

No. 745,913.

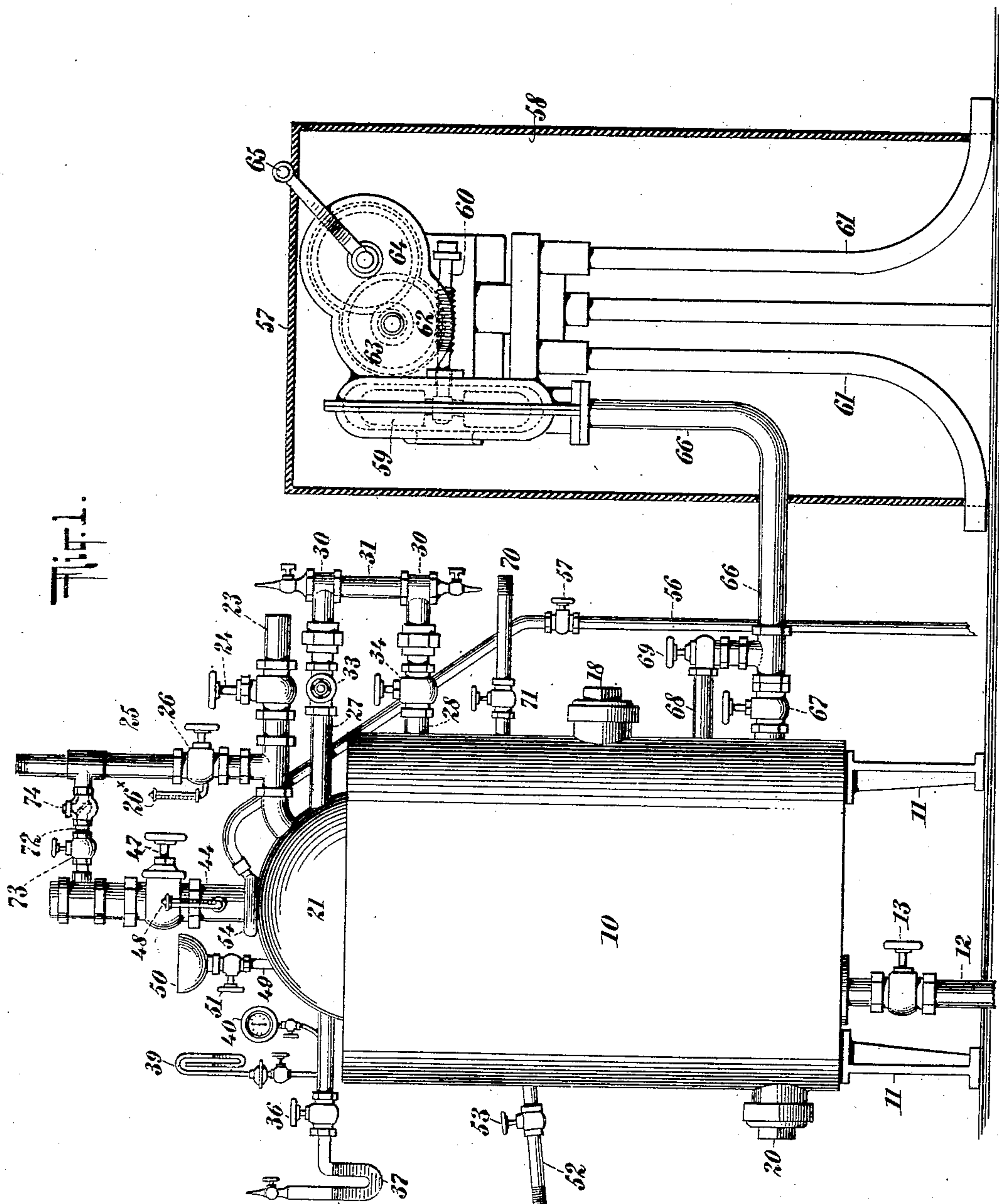
PATENTED DEC. 1, 1903.

