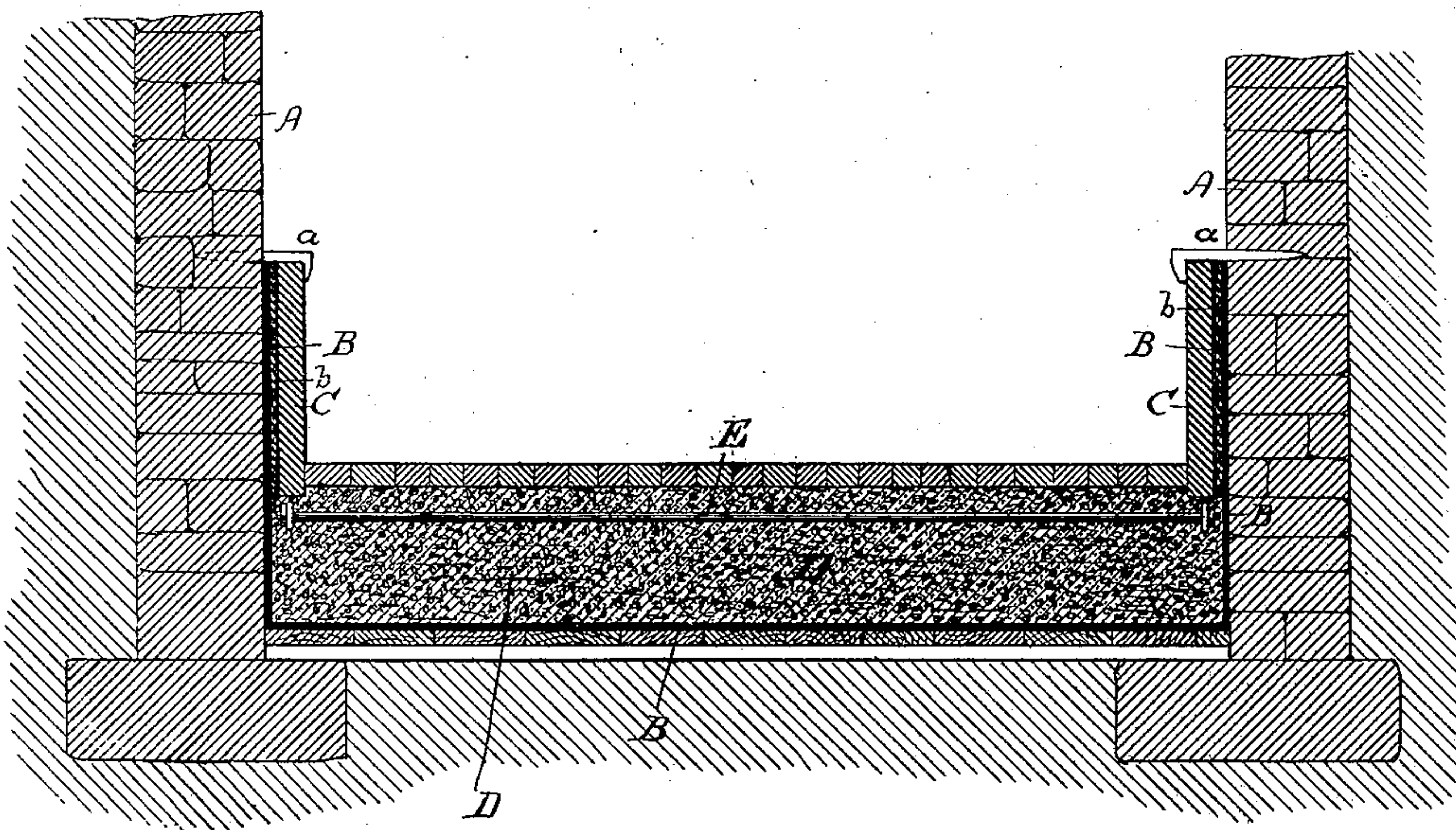


T. NEW.
Water-Proof Cellar.

No. 206,351.

Patented July 23, 1878.



