

J. W. LANE.
 WATERPROOF CELLAR.
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997,835.

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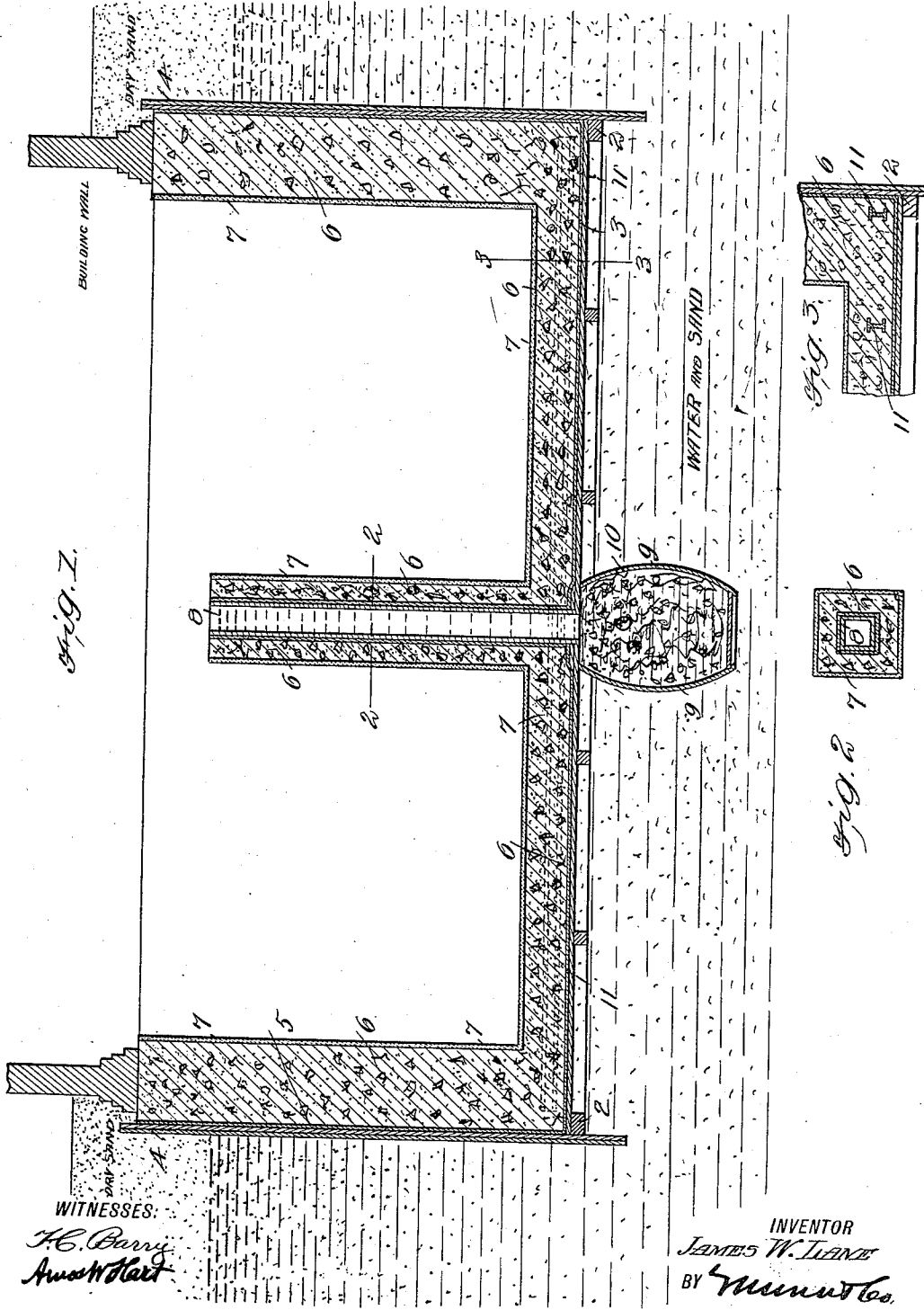


Fig. 1.

Fig. 3.