M. SCHNAIER.  
TESTING AND FUMIGATING APPARATUS.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

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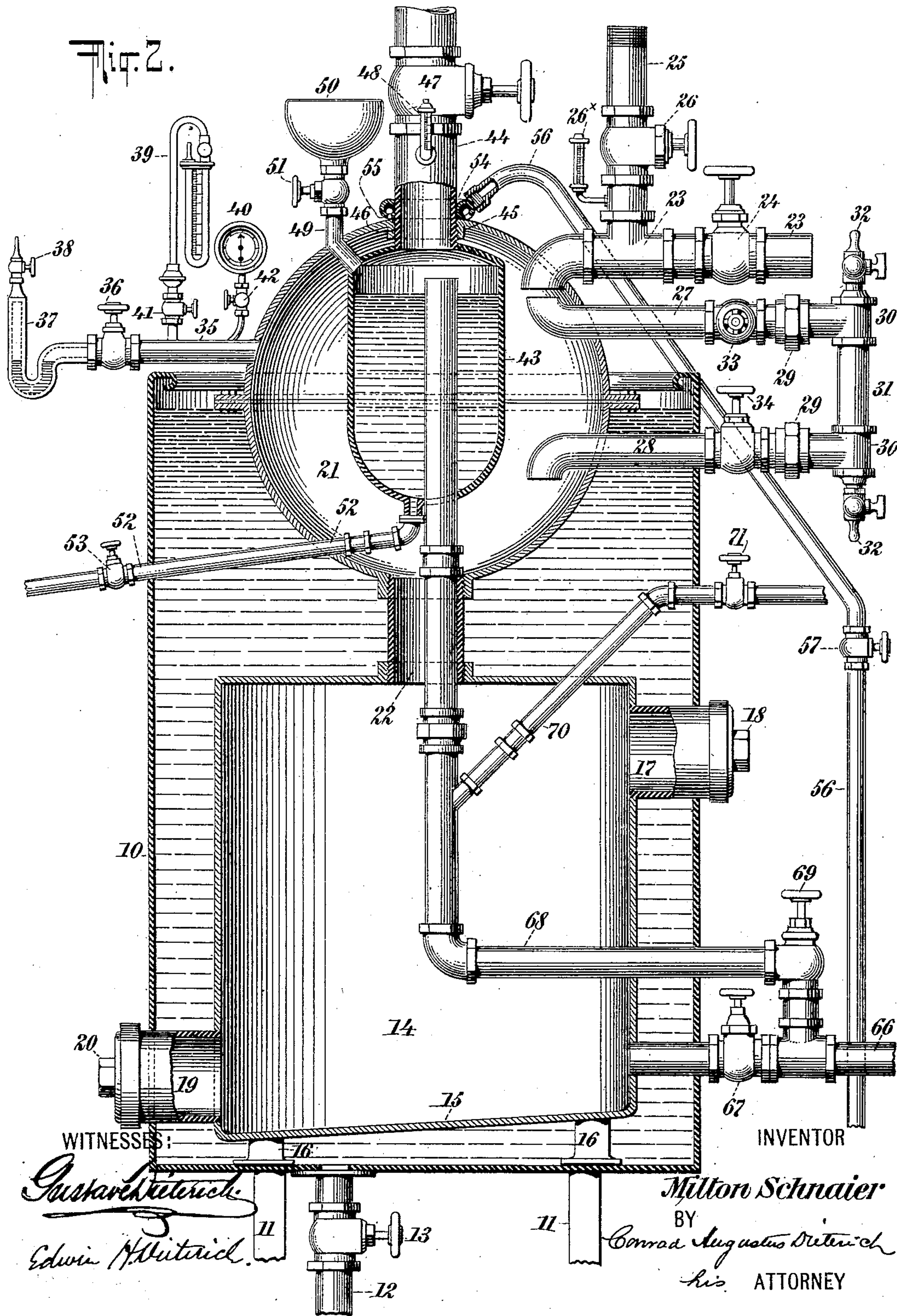
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

