

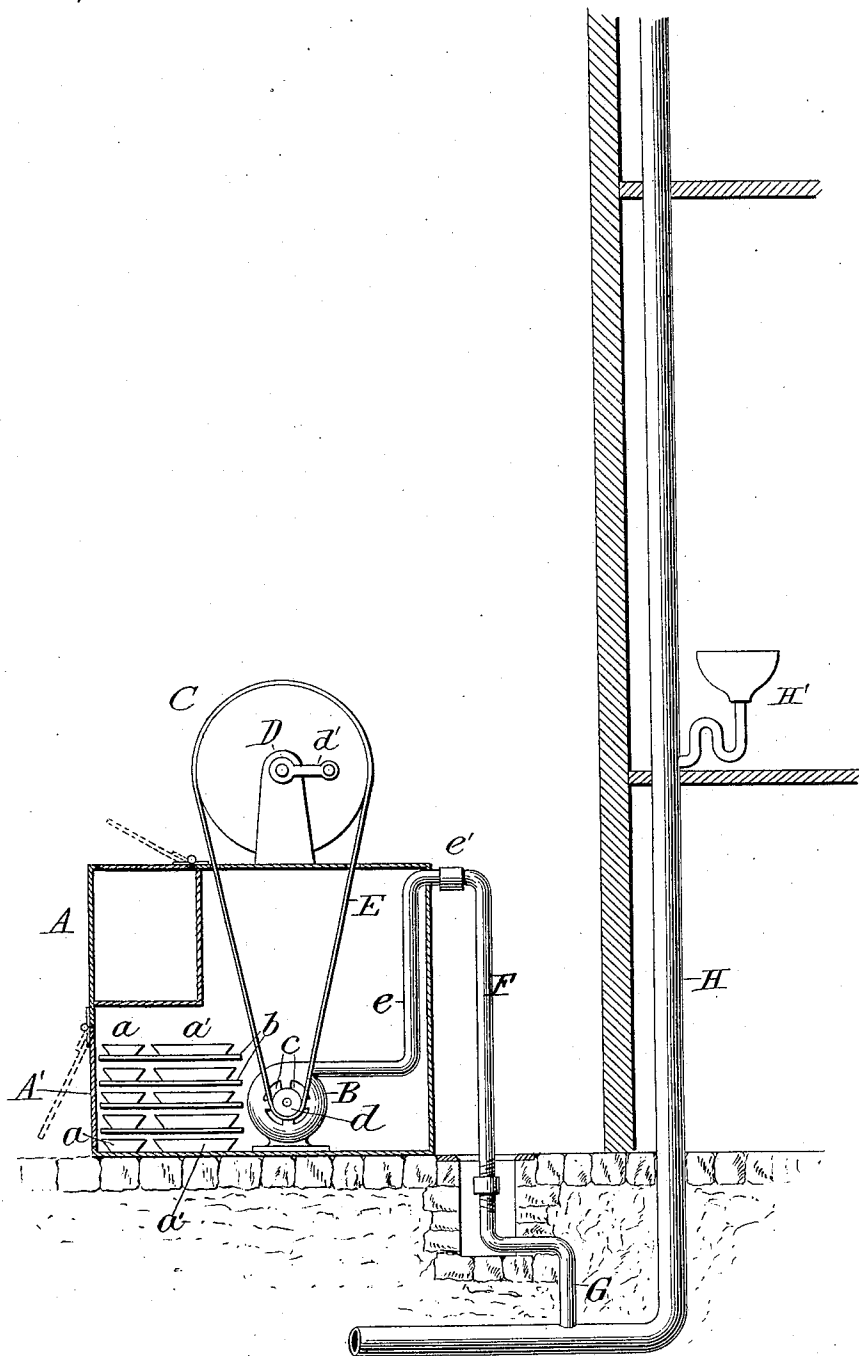
(No Model.)

L. MOSES.

PROCESS OF TESTING PLUMBING, &c.

No. 577,560.

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UNITED STATES PATENT OFFICE.

