

W. H. BURR & J. A. LOCKWOOD.
CONDUIT OR SUBWAY.

APPLICATION FILED APR. 17, 1905.

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Patented Mar. 1, 1910.

2 SHEETS—SHEET 1.

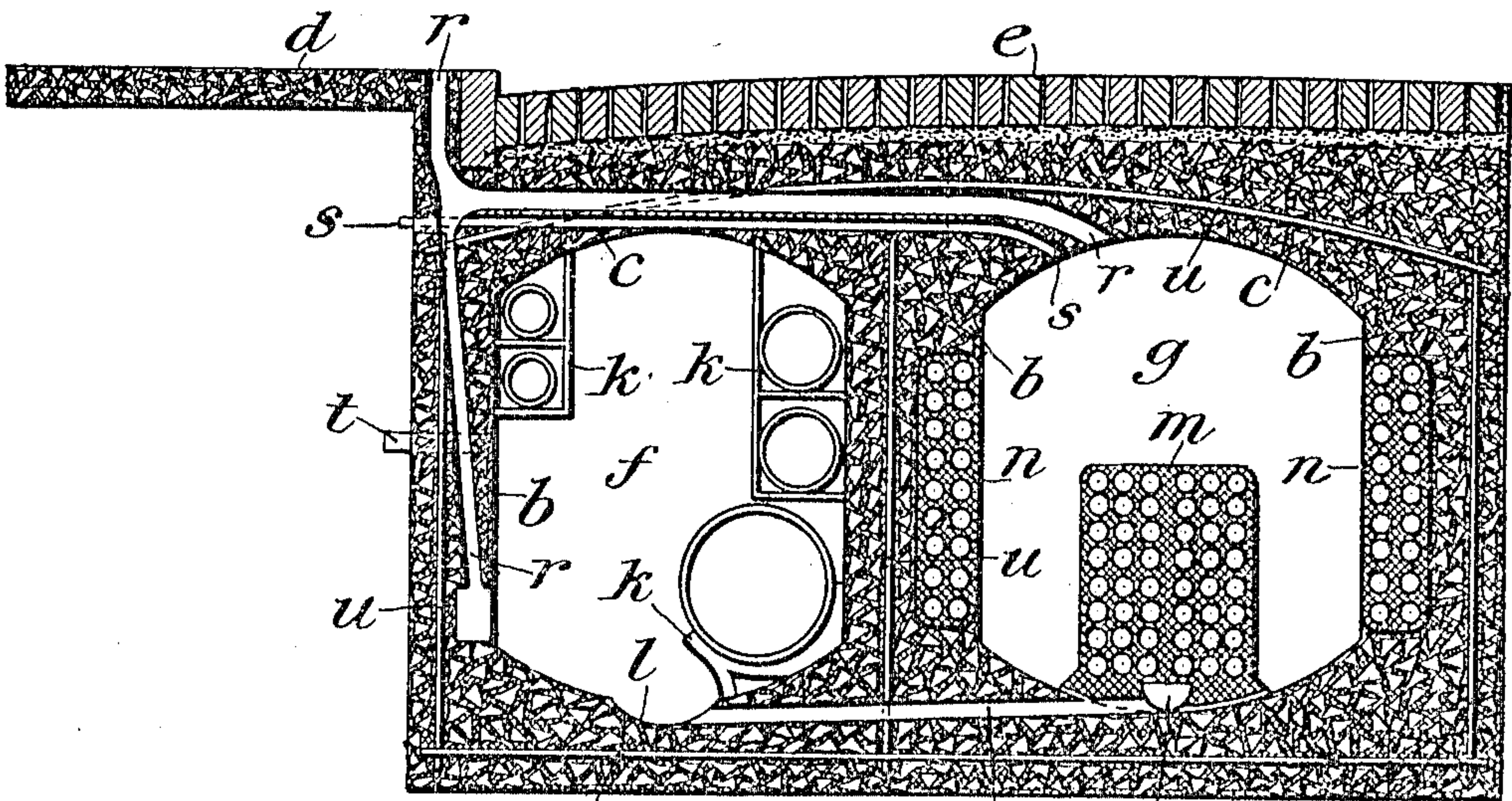


Fig. 1.

