(No Model.)

T. J. MARTIN & J. T. BUDD.

APPARATUS FOR DETECTING LEAKAGE OF GAS AND PREVENTING ITS EXPLOSION.

No. 362,523. Patented May 10, 1887.

Fig. 2.

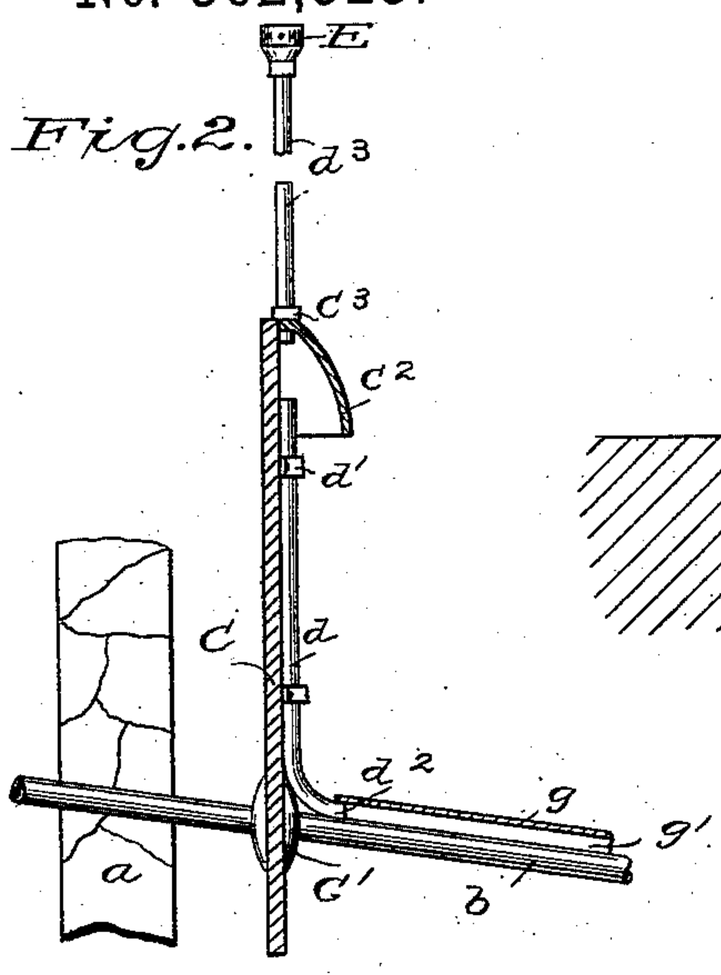


Fig. 1.

