

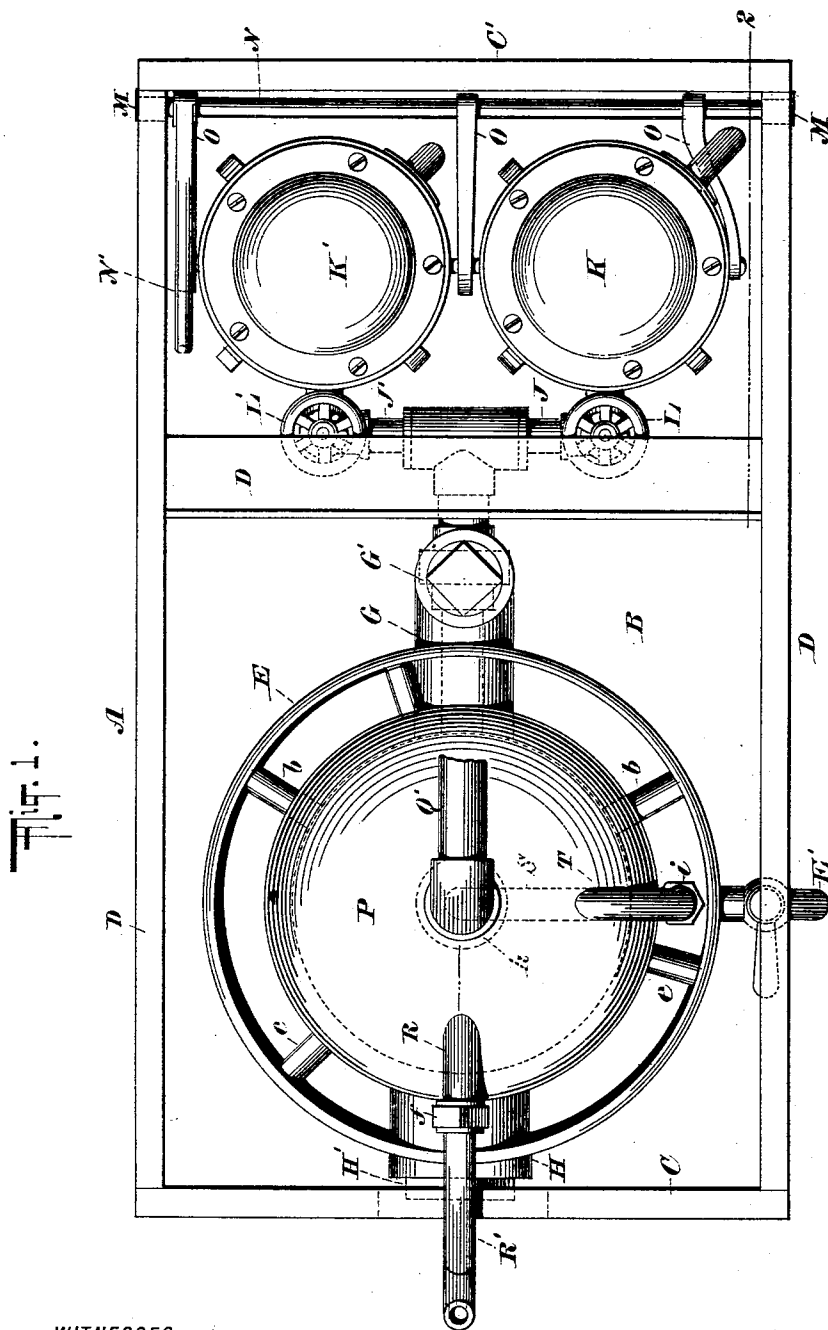
(No Model.)

2 Sheets—Sheet 1.

M. SCHNAIER.
PLUMBER'S SMOKE TEST APPARATUS.

No. 590,241.

Patented Sept. 21, 1897.



WITNESSES:

Gustave Dietrich
John Fehlebeck

INVENTOR

Milton Schnaier
BY
Augustus Dietrich
his ATTORNEY.