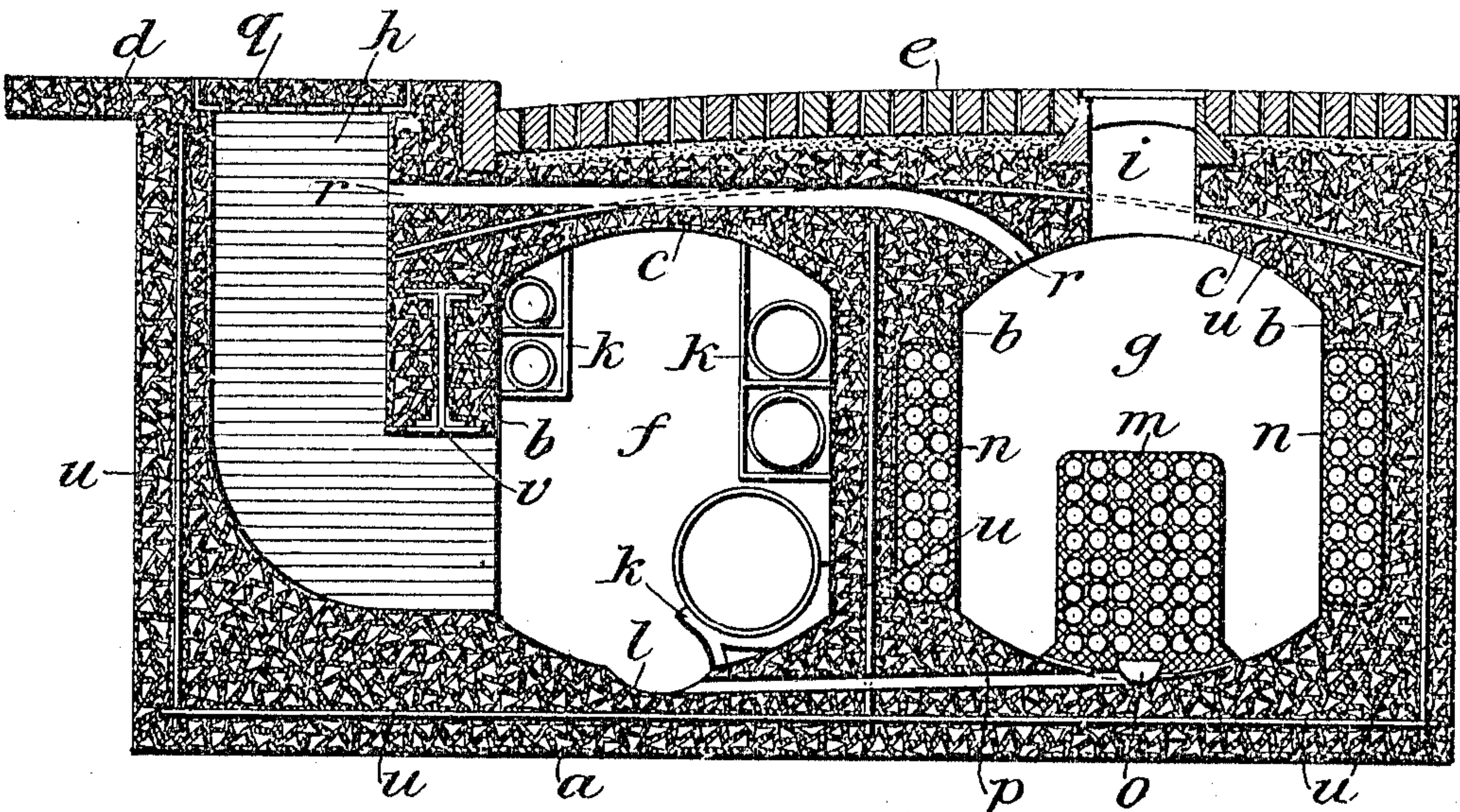


Fig. 2.