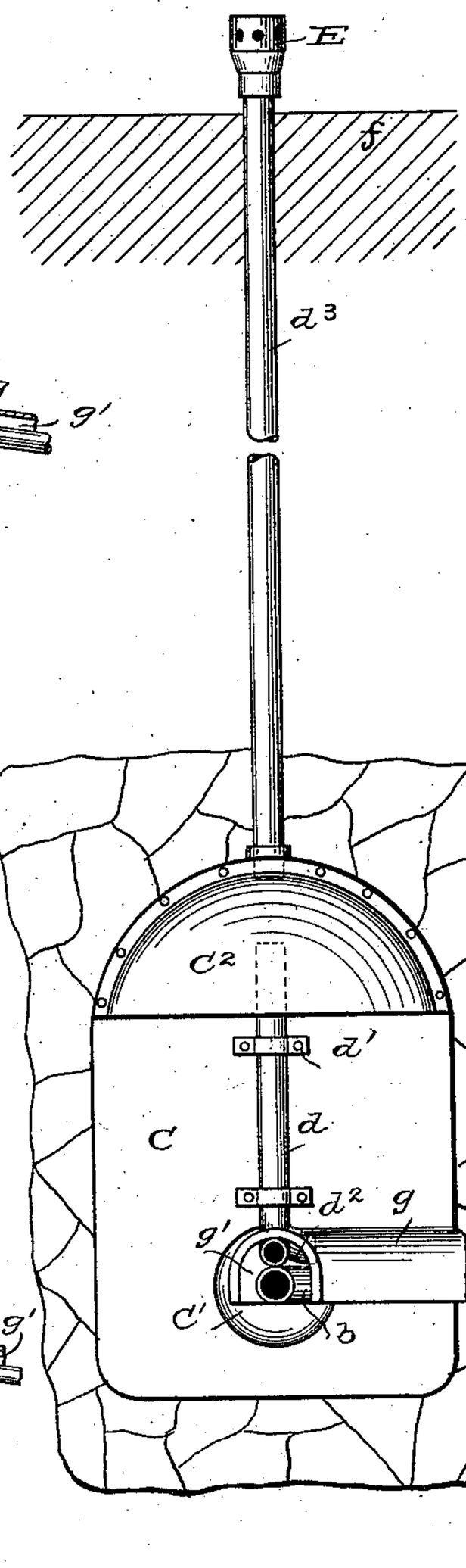


Fig. 3.

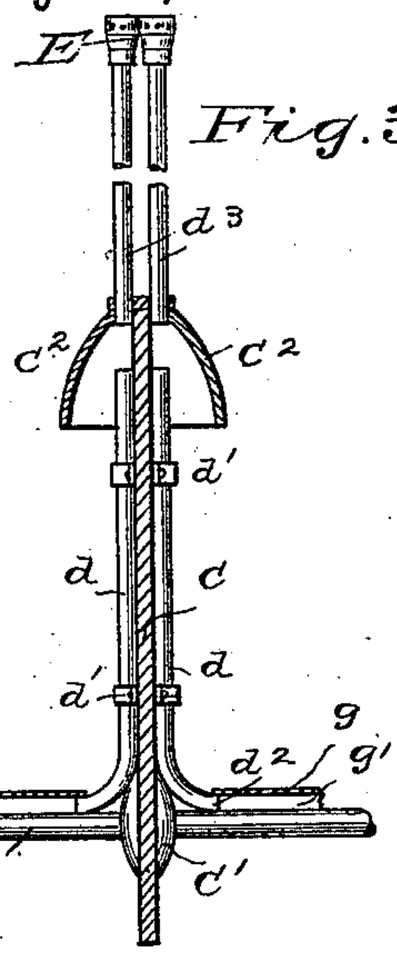


Fig. 4.

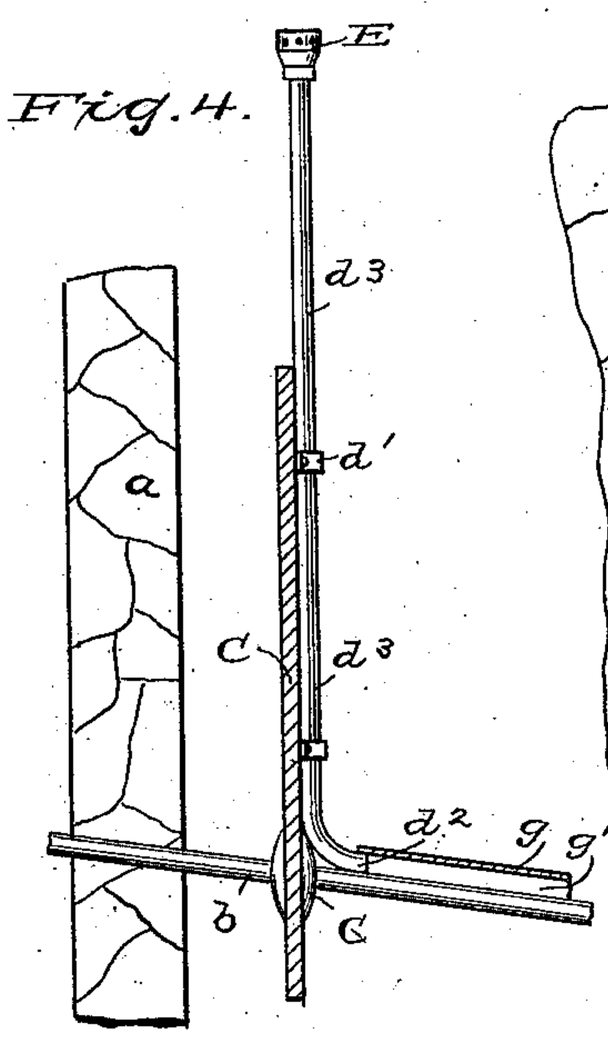
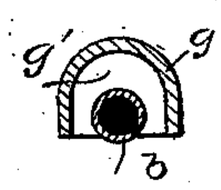


Fig. 5.



