W. A. GAY.

Construction of Cement-Vats for Tanning and Other Purposes.

No. 209,757. Patented Nov. 12, 1878.

Fig. 1.

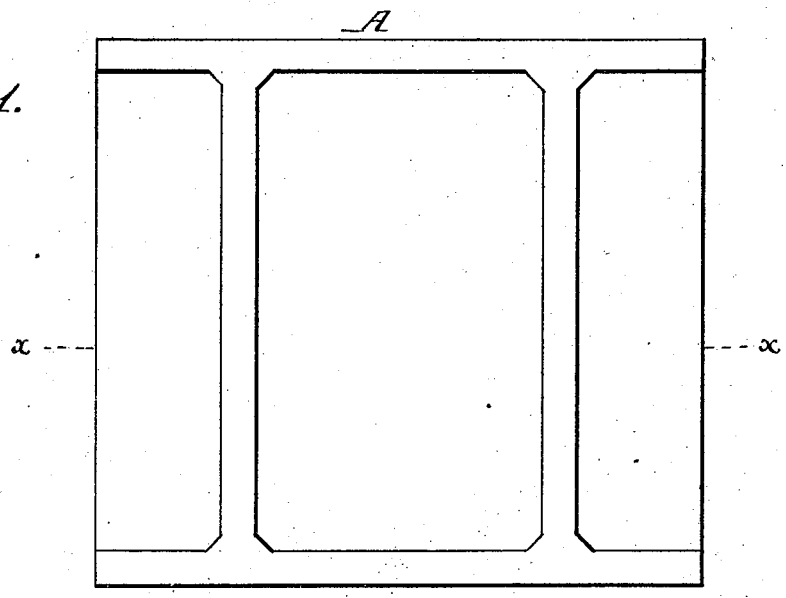
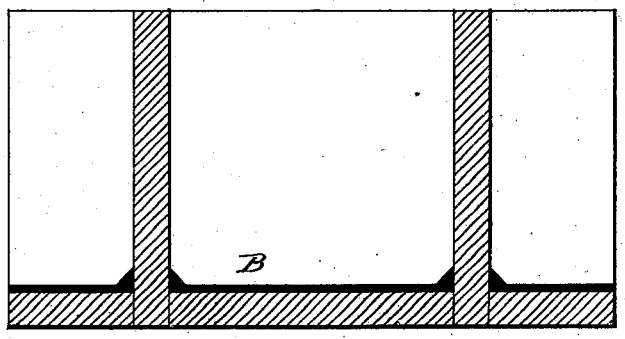


Fig. 2.



Attest:
Fred Benjamin
Jno. D. Patten.

Inventor
W. A. Gay
By his attys
O. Drake

UNITED STATES PATENT OFFICE.

WILLIAM A. GAY, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN THE CONSTRUCTION OF CEMENT VATS FOR TANNING AND OTHER PURPOSES.

Specification forming part of Letters Patent No. **209,757**, dated November 12, 1878; application filed April 15, 1878.

To all whom it may concern:

Be it known that I, WILLIAM A. GAY, of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Construction of Vats; 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 which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in the construction of tanners' vats, by means of which important advantages are secured, as will be hereinafter set forth.

The accompanying drawing illustrates the nature and character of my invention, in which Figure 1 is a top or plan view, and Fig. 2 a vertical cross-section taken through line *x*.

Similar letters of reference indicate corresponding parts in each figure.

The materials I use in the construction of said vats are Portland or hydraulic cement, sand, gravel, broken stone, and water, mixed together in suitable proportions, as hereinafter set forth.

To construct a vat or vats as I propose, I first prepare the molds or forms, which are made of wood, and in sections of convenient size for handling, of which I require two sets—viz., one set for the outer side of the vat-wall and another set for the inner sides of the walls. The molds or forms for the inner sides of the walls are made, in length, width, and height, the exact size the vat is desired to be when finished, and so arranged as to be held or supported by cross bars or braces in such a manner that its several parts shall be perfectly firm and rigid while in use, but readily taken apart and removed when desired.

The molds or forms for the outer side of the walls are made the same height as the inner molds, but of any convenient length, so that they may cover the space of one, two, or more vats, as indicated in the drawing.

