom of the outer drum to loosen or remove any adhering substance.

Other and further objects and advantages of the invention will be hereinafter set forth 30 and the novel features thereof defined by the appended claims.

In the drawing:—Figure 1 is a vertical section through one form of the heaters; Fig. 2 is a similar view of a modified form of heater, 35 and Fig. 3 is a horizontal section on the line 3—3, Fig. 1.

Like numerals refer to like parts in the several views of the drawing.

Referring to the preferred form of the invention shown in Fig. 1, the numeral 1 designates the outer drum or cylinder which may be of any desired construction or configuration, preferably provided with the lower flanged head 2 secured therein, and the upper 45 cap or head 3 bolted to the angle flange 4 carried by the upper end of the outer drum. This head is provided with a central threaded socket 5 as hereinafter described. The outer drum is provided at its lower portion 50 with an inlet 6 and an outlet 7 at the opposite sides thereof, and with similar connections 8 at its upper portion in order that a series of heaters may be connected together. The bottom 2 of the outer drum is provided

with the clear water inlet or feed pipe 9 55 which communicates with the pressure main 10 provided with the controlling valve 11 therein. The inner drum 12, which may be of any preferred construction, for instance provided with the upper head 13 and the 60 lower head 14 is spaced and supported from the outer drum at its upper portion by the interiorly threaded block 15 and at its lower portion by the braces 16. The bottom of the inner drum is provided with the valve seat 17 65 adapted to cooperate with the valve 18 carried by the feed pipe 9. This feed pipe extends upward through the entire heater and is provided with a partition 19 and outlet openings 20 below said partition so as to 70 cause a flow of water from this pipe into the lower portion of the inner drum, while openings 21 are provided with a discharge portion above the partition for the discharge of heated water from the upper part of the 75 drum.

The feed pipe is mounted for rotative movement and also a simultaneous raising movement by means of the threads 22 thereon which engage the interior of the 80 block 15, and the pipe may be rotated by any suitable connection, for instance the ordinary reversible pawl and ratchet connection 23 having the operating handle 24 and connected to the pipe at its lower portion. The 85 block 15 is provided with a follower 25 thereon to engage a compressible packing 26 carried by the upper portion of the block so as to effect a tight joint between the parts. Secured to the lower portion of the feed pipe 90 adjacent to the bottom of the outer drum is a ring 27 upon which a series of scraper arms 28 are pivotally mounted at 29, and their free ends are always adapted to contact with the bottom of the outer drum. The under 95 face of this bottom is provided with the packing 30 through which the pipe travels in its rotative and vertical movement.

In order to permit the movement of the feed pipe relative to its fixed connections a 100 packed joint 31 is provided at the upper and lower portions thereof and comprises a coupling 32 communicating with the conducting pipe. In order to prevent this coupling being disengaged from the feed pipe by the 105 pressure a rod 33 extends downward from the upper portion thereof and engages the cross bar 34 carried by the feed pipe 9, while

the extent of play or travel is adjusted or determined by a nut 35 and a compressible packing 36 which permits the necessary movement.

5 In the modified form of the invention shown in Fig. 2 the outer drum 37 is similar in construction to that described in connection with Fig. 1, while the head 3 thereof is provided with a threaded socket 38. The
10 inner drum 39 in this form may be provided with the circulating pipes 40 therethrough, and is provided at its upper portion with the exteriorly threaded pipe 41 engaging the socket 38. An operating lever 42 is secured
15 to this pipe, and the upper end of this pipe is disposed in a packed connection 43 similar to that described in connection with Fig. 1. The lower end of the inner drum is provided with an inlet opening 44 and a conical valve
20 45 beneath the same adapted to cooperate with the valve seat 46 secured to the upper face of the bottom of the outer drum and communicating with the pressure pipe 47 for feeding clear water thereto. This valve 45
25 is provided on its outer periphery with a series of scraper arms 48 pivoted thereto at 49 to engage the lower face of the outer drum. When a series of heaters are to be connected together a pipe 50 may be used for that purpose and provided with a controlling valve
30 51. In the operation of this modified form it will be seen that the inner drum is rotated and raised to effect the scraping and discharge of water upon the bottom of the outer
35 drum, while in Fig. 1 the feed pipe is rotated and raised for that purpose.

In the operation of the invention, the water from the boiler to be washed out is introduced into the outer drum through the
40 pipe at its lower portion and rises to any predetermined level therein. When a series of heaters are used in communication this common level of the heated water from the boiler is maintained in all of them. The clear or
45 clean water for introduction into the boiler enters through the feed pipe and in passing through the inner drum is heated by the surrounding body of water in the outer drum and passes through the conducting pipe and
50 series of heaters until it reaches the engine boiler where it is to be introduced. In an apparatus of this character where the water charged with mud or other solids is removed from the engine boiler this foreign matter
55 quickly collects at the bottom of the heater and eats or destroys the drum thereof so that the present invention contemplates means for washing out the outer drum and loosening the mud therefrom at proper intervals.
60 For this purpose the scrapers are carried by the rotatable device which in its movement carries the scrapers over the face of the bottom of the outer drum and effectually loosens any mud or adhering material therefrom,
65 and opens the socket connection with the