Witnesses
H. A. Lamb.
Geo. W. Campbell.

Inventor
Truman J. Martin,
J. Talman Budd
Wm T. Miller
attorney,
By Chas J. Gooch
associate.

UNITED STATES PATENT OFFICE.

TRUMAN J. MARTIN AND J. TALMAN BUDD, OF BUFFALO, NEW YORK.

APPARATUS FOR DETECTING LEAKAGE OF GAS AND PREVENTING ITS EXPLOSION.

SPECIFICATION forming part of Letters Patent No. 362,523, dated May 10, 1887.

Application filed April 17, 1886. Serial No. 199,271. (No model.)

To all whom it may concern:

Be it known that we, TRUMAN J. MARTIN and J. TALMAN BUDD, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Apparatus for Detecting Leakage of Gas and Preventing its Explosion; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of our invention is to provide for the discovery and location of leakages in gas pipes or conduits and for conveying the escaping gas above the surface of the ground, thereby preventing the collection and accidental explosion of the escaped gas in the cellars of dwelling-houses or buildings and street-sewers.

It is an established fact that escaping gas from a leak in the pipes will percolate through the loose earth with which the ditch is filled after laying the pipes therein, and will most generally follow along the outside of the pipe, where it naturally meets with the least resistance, until it finds an outlet, such as a contiguous cellar or sewer, where it may accumulate and be accidentally exploded.

Our invention consists of the combination of a conductor-pipe leading from the gas-pipe to a point at or near the surface of the ground, with a plate of substantially the width of the ditch or trench opened for the reception of the gas-pipe, provided with an opening or openings for the passage therethrough of the gas pipe or pipes, the plate, being back of the conductor-pipe, carrying off escaped gas percolating through the loose earth of the trench. Across the top of the plate may be secured an overhanging hood, opening downward, connecting with and opening into a conductor-pipe for the purpose of carrying off the escaping gas following the surface of the plate. Where the depth of the trench is substantially the same as the height of the plate, the gas would be discharged directly through the orifice in the hood at the top of the plate.

Our invention further consists in other details of construction, all of which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation of our improved device. Fig. 2 is a side elevation, partly in section, of the lower portion of Fig. 1. Figs. 3 and 4 are views of modifications, and Fig. 5 is a sectional view taken on the line *x x* of Fig. 1.

Referring to the drawings, *a* is the foundation-wall of the house or building, and *b* is the gas-pipe passing through the wall *a*.

c is a flat plate, preferably of iron, in the central lower portion of which is the shouldered opening *c'*, for the reception of the gas-pipe *b*. This plate *c* is intended to be of substantially the width of the trench opened for the reception of the gas-pipe, and of any suitable height, it being shown somewhat higher than its width in Fig. 1. Its upper edge is preferably curved, as shown, and provided with the overhanging hood c^2, having its wall curved, as shown in section in Figs. 2 and 3. In the central upper portion of this hood is the screw-threaded opening c^3.

d is a conductor-pipe, secured in a vertical position centrally upon the plate *c* by means of fastening-strips *d' d'*. Its lower end, d^2, is curved outwardly, with its opening in close proximity to the gas-pipe *b*, its open upper end extending up within the hood c^2, as shown in Figs. 2 and 3. In the opening c^3 in the hood is secured the lower end of the pipe d^3, its upper end being provided with the cap *e*, having openings on one side. This cap is located just above the surface *f* of the ground. (See Fig. 1.)

g is an arch or tile, formed, preferably, of clay, placed over and partially inclosing the gas-pipe *b*, in such manner as to leave a space or passage, *g'*, between it and the pipe, as clearly shown in Fig. 5. This arch or tile is in sections, arranged to form a continuous passage along the gas-pipe between defined points. Instead of the arch *g* shown, the pipe *b* may be entirely inclosed, with a chamber surrounding same.

In Fig. 4 we have shown the pipe *d* as continuous to the cap *e*, in which case the hood c^2 is omitted from the plate *c*.

In Fig. 3 the plate *c* is shown as provided on both sides with the conductor-pipes *d* d^3, hood c^2, and cap *e*, both sets being arranged as

shown in Fig. 1, and the pipe *b* being provided with the arch *g*, extending in both directions from the plate *c*.