Witnesses.

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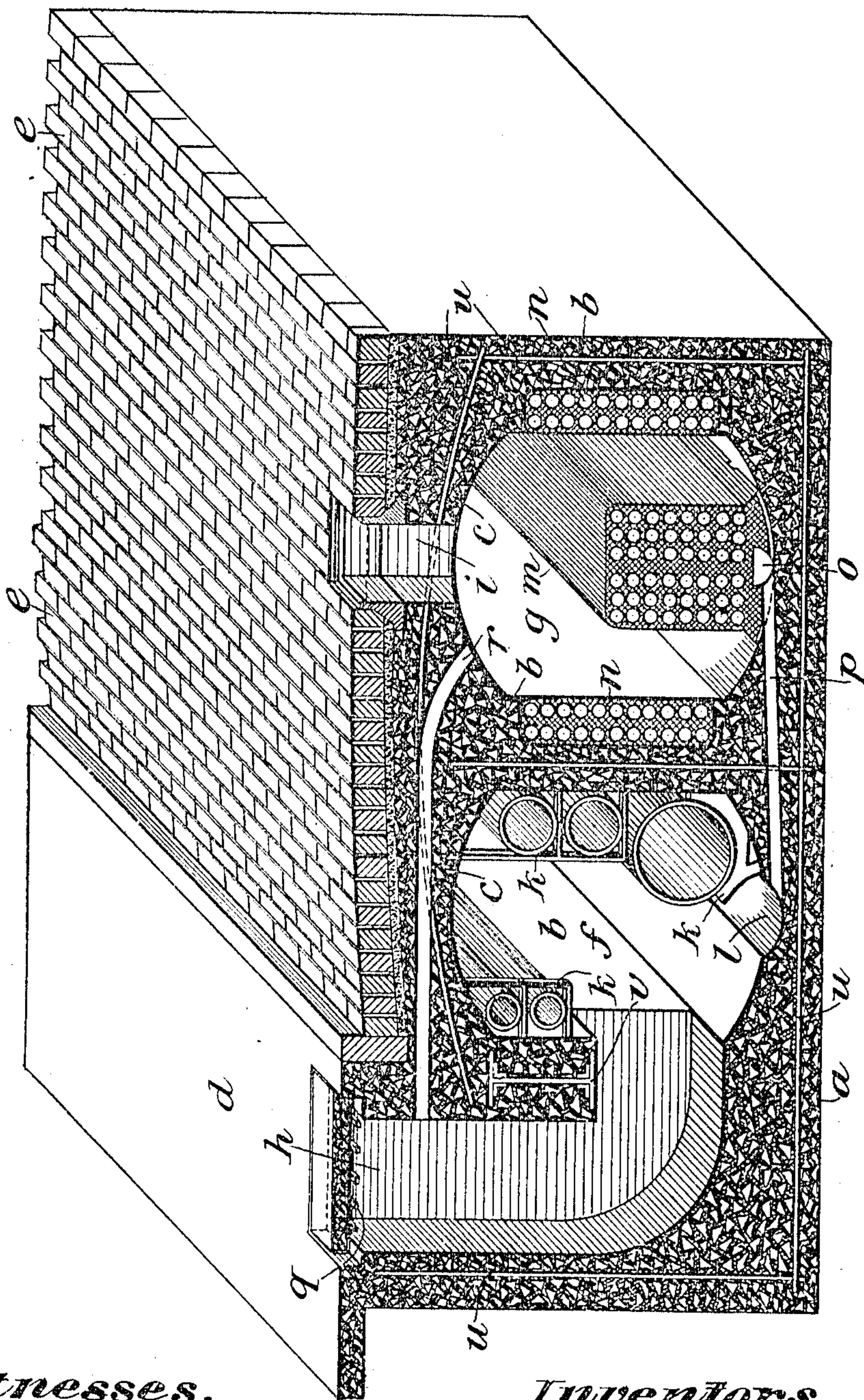


Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM H. BURR AND JUDD A. LOCKWOOD, OF NEW YORK, N. Y.