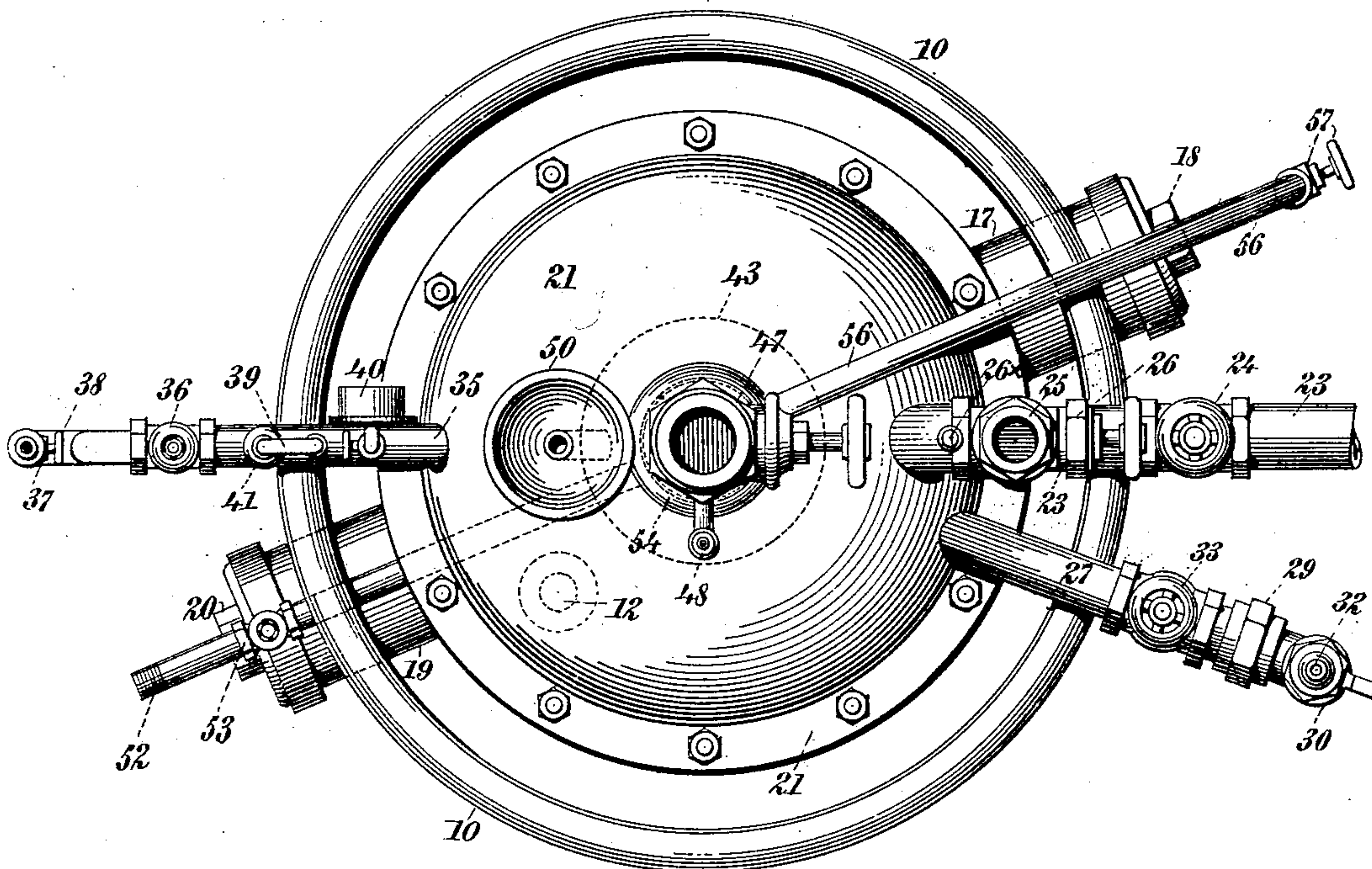