feed pipe which is under pressure, and thus direct a stream or jet of clear water downwardly upon the bottom of the outer drum to wash out any mud or foreign material which may be thereon. When the cleaning
70 operation is effected it is only necessary to again lower the device by means of the handle provided when the inlet connection is made secure and the heating action continues in the manner described. The connection of the discharge from the inner drum
75 with the conducting pipe provides means for its vertical movement without disarranging or disconnecting this pipe and thus provides a structure of water heater in which the
80 parts of the drum may be readily accessible for repair, and the washing of the drum rendered perfectly simple and easy so that their corrosion is avoided. With the inner drum filled with clean water under pressure the
85 heated water from the engine boiler is blown into the outer drum and surrounds the inner drum and thus heats the clean water which is introduced into the boiler as the muddy or
90 unclean water is removed therefrom, and the feed water can thus be fed to the boiler at a temperature of about 112 degrees. If it be desired to use the scrapers without the introduction of water, the latter may be cut off by
95 the valve in the pressure feed pipe.

Having described my invention and set forth its merits what I claim and desire to secure by Letters Patent is:—

1. In a device of the class described, an outer drum, a rotary device mounted for
100 movement therein, scrapers carried by said device to engage the bottom of the outer drum and means for simultaneously feeding water upon said bottom.

2. In a device of the class described, an
105 outer drum, a rotary device mounted for vertical movement therein, and scrapers pivotally mounted upon said device and resting at their free ends upon the outer drum.

3. In a device of the class described, an
110 outer drum, an inner drum, a rotary device mounted for movement therein, scrapers carried by said device to engage the bottom of the outer drum, a valved inlet connection between the inner drum and said device, and
115 means for discharging from said connection in the rotary movement of said device.

4. In a device of the class described, an
120 outer drum, an inner drum, a feed pipe mounted for rotary movement therein, scrapers carried by the feed pipe to engage the bottom of the outer drum, a valve inlet connection between the pipe and inner drum, and means for raising said pipe during its rotary movement.

5. In a device of the class described, an
125 outer drum, an inner drum, a feed pipe mounted for rotary movement therein, scrapers carried by the feed pipe to engage the bottom of the outer drum, a valved inlet
130

connection between the pipe and inner drum, a threaded discharge portion of said feed pipe from the inner drum, and a threaded socket for said discharge pipe carried by the upper 5 head of the outer drum.

6. In a device of the class described, an outer drum, an inner drum, a feed pipe mounted for rotary movement therein, scrapers carried by the feed pipe to engage 10 the bottom of the outer drum, a valved inlet connection between the pipe and inner drum, a threaded discharge portion of said feed pipe from the inner drum, a threaded socket for said discharge pipe carried by the upper 15 head of the outer drum, and operating means secured to said feed pipe for rotating the same.

7. In a device of the class described, an outer drum, an inner drum provided with a 20 valve member at its lower portion, an inlet pipe having a valve member cooperating with said drum member, and means for separating said valve members to permit a discharge upon the bottom of the outer drum.

8. In a device of the class described, an 25 outer drum, an inlet pipe provided with a valve member, an inner drum provided at its lower portion with a cooperating valve member to engage said pipe member, and means 30 for raising one of said members to permit discharge from said valve.

9. In a device of the class described, an outer drum provided with an inlet pipe at its 35 lower portion having a valve, an inner drum provided with a valve seat to receive said valve, and means for raising and lowering said pipe.

10. In a device of the class described, an 40 outer drum provided with an inlet pipe at its lower portion having a valve, an inner drum provided with a valve seat to receive said valve, means for raising and lowering said pipe, a discharge pipe from the upper portion of the inner drum, a packed coupling to re- 45 ceive the upper end of said discharge pipe,

and a tie rod extending from said coupling to said discharge pipe.

11. In a device of the class described, an outer drum, an inner drum, a discharge pipe from the upper portion of the inner drum, 50 means for raising and lowering said pipe, a packed coupling to receive the upper end of said discharge pipe, and a tie rod extending from said coupling to said discharge pipe.

12. In a device of the class described, an 55 outer drum provided with a feed pipe having at its lower portion an inlet valve member, an inner drum surrounding said feed pipe, a partition and apertures in said feed pipe within the inner drum, and a cooperating 60 valve member carried by the lower end of the inner drum.

13. In a device of the class described, an outer drum provided with a feed pipe having 65 at its lower portion an inlet valve member, an inner drum surrounding said feed pipe, a partition and apertures in said feed pipe within the inner drum, a cooperating valve member carried by the lower end of the inner 70 drum, a threaded discharge portion of the feed pipe extended beyond the inner drum, and a threaded socket upon the outer drum engaging said portion.

14. In a device of the class described, an outer drum having an inlet connection, an 75 inner drum communicating with said connection, and means for actuating said connection to permit discharge from the inner drum into the outer drum.

15. In a device of the class described, an 80 outer drum, an inner drum mounted therein, and a rotatable device having a scraping arm to engage the bottom of the outer drum.

In testimony whereof I affix my signature in presence of two witnesses.

HORACE J. CLARK.

Witnesses:

WM. F. HOWE,
EDWARD B. COLBERG.