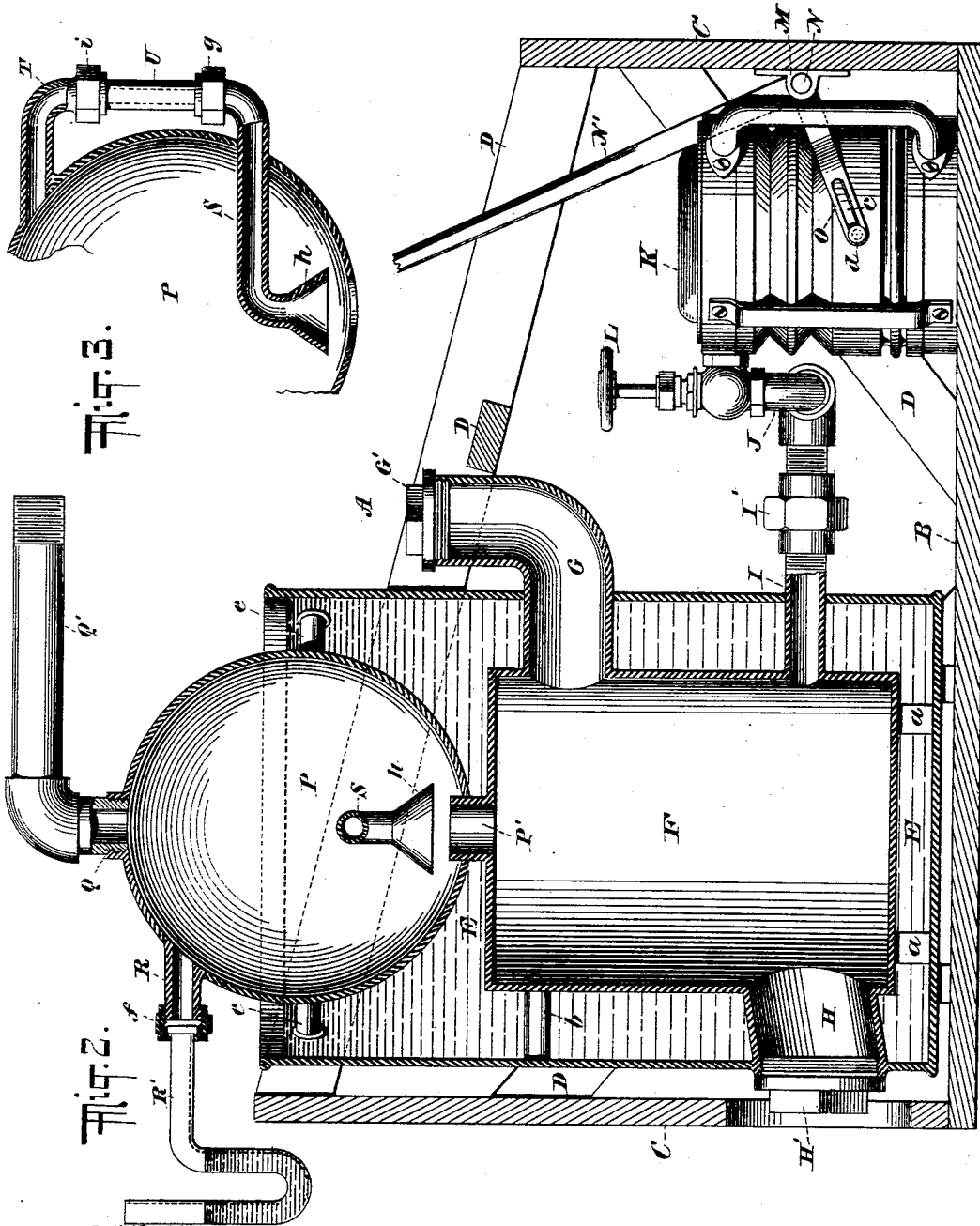
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UNITED STATES PATENT OFFICE.

MILTON SCHNAIER, OF NEW YORK, N. Y.

PLUMBER'S SMOKE-TEST APPARATUS.

SPECIFICATION forming part of Letters Patent No. 590,241, dated September 21, 1897.

Application filed July 14, 1896. Serial No. 599,154. (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, in the county and State of New York, have invented certain new and useful Improvements in Plumbers' Smoke-Test Apparatus, of which the following is a full, clear, and exact specification.

My invention relates to improvements in apparatus for testing the plumbing in buildings, especially the drainage system, in order to discover defective workmanship or material; and the invention has for its object more particularly to provide a simple and efficient apparatus for producing smoke for indicating the production or generation of smoke and for indicating the pressure under which the smoke is forced into plumbing during the period of operation.