The earth in the place where it is intended to construct the vats being first properly leveled or graded, I proceed to set up the molds, placing the outer molds or frames in position first, being careful to have the top of the molds level and the exact height it is desired to have the top of the vat-wall. I then place the inner molds in position, being careful to keep the upper edge of the molds or frames level and the exact height required, and keeping the molds for each vat or each inner set of molds separate from each other, and also from the outer molds or frames the exact distance which it is desired to make the thickness of the walls or sides A of the vats, using for this purpose pieces of board or plank of suitable width or thickness, reaching down two-thirds the depth of the molds, and setting up only so many of the molds or frames as can be filled and completed in one day. The outside molds or forms are then rigidly secured, and supported by suitable braces and wedged up tightly, forcing the molds up firmly together in all directions, and holding them rigidly in their places.

The molds being secured in their proper positions, I then proceed to mix the concrete for use. The proportions I have found to give the best and most economical results are: one part, by measure, cement, two and one-half parts sand, and four parts gravel or broken stone. The cement and sand are first thoroughly mixed together in a dry state, and then enough water is added to make the whole mass, when again thoroughly mixed, about the consistency of stiff mortar.

The cement and sand thus prepared are then thoroughly mixed with the proper proportion of gravel or broken stone, so that each particle of the gravel or stone shall be fully covered or coated with the mixture of cement and sand. The mixture or concrete thus prepared is then spread into the spaces left between the molds forming the walls of the vats, and thoroughly tamped or rammed, one man spreading the concrete along in the spaces between the molds with a shovel to a depth of not more than four inches, and two men following with heavy tampers, and tamping or ramming the material until perfectly compact and solid, thus proceeding until the walls are filled up and leveled to their proper height. The material is then allowed to stand in the molds from twenty-four to forty-eight

hours, in order to allow it to harden, when the molds may be taken out, leaving the wall of the vat standing.

As soon as possible after taking out the molds, as above described, and before the walls have had time to harden too much, I proceed to put in the bottoms B, in forming which I first put in a layer of concrete, made substantially of the same materials and proportions above described as being used in the construction of the vat-walls, to the depth of three inches, more or less, as deemed necessary; and a surface-coating, composed of one part, by measure, of cement to two parts of clean sand, mixed with water to the consistency of very stiff mortar, is then laid over the surface of the bottom foundation, as thus prepared, to the depth of one inch, more or less, and, after being tamped solid with wide flat tampers, is floated or troweled until the surface is perfectly smooth. After the bottom has hardened sufficiently to admit of its being walked upon, I prepare a coating composed of one part, by measure, cement, and one part very fine clean sand, to which enough water is added to make a stiff wash, which is then thoroughly applied, by means of a suitable brush, to the entire surface of the walls, thus completely filling up any interstices or rough spots which might be left on the walls, and rendering the surfaces of the walls perfectly smooth, impervious, and solid.

The special advantages which I claim for these vats are—

Durability. Vats as now constructed of wood last but six or eight years, when they either need extensive repairs or have to be replaced with entirely new ones, (the latter course being generally found the cheapest,) while the artificial-stone or concrete vats are practically indestructible and grow stronger and more durable with age.

Absolute freedom from loss by leakage. Wood vats, however carefully they may be constructed, are always more or less subject to leakage, and as decay progresses the loss of material from this cause becomes much greater. Artificial-stone or concrete vats being hermetically tight and subject to no decay or deterioration of the material through the action of time or any influences or conditions to which they are ordinarily subjected, no loss whatever is incurred by leakage, thus effecting a permanent saving of very valuable material.

Economy of space. Wood vats require heavy timbers on the outside of the planking to support them, and wedges or keys to draw and hold the plank tightly together. Thus a large amount of room is lost, artificial-stone or concrete vats requiring merely the thickness of the wall (ordinarily three or four inches) between them. At least one foot of space to each vat is thus saved.

Its cost is also but little more than a wood vat at first, while, taking their durability and freedom from loss by leakage into consideration, they are far cheaper than wood.

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

The within-described improvement in constructing vats, consisting in building the sides and cross-walls of concrete in temporary molds, removing the latter, filling in between the walls with concrete to form the bottom, and coating the same with cement, as set forth.

In testimony that I claim the foregoing as my own I hereto affix my signature in presence of two witnesses.

WM. A. GAY.

Witnesses:

OLIVER DRAKE,

P. J. INSLEE.