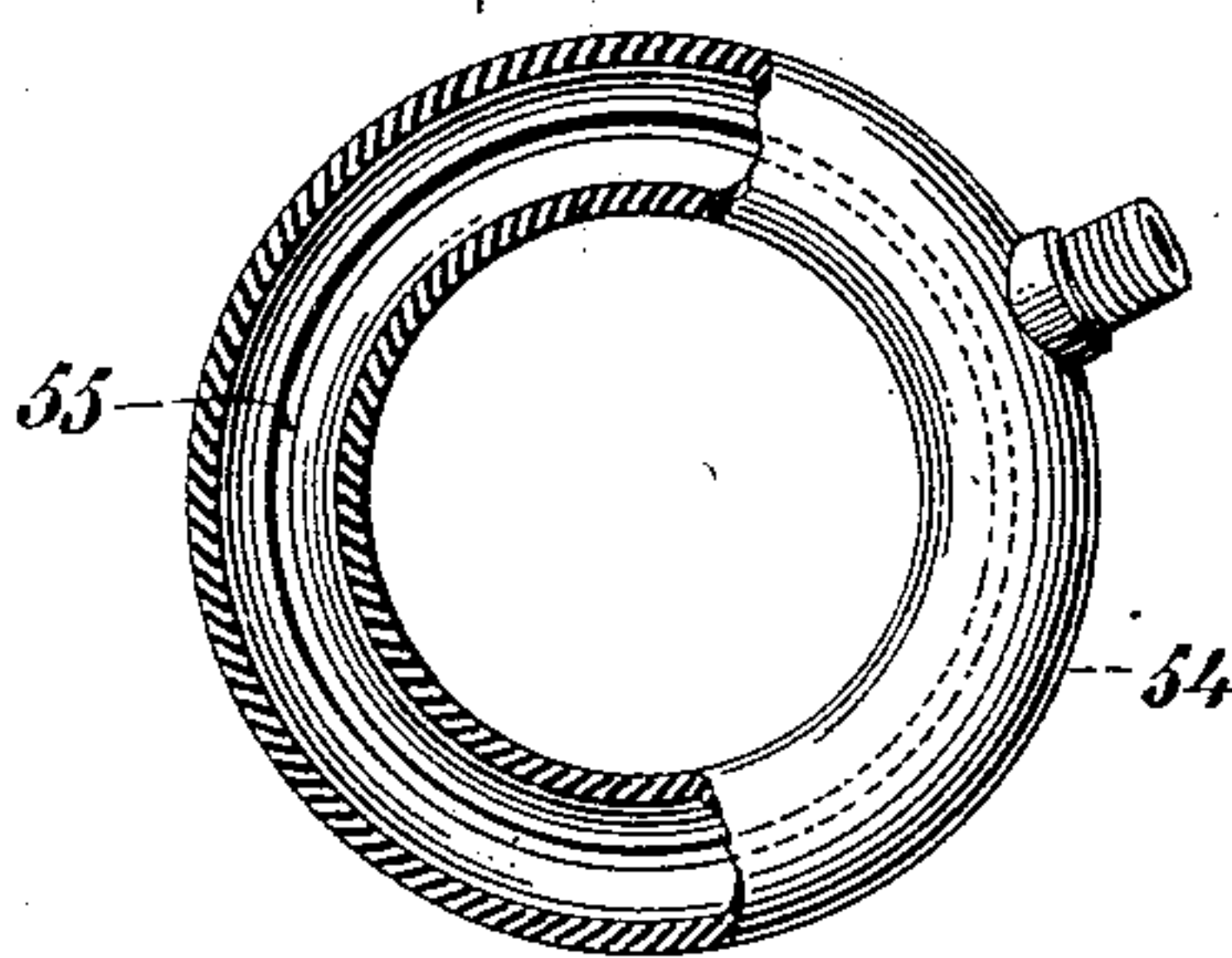