Witnesses:

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UNITED STATES PATENT OFFICE.

TOBIAS NEW, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN WATER-PROOF CELLARS.

Specification forming part of Letters Patent No. **206,351**, dated July 23, 1878; application filed June 24, 1878.

To all whom it may concern:

Be it known that I, TOBIAS NEW, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Constructing Water-Proof Cellars, Cisterns, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, making part of this specification.

This invention relates to the construction of water-proof cellars, cisterns, vaults, and all underground compartments; and it consists in an improved combination of devices for resisting the upward and horizontal or lateral pressure of water, and is an improvement on reissued Patent No. 7,920, granted to me October 23, 1877.

The accompanying drawing is a vertical section of a cellar with the bottom and walls constructed according to my invention and showing my improvement.

In all methods of making water-tight cellars heretofore we have had to depend upon a water-proof lining of impervious materials, the pressure of the water being counterbalanced by weight being placed on the floor. It is evident that, in cases where the water was deep and the foundation of the building was not sufficiently deep to allow the excavation necessary to contain the required load or weight to counterbalance the great depth of water; it would be impossible to get the necessary amount of head room; and the lower down the water-proof lining is placed the greater becomes the weight of masonry required, water being about one-half the weight of masonry.

The great desideratum has been to get some kind of construction that should offer the required resistance to counterbalance the upward pressure of water, and still occupy a minimum depth, so that, by keeping as near the surface of the cellar as possible, or by stopping the water at as high a level as possible, there would be less weight of water to overcome, and, of course, a proportionally less excavation and less cost of construction.

In the drawing, A represents a cellar-wall, on the inner sides of which I place my water-proof layer, B. The inner wall C is constructed

of flag-stones, or other suitable material of sufficient strength to resist any expected pressure of water from without.

The floor is made smooth, with either concrete or lumber, and the water-proof lining B is applied, extending, also, along the perpendicular walls, as shown in the drawing, to a sufficient height to be above the greatest rise of water. I next apply a layer of concrete, D, on the water-proof lining, and then place across the cellar the tie-rods E, of sufficient number and strength, when combined with the weight of concrete, to resist the upward pressure of the water.

The flag-stones C will be anchored at the top at *a* and backed up with concrete at *b*, so that the tie-rods are held rigidly in their places, and prevented from rising when strain is brought upon them by the upward pressure of the water. To complete the bottom and form the floor for storing merchandise or other uses, and to prevent the flag-stones from being forced inward by the pressure of water and the strain of the tie-rods, I cover the tie-rods with another layer of concrete or artificial stone, or, if preferred, with a compact layer of brick or tiling.

It is evident that by this construction I form a flat arch or truss in the bottom of great strength, and sufficient to counterbalance with six or eight inches four to six feet depth of water.

The concrete below the tie-rod is made to resist the upward pressure, tending to crown the floor and the tie-rods, re-enforce the same by their tensile resistance, preventing an arching of the structure. The effect of the upward or lifting pressure of the water will be to bring the strain on the tie-rods, and before the floor can be lifted the rods must break or the artificial stone must crush. By actual experiment I have learned that I can counterbalance the same amount of water with about one-third the thickness of construction now required; consequently two-thirds of the thickness of floor is saved and an equal amount of excavation.

This construction can be used in dams, reservoirs, &c., with great saving and advantage. The Portland cement will bond to the tie-rods, and, when hydrated, will prevent corrosion of the iron in the same manner as mortar pre-

vents the iron anchor in brick buildings from rusting.

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

1. In water-proof cellars, &c., the tie-rods E, in combination with layers of concrete or equivalent material, substantially as and for the purpose set forth.

2. In water-proof cellars, &c., the tie-rods E, in combination with layers of concrete and

water-proof lining, substantially as and for the purpose set forth.

3. The improved method herein described of resisting the upward pressure of water, the same consisting of tie-rods, in combination with layers of concrete or other equivalent material, substantially as set forth.

TOBIAS NEW.

Attest:

NATHAN DUFF,
P. J. KEATING.