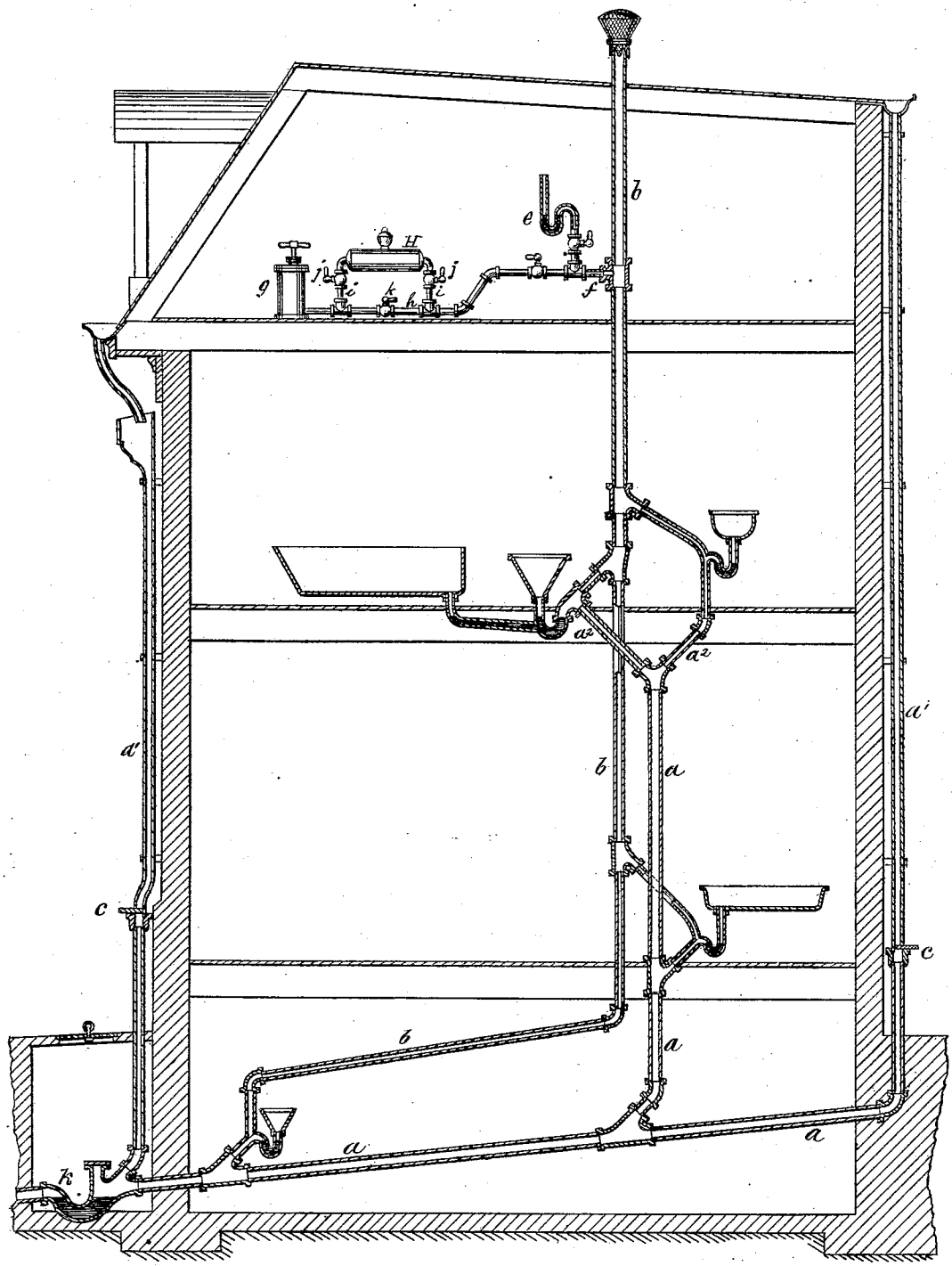
(No Model.)

F. TUDOR.

TESTING DRAIN PIPES.

No. 243,741. Patented July 5, 1881.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERIC TUDOR, OF NEW YORK, N. Y.

TESTING DRAIN-PIPES.

SPECIFICATION forming part of Letters Patent No. 243,741, dated July 5, 1881.

Application filed December 24, 1880. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC TUDOR, of New York city, New York, have invented certain new and useful Improvement in Testing Drain-Pipes, of which the following is a specification.

It is well known that the leakage of sewer-gases from waste or drain pipes into the apartments of dwellings is very prejudicial to health, and is a source of fatal diseases, which hence renders it very desirable that some means be provided of testing such pipes, or so constructing them that they may be readily tested to determine whether any leaks exist, and if so to show their location, so that they may be easily found and stopped. The only means heretofore employed for this purpose is to charge the pipes with water and search for leaks, which will be indicated by an escape of water at the leaking place. This, however, is troublesome and unsatisfactory, and is liable to cause great damage to the dwellings should any serious leak exist.