Fig. 4.



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# UNITED STATES PATENT OFFICE.

MILTON SCHNAIER, OF NEW YORK, N. Y.

## TESTING AND FUMIGATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 745,913, dated December 1, 1903.

Application filed March 2, 1903. Serial No. 145,706. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON SCHNAIER, a citizen of the United States, residing at the city of New York, borough of Manhattan, in the county and State of New York, have invented certain new and useful Improvements in Testing and Fumigating Apparatus, of which the following is a full, clear, and exact specification.

My invention relates to improvements in smoke-testing and fumigating or disinfecting apparatus of the character shown, described, and claimed in United States Letters Patent granted to me, dated September 21, 1897, No. 590,241; and my present invention has for its object to provide an efficient, durable, and readily-transportable apparatus by means of which plumbing-work may be efficiently tested in order to disclose defective workmanship or material and which apparatus may, when so desired, be readily converted into an apparatus adapted for fumigating and disinfecting apartments, buildings, and ships in order to destroy disease-germs therein.

To these ends my invention consists in the novel details of construction and in the combination, connection, and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, wherein like numerals of reference indicate like parts, Figure 1 is a side elevation, partly in section, showing a combined smoke-testing and fumigating apparatus made according to and embodying my invention. Fig. 2 is a central section of the apparatus detached from the air-forcing apparatus. Fig. 3 is a top view thereof; and Fig. 4 is a top view, partly in section, showing the construction of the spraying device.

In said drawings, 10 denotes an outer cylindrical receptacle supported upon legs 11 11 and provided at its bottom with a discharge-pipe 12, having a valve 13 therein, whereby to control the flow of the water from the interior of said receptacle. Within said receptacle 10 is arranged a fire-pot 14, having an inclined bottom 15 and supported within said receptacle 10 upon legs 16 16. Near the upper right-hand end of said fire-pot 14 is a fuel-inlet pipe 17, which extends through the wall

of the outer receptacle 10 and provided with a screw-plug 18 for sealing the same, and at the lower left-hand end of said fire-pot 14 is a similar pipe 19, which extends through the wall of the receptacle 10 and is provided with a screw-plug 20 for sealing the same, this latter pipe being provided for the purpose of giving access to the base of the fire-pot for the purpose of withdrawing the fire or removing the refuse therefrom.

21 denotes a spherical receptacle which is arranged partly within and partly without the receptacle 10 above the fire-pot 14 and connected thereto by a pipe 22. To the upper portion of said receptacle 21 is secured an uptake pipe or stack 23, having its inner end extending downwardly within said receptacle 21 and its outer end provided with a valve 24, and to the outer end of said pipe 23 intermediate its valve and the receptacle is connected a vertical pipe 25, provided with a valve 26 and thermometer 26<sup>x</sup>.

Directly below the pipe 23 is arranged a pipe 27, which is secured within said receptacle with its inner end extending inwardly and upwardly therein and terminating in proximity to the inner end of the pipe 23, and directly below said pipe 27 is secured a similar pipe 28, having its inner end extending inwardly and downwardly within the receptacle 21.

29 denotes unions arranged upon the outer projecting ends of the pipes 27 28, in which are secured the horizontal ends of T-joints 30, between the inner opposing ends of whose vertical portions is secured a glass section 31.

32 denotes petcocks connected to the T-joints 30 above and below the glass section 31 to permit the escape of smoke which may be trapped in the portion of the indicator intermediate the valves 33 34, arranged, respectively, in the pipes 27 28 intermediate the glass section 31 and the spherical receptacle 21. To the opposite side of the spherical receptacle 21 is secured a pipe 35, having a valve 36 secured to its outer end, to which is connected a glass trap 37, having a petcock 38 at its upper end, and 39 and 40 denote pressure-gages, connected to said pipe 35 intermediate the valve 36 and the spherical receptacle 21, the gage 39 being provided with a valve 41 and adapted to indicate the pres-



sure in ounces and the gage 40 provided with a valve 42 and adapted to indicate the pressure in pounds within the receptacle 21.

Within the spherical receptacle 21 is supported a fumigating-receptacle 43, adapted to receive a fumigating agent, such as formaldehyde, either in solution or in dry or tablet form, said receptacle being provided at its upper end with an outlet-pipe 44, provided adjacent to said receptacle 43 with screw-threads 45, adapted to engage the screw-threads 46 in the top of the spherical receptacle 21, whereby to support the receptacle 43 therein. 47 denotes a valve arranged in said outlet-pipe 44, and 48 denotes a thermometer secured to and extending into the pipe 44 to indicate the temperature of the fumigating agent passing therethrough. To one side of the pipe 44 is arranged a pipe 49, having one end connected to the receptacle 43 and its other end extending outwardly through the spherical receptacle 21 and provided at its end with a filling-cup 50 and intermediate said cup 50 and spherical receptacle 21 with a valve 51.

52 denotes a drain-pipe having its inner end connected to the bottom of the fumigating-receptacle 43 and its other end extending through the spherical receptacle 21 and the outer receptacle 10 and provided with a valve 53.

Arranged around the outlet-pipe 44 of the fumigating-receptacle 43 and resting upon the outer surface of the spherical receptacle 21 is a spraying device, consisting of an annular pipe 54, having an annular slit 55 in its under side and connected by a pipe 56, having a valve 57, to a source of cold-water supply.