CONDUIT OR SUBWAY.

950,610.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WILLIAM H. BURR and JUDD A. LOCKWOOD, citizens of the United States, and residents of the borough of Manhattan of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Conduits or Subways, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates primarily to conduits, such as are employed to contain gas and water pipes, wires for power, telephone and telegraph service, &c., and many other kinds of fixtures which it is customary to place beneath the streets of cities for public service of various sorts.

The general object of the invention is to improve devices of this character and particularly those that are formed of plastic materials such as concrete, with a view toward strengthening the structure thereof and toward keeping them well drained and ventilated to make them more clean and serviceable than heretofore. Furthermore, the present improvements provide for the escape of any gases which are liable to be generated therein, thus reducing the possibility of explosions, and for ready access to the interior of the conduits, whereby fixtures may be put in and taken out or repaired, and the conduits may be inspected without any public inconvenience.

The invention will be described in detail with reference to the accompanying drawings, in which—

Figure 1 is a view in vertical section of a subway embodying the improvements, the section being taken adjacent to the curb of the street and showing the street-surfacing material. Fig. 2 is a similar view showing a modification; and Fig. 3 is a view in perspective of the section shown in Fig. 2.

In accordance with the improvements, the conduit or subway is constructed from some suitable plastic material such as concrete which is capable of being laid or molded in the desired form and then of setting or becoming permanently hard in that form. The formation of the material into the conduit may be accomplished in any appropriate manner. Preferably the bed or base or foundation *a* will be laid at first, then after suitable frames or forms are placed thereon to

form the gallery, passages or openings through the conduit, the concrete or other material is molded therearound to form the vertical side walls *b*, and finally the roof or top *c* is formed, the flagging *d* and the street-surfacing material *e* being placed upon the roof or top in the usual manner.

In the present case the subway has been particularly designed for accommodating the water and gas pipes and the like and the wires for telephone service, power and other purposes in separate and distinct passages or galleries, whereby these two sets of fixtures when in proximity, may be as far as possible free from the influence which each set has upon the other. The two galleries *f* and *g* which are formed for this purpose, are provided with manholes *h* and *i* respectively, the several manholes in each gallery being located at frequent intervals whereby complete access may be had to the galleries and whereby each gallery may be freely and completely ventilated. The manholes *h* preferably open from the sidewalk as shown, the conduit or subway being preferably located near one curb, and the lower ends of these manholes open into the adjacent gallery *f*. In this gallery *f* either set of fixtures may be placed, and in the present case the gas and water pipes are shown in this gallery. These pipes may be supported in any desired way. It is preferable, however, to suspend them from the sides and top of the gallery by brackets *k*, as shown; or to place them at the sides of the base of the gallery, leaving the center of the base free for a gutter or drain *l*, which may be formed therein to receive and carry off any water that may enter the gallery through the manholes or from any other source. In the other gallery *g* a suitable wire conduit *m* may be placed, this conduit being located preferably centrally therein and being adapted to carry the power or other high tension currents, while the telegraph, telephone and other wires which it is desirable to isolate from the high tension currents so far as possible may be placed in side conduits *n* which are set into the walls of the gallery. The gallery *g* may also be provided with a gutter or drain *o* which is formed preferably centrally in the base thereof and which preferably communicates at suitable intervals with the drain or gutter *l* in the gallery *f* by means of drains or connecting passages *p*.