The operation of our improved device is as follows: It will be seen by reference to Fig. 1 that the plate *c* is placed near to the foundation-wall of the building. In case of a leak in the gas-pipe, the gas would be conducted along the chamber *g'* to the mouth d^2 of the conductor *d*, and thence, passing up the conductor-pipe, it escapes through the openings *e'* in the cap *e*, the openings being preferably placed in the side wall of the cap, away from the house, so that if fire is applied to escaping gas no damage would ensue therefrom. Any gas percolating through the loose earth in the trench, not entering the chamber *g* or the opening d^2 in the conductor-pipe, will be stopped by the plate *c*, which extends entirely across the trench, and will pass upward along its surface and into the hood c^2, from whence it enters the pipe d^3 and is conducted to the surface. By means of this construction described it is practically impossible for any escaping gas to penetrate into the cellar of the building.

Our invention is additionally valuable in locating leaks in sections of the gas-mains between conductor or escape pipes, which may be located at certain distances along the mains. The double construction shown in Fig. 3 is particularly adapted for this purpose, as it will be seen that the conductor-pipes receive and discharge the escaping gas from both directions. The conductor-pipes on either side of the plate have independent discharge-openings, as shown in Fig. 3; but these pipes may be connected above the plate and have a common discharge opening or openings instead. In this manner any leakage can be approximately located at any point in the main pipe. The plate *c*, without the discharge-pipe, may be placed at intervals on the main line of pipes, and the discharge-pipes located on the house or service pipes. In this manner leakages can be located between any two of these plates by examining the discharge pipes in the section between these plates.

We are aware that it is not novel to employ a conductor-pipe extending from a point at or near the gas-pipe to the surface of the ground; also, that gas-pipes have been provided with conducting-chambers wholly or partially surrounding same, and we do not, therefore, broadly claim such construction.

We are aware of Patent No. 320,002, granted to James J. Ricketts on the 16th day of June, 1885, covering a tube or box, through which the gas-pipe passes, said tube or box communicating with the open air and fitting tightly around the gas-pipe on one side and open on the other side of the box; and we do not, therefore, lay claim to any such construction.

The novel feature of our invention is the plate of substantially the width of the trench in which the gas-pipe is laid, such plate being located just back of the ventilating-pipe, for the purpose hereinbefore outlined. It is a known fact that a trench or ditch is considerably wider than a box, tube, or ventilating-pipe that would generally be placed therein. Therefore the new function of our plate is that it carries off the escaped gas which would percolate through the loose earth in the trench and pass on either side of such box, tube, or pipe beyond the same and into the cellars of houses, &c. Our plate being back of the ventilating-pipe, and extending on either side beyond the same and entirely across the trench in which it is tightly fitted, it entirely prevents the entrance of escaping gas through the earth into cellars, &c. Where the plate extends to the surface of the ground the hood would not be required. We have combined this plate with a ventilating-pipe, and also with a conducting-chamber over or around the gas-pipe, which features, taken separately, we have hereinbefore disclaimed. The conductor-pipe, when cast with the plate or forming part of the plate, and with the plate extending on either side or both sides beyond the pipe and inclosing the ditch, would perform the same functions as when the pipe is attached to the plate, and the conductor-pipe would also perform the same functions if, in combination with the gas-pipe, it was placed near the plate, but not attached to it.

We claim—

1. The combination, with the gas-pipe *b*, of the plate *c*, of substantially the width of the trench in which the gas-pipe is laid and provided with an orifice, *c'*, hood c^2, and pipe *d*, the plate or tile *g*, forming the conducting-chamber *g'*, and discharge-pipe d^3, substantially as and for the purpose set forth.

2. The combination, with the gas-pipe *b*, of the plate *c*, of substantially the width of the trench in which the gas-pipe is laid and provided with an orifice, *c'*, hood c^2, pipe *d*, and discharge-pipe d^3, substantially as and for the purpose set forth.

3. The combination, with the gas-pipe *b*, of the conductor-pipe *d* and plate *c*, of substantially the width of the trench in which the gas-pipe is laid and having orifice *c'*, said plate being arranged at the back of the conductor-pipe and extending on either side thereof the width of the ditch and also above the opening in said conductor-pipe to or about to the surface of the ground, substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

TRUMAN J. MARTIN.
J. TALMAN BUDD.

Witnesses:
W. L. HODGMAN,
W. T. MILLER.