Beside the receptacle 10 is arranged an air-forcing apparatus 57, comprising a housing 58, inclosing a blower 59, mounted upon one end of a worm-shaft 60, supported upon standards 61 and operated through the train of gearing 62 63 64 by means of the handle 65. From the blower 59 extends a pipe 66, which passes through the housing 58, through the receptacle 10, and is connected to the fire-pot 14 near its lower edge, and 67 denotes a valve arranged in the portion of said pipe 66 without the receptacle 10. From the pipe 66, intermediate its valve 67 and the blower 59, extends a branch pipe 68, provided with a valve 69, which pipe extends through the receptacle 10, fire-pot 14, connection 22, and is connected to the fumigating-receptacle 43, the upper end extending into the same almost to the top of said fumigating-receptacle 43, and 70 denotes a pipe provided with a valve 71, having one end connected with a source of steam or water supply and its other end extending through the receptacle 10 and fire-pot 14 and connected to the portion of the branch pipe 68 within the fire-pot 14.

72 denotes a pipe connecting the outlet 25 of the spherical receptacle 21 with the outlet

44 of the fumigating-receptacle 21, provided with a valve 73 and back-pressure valve 74.

The operation of the apparatus is as follows: If the apparatus is to be used for fumigating and disinfecting, it simply becomes necessary to close all the valves and fill the receptacle 10 with water to about the height indicated at Fig. 2. Then open the valve 51 in the pipe 49, leading from the fumigating-receptacle 43 and fill said receptacle 43 with the fumigating agent (if in liquid form) by means of the cup 50 and pipe 49 to about the height indicated at Fig. 2, and thereupon close the valve 51. Then open the valve 24 of the pipe 23, which serves as an uptake pipe or stack for the fire-pot, remove the plug 18 of the fuel-inlet pipe 17, place a quantity of paper and charcoal in said fire-pot 14, ignite the same, and then open the valve 67 in the pipe 66, leading from the blower, open the valve 69 in the branch pipe 68, leading to the fumigating-receptacle 43, open valves 47 in the outlet-pipe 44 and 73 in the pipe 72 at the top of the apparatus, and then set the blower in operation and force air into the fire-pot 14 and at the same time force the vapors from the fumigating-receptacle 43 therefrom through its outlet 44. The operation of the blower is then continued in order to supply air to feed the fire, and as soon as the requisite degree of heat necessary to vaporize or volatilize the fumigating agent has been obtained (which may be learned by reference to the thermometer 48 in the outlet-pipe 44) the same is conducted to the place of discharge by means of a hose attached to the upper end of the outlet 25. At about the same time that the valve 24 in the uptake-pipe 23 is open the valve 57 in the cold-water-supply pipe 56 should be opened and water caused to be sprayed by the spraying-ring 54 over the outer surface of the receptacle 21 and a valve 13 in the outlet 12 at the bottom of the receptacle 10 open sufficiently to let the excess of water drain off.

Should the operation of fumigating be an extensive one and continue for some considerable length of time and it become necessary to ascertain whether the fumigating-receptacle 43 still contains any of the fumigating agent, the same may be readily determined by opening the valve 53 in the drain-pipe 52.

When the fumigating agent is in a powder or dry form, such as tablets, and it is desirable to moisten the same after it has been introduced in the receptacle 43, it simply becomes necessary to open the valve 71 in the pipe 70, which is connected with a source of steam or water supply, and force the steam or water into said receptacle with the hot air from the blower from the branch pipe 68.

As soon as the operation of fumigating has been completed the working of the blower is discontinued, the spraying-pipe 54 stopped by closing the valve 57 in the pipe 56, the hose disconnected from the outlet-pipes 44, and the plugs 18 and 20 of the fire-pot re-



moved and the fire and hot ashes withdrawn therefrom through the opening 19 and the entire apparatus permitted to cool down.