The objects above set forth I am enabled to attain by means of my invention, which consists in the novel combination, connection, and arrangement of parts, and the details of construction, as hereinafter more fully set forth, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, wherein like letters of reference indicate like parts, Figure 1 is a plan or top view of my improved apparatus. Fig. 2 is a section thereof, taken on the line 2 2 of Fig. 1; and Fig. 3 is a detail section of a portion of the smoke-receptacle, showing the smoke-indicator thereto attached.

In said drawings, A designates a crate comprising the base B, ends C C', and connecting-stays D. Upon the base B, near the end C, is mounted a cylindrical receptacle or water-jacket E, which is provided near its base with a faucet E', whereby the water may be withdrawn from the said receptacle E. Within the water-jacket or receptacle E is arranged a fire-pot F, which is supported therein upon legs a a and maintained in position by braces b b. To one side of the fire-pot F, near its top, is connected a feed-pipe G, which extends through the side of the water-jacket E, and is provided at its outer or projecting end with a screw-plug G', and to the opposite side of said fire-pot F is connected an outlet-pipe H, which also extends through the side of the water-jacket E, and is provided at its outer or projecting end with a screw-plug H'.

To the side of the fire-pot F, beneath the feed-pipe G, is connected a pipe I, which extends through the side of the water-jacket E, and has its outer end connected by a nut I' and a T-joint with the pipes J J', connected to and communicating with the bellows K K', respectively, and L L' denote valves provided in the pipes J J', respectively, whereby to regulate the quantity of air admitted to the fire-pot by means of the bellows.

M M designate bearings secured upon the inner side of the end C' of the crate. N denotes a rock-shaft carried within said bearings provided at one end with an operating-lever N', and O O O denote arms having each one end secured to the rock-shaft N' and their projecting ends provided with slots c, into which extend the studs d, secured to the center partitions of the bellows K K'.

P designates a spherical smoke-receptacle which is disposed within the water-jacket E above the fire-pot F and connected to the latter by a short pipe P' and maintained in proper position within the water-jacket E by braces e e.

In the top of the smoke-receptacle P is provided a threaded opening Q, into which is fitted one end of a pipe Q', to the outer end of which the hose is attached communicating with the pipes to be tested.

Connected to the smoke-receptacle, at the side thereof, is a pipe R, which communicates with the interior of the receptacle and is provided at its outer end with a glass trap R', containing a liquid seal, said trap being secured to the pipe R by a packed nut f.

At the front of the smoke-receptacle is arranged the smoke-indicator, comprising a pipe S, which is arranged partly within and partly without the smoke-receptacle. At its inner end the said pipe S is provided with a flaring mouth or hood h, which is disposed above the upper end of the pipe P', connecting the fire-pot F with the smoke-receptacle P, and upon the outer or projecting end of the pipe S is a packed nut g. Above the pipe S is arranged a pipe T, communicating with the interior of the smoke-receptacle, having one end secured to said smoke-receptacle and its other end provided with a packed nut i, and U denotes a glass tube which is secured intermediate the projecting ends of the pipes S and T by

means of the packed nuts *g* and *i*, arranged upon the ends of said pipes.

The operation is as follows: It will of course be understood that before any test is made for the purpose of discovering leaky joints or defective material all the traps in the system to be tested should be properly sealed. To make the test, then, one end of a hose is secured to the end of the pipe *Q'* of the smoke-receptacle and the other end of the hose connected to the end of the fresh-air pipe, which is located outside of the building, generally beneath a grating in the sidewalk. Thereupon the water-jacket *E* is filled with water, as indicated at Fig. 2, and the feed-pipe *G* opened by removing the plug *G'* and inserting into the fire-pot *F* through said pipe *G* a quantity of smoke-producing material—for example, oily cotton waste—which is thereupon ignited and the feed-pipe *G* again sealed. The bellows are then operated by means of the operating-lever *N'* and air forced into the fire-pot, which thereby serves to keep the fire alive therein and at the same time force the smoke produced thereby first into the smoke-receptacle and partly through the smoke-indicator, and then, through the pipe *Q'* and the hose thereto attached, into the pipes to be tested. As soon as the smoke begins to issue from the vent-pipes on the roof the same are then sealed up and the forcing of smoke into the pipes continued until they are filled, whereupon the valves *LL* are closed. Should no defect exist and all the traps remain sealed during the operation of testing, no smoke can enter the building. However, should a defect exist the same will be readily detected either by the odor of the smoke or by the smoke itself, which can be seen issuing from the defect.