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PROCESS OF TESTING PLUMBING, &c.

SPECIFICATION forming part of Letters Patent No. 577,560, dated February 23, 1897.

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To all whom it may concern:

Be it known that I, LIONEL MOSES, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Processes of and Apparatus for Testing Plumbing, &c., of which the following is a specification.

My invention relates to a process for testing plumbing and drain-pipes for defective work and leakages and for locating the same for repairs; and the invention consists in the employment of chemicals which give off visible gases or vapors at ordinary atmospheric temperature without added heat, which vapors or gases are emitted into a closed chamber to be connected with the plumbing, and from which chamber the plumbing is forcibly charged with said visible vapors by air-pressure.

In the accompanying drawing I have illustrated my invention and have shown one form of apparatus by which my process may be carried into effect.

In carrying out my process I preferably employ two chemicals which vaporize or form gases at ordinary temperatures, which gases when mingled combine and form a visible vapor or gas. For this purpose I use ammonia (NH_3) and hydrochloric acid (HCl). These chemicals are placed near each other in separate open trays or pans *a a'* in a chamber A. As shown in the drawing, the said trays or pans are placed upon a series of shelves or cleats *b b* within the chamber and are held near a door *A'*, which during the operation will be opened sufficiently to admit a current of air to the chamber A, which current must pass over the open pans or trays. The area of the pans *a'*, which contain the hydrochloric acid, are about twice that of the pans *a*, which contain the ammonia. Within the chamber A is placed an air-forcing device or blower B, having side openings *c* to take in air from the interior of the chamber. The blower is operated by a drive-wheel C, mounted in bearings D on the chamber, and a belt E, leading from said drive-wheel to a pulley *d* on the shaft of the blower. The drive-wheel is turned by a crank *d'*. The suction-pipe *e* of the blower terminates at the outside of the chamber A, where it is provided with a coup-

ling or union *e'* for connection with another pipe F, usually a rubber hose.

In operation the pans or trays *a a'* will be supplied with chemicals and the door *A'* partially closed. The pipe F will then be connected with the drain-pipes or plumbing H to be tested by way of the street-pipe G or by means of any connection in the building. The connection of the plumbing with the sewer will be cut off by any suitable means and the basins H' and all other connections plugged. This done the operator will rapidly rotate the blower and force the fumes from the chamber A into the plumbing until the plumbing is forcibly charged with air and fumes from the source. The air under pressure will detect any defective points or leaks in the plumbing and issue therefrom, giving more or less sound, and will cause the fumes to be emitted at the leaks, so that they can be readily located.

By the foregoing process I am enabled to make reliable tests of plumbing and to guard fully against the dangers of sewer-gas, which even in small quantities is known to be so destructive to health. It is well known that sewer-gas will find its way through the smallest leaks in plumbing, and it is, in fact, not the large leaks, but the small ones, that become so dangerous. By my process the pipes even in the tallest buildings may be charged with a dense fume, the production of which does not depend upon the skill or attentiveness of the workman, and the fumes will not dissipate in the pipes. On the contrary, the fumes will be as dense at the top of the pipes as anywhere else and will continue so during the whole operation, and they will maintain their visible qualities wholly without regard to heat or cold or any special care on the part of the workman or the maintenance of suitable combustion in the apparatus, and no danger or annoyance results from the use of the apparatus.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The process herein described of testing plumbing for leaks which consists in generating at ordinary air temperatures a visible chemical vapor in a chamber, and then charging the pipes to be tested with vapor-laden air

from said chamber by means of an air-forcing device substantially as described.

2. The process herein described of testing plumbing for leaks which consists in mingling
5 in a chamber at ordinary air temperatures invisible chemical vapors to form a visible vapor and then by air-pressure charge the plumbing with said visible vapor substantially as described.

10 3. The process of testing plumbing for leaks

which consists in mixing in a closed chamber the gases of ammonia and hydrochloric acid forming a cloud of ammonium chlorid and forcing the same under pressure into the plumbing substantially as described.

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