On the other hand, if the apparatus is to be used for the purpose of testing plumbing-work, assuming all the valves to be closed, it simply becomes necessary to insert a suitable smoke-producing agent in the fire-pot 14, ignite the same, close the pipes 17 and 19, open the valves 33 and 34 of the smoke-indicator, open the valve 67 in the pipe 66 and set the blower in operation, and then open either of the valves 41 or 42 of the gages 39 or 40, as may be required, and the valve 36 and petcock 38 of the gage 37, and then connect the end of the outlet-pipe 25 by a hose to the system to be tested and open the valve 26 in said pipe 25, leading from the receptacle 21, the pressure and temperature at which the smoke and gases are being forced into the system undergoing test being indicated by the gage in communication with the smoke-receptacle 21 and the thermometer 26<sup>x</sup> in the pipe 25 and the action of the apparatus upon the liquid seals of the traps in the system undergoing test indicated by the trap 37.

While it is not necessary to the operation of testing, it may nevertheless be desirable to fill the fumigating-receptacle 43 with water and open either of the valves 47 or 51 in the pipes leading therefrom in order to prevent the receptacle 43 from being injured by the heat from the fire-pot 14. As soon as the requisite quantity of smoke and gases has been forced into the system the valves 26 and 67 may be closed and the blower stopped and permitted to remain out of operation until further required.

Should the heat produced by the smoke-producing agent at any time become greater than necessary and liable to injure the spherical receptacle 43, it simply becomes necessary to open the valve 57 in the pipe 56 and set the sprayer 54 in operation and at the same time correspondingly open the valve 13 in the outlet 12 at the bottom of the receptacle 10 to draw off the excess of water from said receptacle.

After the test has been completed the fire is simply withdrawn from the fire-pot and the hose disconnected from the pipe 25.

Without limiting myself to the details of construction, which may be varied within the scope of the invention, what I claim, and desire to secure by Letters Patent, is—

1. An apparatus for the purposes specified comprising a fire-pot, a receptacle adapted to receive the produced heat, a sealed receptacle adapted to receive a fumigating agent, and means for forcing the fumigating agent disposed within the receptacle connected to the fire-pot, but having no communication therewith, from its receptacle, substantially as specified.

2. An apparatus for the purposes specified comprising a fire-pot, a receptacle communicating therewith, adapted to receive the pro-

duced heat, and a sealed receptacle adapted to receive a fumigating agent, disposed within and supported by the receptacle last named, but having no communication therewith, and means for forcing the fumigating agent from its receptacle, substantially as specified.

3. An apparatus for the purpose specified comprising a fire-pot, a receptacle communicating therewith adapted to receive the produced heat, a sealed receptacle adapted to receive a fumigating agent arranged partly within and partly without said receptacle but having no communication therewith, and means for forcing the fumigating agent from its receptacle, substantially as specified.

4. An apparatus for the purposes specified comprising a fire-pot, a receptacle communicating therewith having a valved outlet, a sealed receptacle adapted to receive a fumigating agent, supported therein but having no communication therewith, a valved outlet for said sealed receptacle, and an air-forcing apparatus connected to and communicating with the fire-pot and the sealed receptacle adapted to receive the fumigating agent, substantially as specified.

5. An apparatus for the purposes specified comprising a fire-pot, a receptacle connected thereto and communicating therewith, a valved outlet in said receptacle, a sealed receptacle adapted to receive a fumigating agent supported within said receptacle, a valved outlet in said last-named receptacle, an air-forcing apparatus and pipes connecting said air-forcing apparatus with said fire-pot and the receptacle adapted to receive the fumigating agent, substantially as specified.

6. An apparatus for the purposes specified comprising an outer receptacle having arranged therein a fire-pot, a receptacle connected thereto and communicating with said fire-pot, a valved outlet in said receptacle, a sealed receptacle adapted to receive a fumigating agent supported within the receptacle connected to the fire-pot, a valved outlet in said receptacle, and an air-forcing apparatus connected to and communicating with the fire-pot and the receptacle adapted to receive the fumigating agent, substantially as specified.

7. An apparatus for the purposes specified comprising a fire-pot, a receptacle connected thereto and communicating therewith, an outlet-pipe connected thereto having a valve therein, and a branch outlet provided with a valve and thermometer and connected to said outlet-pipe intermediate the valve therein and the receptacle, a sealed receptacle adapted to receive a fumigating agent arranged within the receptacle last named, having an outlet-pipe extending through said receptacle connected to the fire-pot, a valve arranged in said outlet-pipe, and a thermometer in said outlet-pipe intermediate its valve and the receptacle, a filling-pipe, and a discharge-pipe provided with valves and connected to said fumigating-receptacle, and an



air-forcing apparatus connected to and communicating with the fire-pot and the fumigating-receptacle, substantially as specified.