It will be observed that if no means were provided for indicating the pressure required to force the smoke into the pipes so much pressure might be introduced therein as to blow out the water in the traps, and thus cause the smoke to enter the building and render the operation of testing valueless. To obviate this, I provide the pressure-indicator *R'*, and so long as the liquid remains properly therein the operation of the bellows may be continued, but as soon as it rises too high, thus indicating too much pressure, the operation should be diminished or the valves *KK'* regulated accordingly.

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

1. An apparatus for the purposes specified comprising a receptacle adapted to receive a smoke-producing agent, a receptacle adapted to receive the produced smoke, a water-jacket surrounding said receptacles, and means for forcing the produced smoke from its receptacle, substantially as specified.

2. An apparatus for the purposes specified comprising a receptacle adapted to receive a

smoke-producing agent, a receptacle connected thereto adapted to receive the produced smoke, a smoke-outlet in said receptacle, means for indicating the production of smoke and the passage thereof through its receptacle, means for forcing the smoke from said receptacle, and means for indicating the pressure under which the smoke is forced from its receptacle, substantially as specified.

3. An apparatus for the purposes specified comprising a receptacle adapted to receive a smoke-producing agent, a receptacle adapted to receive the produced smoke disposed above the same and connected thereto, a smoke-outlet arranged therein, a water-jacket surrounding said receptacles, means secured to the smoke-receptacle for indicating the production of smoke and the passage thereof through said smoke-receptacle, means secured to said smoke-receptacle for indicating the pressure under which it is forced from its receptacle, and means for forcing the smoke from said receptacle, substantially as specified.

4. An apparatus for the purposes specified comprising a receptacle adapted to receive a smoke-producing agent, a receptacle adapted to receive the produced smoke disposed above the same, a smoke-outlet therein, a pipe connecting said receptacles, a water-jacket surrounding said receptacles, a smoke-indicator and a pressure-indicator connected to and communicating with said smoke-receptacle, and means for forcing the smoke from its receptacle through the outlet therein, substantially as specified.

5. An apparatus for the purposes specified comprising a fire-pot provided with an inlet and an outlet, a smoke-receptacle having an outlet therein and disposed above the fire-pot, a pipe connecting said fire-pot and smoke-receptacle, a water-jacket surrounding said fire-pot and smoke-receptacle, a smoke-indicating device, and a pressure-indicating device, both attached to and communicating with said smoke-receptacle, and bellows provided with valves and pipes connecting said bellows with the fire-pot, substantially as specified.

6. An apparatus for the purposes specified, comprising a fire-pot provided with an inlet and an outlet, plugs for sealing the same, a smoke-receptacle having a smoke-outlet therein and disposed above said fire-pot, a pipe connecting said fire-pot and smoke-receptacle, a water-jacket surrounding said fire-pot and smoke-receptacle, a smoke-indicator comprising a pipe secured to said smoke-receptacle and arranged partly within and partly without the same, and provided at its inner end with a flaring mouth or hood, a pipe secured to said smoke-receptacle projecting outwardly therefrom, and a transparent tube arranged intermediate the outwardly-projecting ends of the aforesaid pipes, a pressure-indicator comprising a pipe secured to the smoke-receptacle, and a trap secured to the projecting end of said pipe containing a liquid seal, and a pair of bellows provided with

valves and pipes connecting said bellows with the fire-pot, substantially as specified.

7. In an apparatus for the purposes specified, the fire-pot in combination with a smoke-
5 receptacle and a sectional pipe arranged partly within and partly without the smoke-receptacle, and provided within the receptacle with a hood, and without the receptacle
10 with a transparent section, substantially as specified.

8. In an apparatus for the purposes specified the fire-pot in combination with a smoke-receptacle and pipes secured to and communicating with said receptacle, one of said pipes
15 being disposed partly within and partly with-

out the receptacle and provided at its inner end with a hood, and at its outer end with a packed nut, and a pipe secured to said receptacle projecting outwardly therefrom, a packed nut at its projecting end, and a glass
20 tube secured by the packed nuts intermediate the projecting ends of the aforesaid pipes, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 11th day
25 of July, 1896.

MILTON SCHNAIER.

Witnesses:

GUSTAVE DIETERICH,
JOHN KEHLENBECK.