Fig. 2.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES WILLIAM LANE, a citizen of the United States, and a resident of Atlantic City, in the county of Atlantic and State of New Jersey, have invented certain Improvements in Waterproof Cellars, of which the following is a specification.

In some seashore cities and other locations where sandy soil is permeated with water to a short distance below the surface, especially in Atlantic City, N. J., much difficulty has been encountered in providing perfectly water-tight cellars, and various methods have been adopted for the purpose, but without the desired practical success, until the invention herein described was devised and put in use.

The details of construction of my improved cellar are as hereinafter described.

In the accompanying drawing Figure 1 is a vertical longitudinal section of a cellar constructed in accordance with my invention. Fig. 2 is a cross section of the stand-pipe on the line 2—2 of Fig. 1. Fig. 3 is a vertical transverse section of the floor on the line 3—3 of Fig. 1.

In constructing the cellar, the excavation having been made, water is kept out of it as much as possible until the tongue-and-grooved flooring 1 has been laid on cross-beams 2. Upon this floor are laid four layers of felt paper covered with pitch, the same being indicated at 3.

The walls are formed of sheath piling 4, which is driven below the foundation or floor as shown, and whose joints are properly stopped. On the inner side of the sheathing, layers 5 of paper covered with pitch are employed, the same as on the floor. Water-proof concrete is then applied over the paper and also to form the vertical walls or sides of the cellar as indicated at 6, the same being of considerable thickness as indicated in the drawing. This base and wall are made with Portland or other hydraulic cement so as to be entirely impervious to water and to set and harden, so as to have great strength and be capable of great resistance. Upon the floor and wall thus formed I apply a coat of water-proof plaster as indicated at 7.

In the center of the floor or foundation, I arrange a standpipe which is open at each end and extends through the floor or foundation, so that it is accessible to the inflow of

water which may rise or fall freely therein. The inner wall or frame 8 is preferably formed of wood and around this are applied several layers of felt paper covered with pitch, the same as is used on the foundation and outer side of the wall. The water-proof concrete 6 is also extended up and around the column 8, and upon the outside of the same is applied a water-proof coat 7 in the same manner as to the floor and wall. This standpipe permits the water which permeates the sand in which the cellar is for the most part formed, to rise to the same height as in the sand outside the cellar, as will be apparent by inspection of the drawing.

It is well known that all concrete floors are subject to a lateral contraction and expansion during the period of setting. These two forces result in cracks throughout such floors and through these the water passes, especially if there is any upward pressure. Assuming the cellar to be at the edge of tide water, the spaces between the sand particles surrounding the cellar become filled with water and the upward pressure upon each square foot of the cellar floor is uniform, it being according to the head of the water above the level of the cellar bottom. If the tide falls below the bottom of the floor, air is drawn in to occupy the place previously taken by the water. The next high tide compresses this air against the bottom of the cellar floor and unless an escape for it is provided, the pressure per square inch against the bottom of the floor will be far greater than the pressure of the water due to its head above the floor. The central cell or stand-pipe in this instance provides easy escape for such air and thus reduces the pressure against the bottom of the concrete floor.

In practice, I provide one or more stand-pipes according to the size of the cellar. In a cellar of about 35 feet square, one stand-pipe will suffice. I connect with the lower end of the standpipe a filter which may be formed of a barrel 9 or any other suitable inclosure, the same being filled with broken stone and "excelsior" and provided with lateral openings 10 for admission of water. By this means, the water in the stand-pipe may be drawn off free from sand. It is obvious that a pump may be applied to the stand-pipe, or the latter may be provided with stop-cocks for drawing off the water.

The concrete floor may be reinforced by means of iron eye-beams 11 or by metal bars of any other form.

What I claim is:—

5 The improved water-proof cellar having a water-proof concrete floor and walls of considerable thickness, a vertical stand-pipe erected on the floor centrally and extending through the same and to a height above the
10 normal height of water in the sand surrounding the cellar, a filter comprising a hol-

low rigid structure with a filling of filtering material, such filter being located below the floor and arranged in direct communication with the stand-pipe, the latter being open at each end so that water may rise and fall freely therein, as described. 15

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