8. An apparatus for the purposes specified comprising a fire-pot, a receptacle connected thereto and communicating therewith, an outlet-pipe connected to said receptacle, a sealed receptacle adapted to receive a fumigating agent arranged within said receptacle last named, having an outlet-pipe extending through the receptacle connected to the fire-pot, a valve in said outlet-pipe, an air-forcing apparatus, connected to and communicating with said fire-pot and fumigating-receptacle, and a pipe connected with a source of fluid-supply and communicating with the fumigating-receptacle, substantially as specified.

9. An apparatus for the purposes specified comprising a fire-pot, a receptacle connected thereto and communicating therewith, an outlet-pipe connected to said receptacle having a valve therein, a branch pipe provided with a valve and connected to said outlet-pipe, a receptacle adapted to receive a fumigating agent arranged within said receptacle last named, having an outlet therein, an air-forcing apparatus, a pipe provided with a valve and connecting said air-forcing apparatus with the fire-pot, a branch pipe provided with a valve connected to said pipe intermediate its valve and the air-forcing apparatus, and extending through the fire-pot and into the fumigating-receptacle, and a pipe communicating with a source of fluid-supply and connected to said branch pipe intermediate the air-forcing apparatus and the fumigating-receptacle, substantially as specified.

10. An apparatus for the purposes specified comprising an outer receptacle provided with a valved outlet at its base and inclosing a fire-pot having an inlet and outlet, a receptacle arranged above said fire-pot and connected thereto, having an outlet-pipe provided with a valve, a branch pipe provided with a valve and connected to said outlet-pipe intermediate the valve therein and said receptacle, means for indicating the temperature, pressure and passage of the smoke and gases in and through said receptacle, a fumigating-receptacle arranged within said receptacle last named having an outlet therein, provided with a valve and thermometer, a valved filling-inlet, and a valved outlet in said fumigating-receptacle, a spraying device arranged upon said receptacle and surrounding the outlet in its top, a pipe provided with a valve and communicating with a source of water-supply, and a blower having a pipe provided with a valve connected to the fire-pot, a branch pipe provided with a valve connected

to said last-named pipe intermediate its valve and the blower, extending through the fire-pot and into the fumigating-receptacle, and a pipe communicating with a source of fluid-supply and connected within the fire-pot to the portion of the branch pipe therein leading from the blower, substantially as specified.

11. An apparatus for the purposes specified comprising an outer receptacle provided with a valved outlet at its base and inclosing a fire-pot having an inlet and outlet, a receptacle arranged above said fire-pot and connected thereto, having an outlet-pipe provided with a valve, a branch pipe provided with a valve and connected to said outlet-pipe intermediate the valve therein and said receptacle, means for indicating the temperature, pressure and passage of the smoke and gases in and through said receptacle, a fumigating-receptacle arranged within said receptacle last named having an outlet therein, provided with a valve and thermometer, a branch pipe having a valve and a check-valve therein connecting said outlet with the outlet of the receptacle connected to the fire-pot, a valved filling-inlet, and a valved outlet in said fumigating-receptacle, a spraying device arranged upon said receptacle and surrounding the outlet in its top, a pipe provided with a valve and communicating with a source of water-supply, and a blower having a pipe provided with a valve connected to the fire-pot, a branch pipe provided with a valve connected to said last-named pipe intermediate its valve and the blower, extending through the fire-pot and into the fumigating-receptacle, and a pipe communicating with a source of fluid-supply and connected within the fire-pot to the portion of the branch pipe therein leading from the blower, substantially as specified.

12. In an apparatus of the character specified, a smoke-indicator comprising a sectional pipe having its ends extending into the receptacle adapted to receive the produced smoke, one of said ends being turned downwardly toward the inlet, and the other of said pipes turned upwardly toward the outlet in said receptacle, a glass section arranged in the portion of said pipe without the receptacle, valves in said pipe intermediate said glass section and its ends, and cocks provided in said pipe intermediate the glass section and the valves aforesaid, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 25th day of February, 1903.

MILTON SCHNAIER.

Witnesses:

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F. SPENCER PERRY.