My invention aims to provide a means whereby the drain or waste pipes may be tested in a convenient, sure, and safe manner; and the annexed drawing, together with the following description, will show in what the invention consists and how it is applied.

The figure in the drawing represents a sectional elevation of a three-story house with cellar, showing the system of drains, also in section.

The drains consist of a main horizontal and vertical pipe, *a*, receiving the rain-water leaders *a'*, and also a ventilating-pipe, *b*, which passes through the roof of the house, and from which lateral branches extend within the house to the upper bends of the several traps of the water-closets, sinks, bath-tubs, and wash-basins, while the waste from said traps is discharged into separate branch pipes a^2 connecting with the main waste-pipe *a*, as fully illustrated in the drawing. It may be now observed that all the openings of the drains, whereby the interior might be in free communication with the outer air, are represented in the drawing as closed, the openings thereof in the house being closed by the water in the traps, which is their usual condition, the ventilating-pipe being closed by a temporary air-tight hood tied over the same, while the rain-leaders are closed by boards or plugs and air-tight packings placed across the pipes at some convenient point in the manner of a roughly-made gate-valve, as indicated at *c c*. Finally, the whole system of drains as relates to their contained air is isolated from the sewer by means of a trap at *k*, or, where there is no trap, a plug or valve may be used. The arrangement is hence such that if air be forced into the drain-pipes by way of one of the branch waste-pipes, whose trap may be emptied for that purpose, pressure will be accumulated if the pipes are tight, but not otherwise. For this purpose, however, I provide the ventilating-pipe *b*—say on the top floor—with a special opening or nipple, *f*, for the attachment of a gage, *e*, and air-forcing apparatus, which nipple may be closed at all other times. To test the pipes, air may now be blown into the pipes by the breath through the nipple *f* and an attached mouth-piece, and where the drains are not too large or numerous a pressure may be readily accumulated within the drains in this way, if they are not too leaky, and this pressure will be indicated by the gage or manometer *e*, attached to the nipple *f*.

In the case of newly-laid drains in an ordinary dwelling-house no further apparatus than as just described is necessary, and if the pressure produced by the force of the breath in the pipes is maintained, which will be shown by the gage, the drains may be considered tight; if not, leaks must exist. Where the pipes are numerous, large, or leaky, however, a more powerful blowing apparatus than the human lungs will be necessary, such as a bellows or air-pump, as shown at *g*, the discharge-pipe of which is connected with the testing-nipple *f*. To test the pipes by this apparatus it is only necessary to see that all the regular openings of the drains are closed, as before described, and then to operate the pump *g*. If the pipes and joints are all tight, a pressure will now be speedily accumulated and maintained within the same, and this will be clearly indicated by the gage. If, however, there are small leaks, the pressure will slowly diminish, and if the leaks are large, no pressure can be accumulated, all of which will be shown by the action of the gage. The exact location of the leaks can be obtained by forcing the air through a

chamber, *h*, containing strongly-odorous material—such as oil of peppermint, spirits of camphor, or other powerful and distinctive scent—placed between the air-pump and the nipple *f*, so that the air entering the drains will be strongly scented, and its escape from any leak will enable the latter to be accurately located by scent, which leaks may then be closed so as to render the pipes tight.

The chamber H is connected with the pipe *h*, through which the air is forced, by branch pipes *i i* and cocks *j j* at each end, and between the branch pipes *i i* is set a cock, *k*, by means of which the air from the pump may be either forced directly through the pipe *h* or may be passed around through the chamber, as desired, by simply turning the cocks in the proper positions.

In case it is desired to obtain a greater degree of pressure than the traps will allow, check-valves can be put into the waste-pipes, or the traps may be securely plugged, when the pressure may be increased to the desired extent.

By this means it will be seen that the drains of a house, whether new or old, may be quickly tested in a convenient and certain manner, which will avoid injury to the house, insure the detection of leaks, and enable the same to be stopped up, so as to render the drains tight and in correct sanitary condition, which has been heretofore very desirable.

I am aware that it is not new to test gas-pipes by pumping air or ether or other odorous material into them, and therefore I make no claim, broadly, to the testing of pipes by pumping into them either air or strong scents.

What I claim is—

The combination, with a system of drains substantially such as set forth, of a branch or air pipe having an opening or nipple, *f*, a pump, *g*, scent-chamber H, air-pipe *h*, branch pipes *i i*, provided with cocks *j j*, and communicating with the opposite ends of the scent-chamber, and the cock *k* between said branch pipes, whereby either common or scented air may be forced into the drains at will for testing said drains, substantially as shown and described.

FREDERIC TUDOR.

Witnesses:
S. H. WALES,
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