The manholes in the sidewalk are preferably provided with gratings *g* whereby fresh air may easily find its way into the subway and whereby any gases formed or received therein may be discharged, while the manholes in the street will preferably be provided with covers to completely close them. In order, therefore, to insure a perfect ventilation and absence of pent up gases which, when present, are always a source of danger, vent passages *r* may be provided, as shown. In Fig. 1 these passages *r*, communicating respectively with each gallery, lead to an opening back of the curb, while in Fig. 2 there is only one passage *r* which leads from the non-adjacent gallery to the manhole in the sidewalk just back of the curb, said manhole ventilating the other gallery. Passages *s* and *t* for the service pipes are of course provided at proper intervals along the subway and through these passages, pipes and wires for house connections can readily be inserted. These passages are shown in Fig. 1.

It will be obvious where the subway is constructed entirely of concrete and similar material that the provision of numerous manholes therein and the hanging of pipes to the top and sides of the subway, will tend to weaken the structure of the subway and render it unable to sustain properly the shocks and weight which the traffic in the street above will bring to bear upon it. Furthermore a conduit of concrete, even though devoid of manholes and depending fixtures, is ill adapted to support the weight of the street-surfacing material and to sustain the weight of heavy traffic. In order to reinforce the subway structure, to overcome these objections to the use of concrete and similar subways, the top, bottom and sides thereof and the partitions between the several galleries are provided with a plurality of rods *u*, preferably steel rods, and these rods are suitably arranged, either transversely as shown, or in any other desired manner. Said rods are embedded in the concrete or other material of which the subway is composed, and constitute, as it were, a frame or skeleton around which the concrete or other material is laid. In this way the strength of the rods is imparted to the solid mass of material which clothes them and the subway or conduit is able to sustain great weight.

Where the manholes from the sidewalk enter the adjacent gallery the lower end of the side walls adjacent thereto has to be cut away. To reinforce these portions of the wall just above the openings, I-beams *v* are preferably embedded in the material of the subway or conduit as shown in Figs. 2 and

3, thus supporting and reinforcing these walls at such points.

The invention, it will be understood, especially so far as the strengthening rods are concerned, is not limited to any form of conduit or subway, and a rectangular conduit or subway, having two galleries has been chosen herein for the purposes of illustration and explanation only. Furthermore, it will be understood that although rods have been described and shown as means for strengthening the structure of the subway, such strengthening means may comprise strips, bars, wires, and any form, in fact, of steel construction adaptable for the purpose in view, and that therefore the word "rod" as used throughout the specification refers generically to these various forms.

We claim as our invention:—

1. A conduit with two passages having a base or bed, a roof or top and vertical walls to support the roof or top, a gutter or drain being formed in each passage and a drain leading from the gutter in one passage to the gutter in the other passage.
2. A subway having two galleries beneath the street adjacent to the curb, a manhole in the sidewalk communicating with one of the galleries, and a passage or vent connecting the manhole with the other gallery.
3. A subway with two galleries and having a base or bed, a roof or top and vertical walls to support the roof or top, said galleries being beneath the street and adjacent to the curb, a gutter or drain being formed in each gallery and a drain leading from the gutter in one gallery to the gutter in the other gallery, a manhole in the sidewalk communicating with the gallery nearest the curb and a passage or vent communicating with the manhole and the other gallery.
4. A subway having a gallery beneath the street adjacent to the curb, a manhole in the sidewalk, a vertical wall separating the manhole from the gallery except at the bottom, said vertical wall having an I-beam embedded therein to support the same.
5. A subway having two galleries beneath the street and adjacent to the curb and independent ventilating means for each gallery communicating with an opening located back of the curb.

This specification signed and witnessed this 11th day of April A. D., 1905.

WILLIAM H. BURR.
JUDD A. LOCKWOOD.

Signed in the presence of—
ALFRED D. FLINN,
JOHN P. REYNOLDS, Jr.