UNITED STATES PATENT OFFICE.

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METHOD OF DAMP-PROOFING BURIAL-VAULTS.

1,238,760. Specification of Letters Patent. Patented Sept. 4, 1917.

Application filed March 27, 1916. Serial No. 87,095.

To all whom it may concern:

Be it known that I, ANDREW W. GRAHAM, a citizen 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 Methods of Damp-Proofing Burial-Vaults, of which the following is a specification.

This invention relates to a method of damp-proofing burial or receiving vaults, and while primarily designed for use in the treatment of underground vaults or sepulchers, the method is equally adaptable for above-ground vaults.

The object of the invention is in a ready, positive, inexpensive and certain manner, so to treat the interior walls of a vault or crypt, as well, if desired, the exterior walls, as to render them absolutely impervious to the passage of moisture or water.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in so applying a damp-proofing substance to the surfaces to be treated, that the walls of the vault and the substance will be caused to become practically homogeneous—that is to say, the substance will be absorbed by the interstices of the walls or surfaces, and be firmly bonded thereto, so that the surfaces treated, whether on the interior or exterior of the vault or other structure, will be absolutely impenetrable to the admission of moisture or water. Generally, the vault or sepulcher will be of concrete and will have only its inner and, if found necessary, its outer walls so treated, but if desirable, a third damp-proofing surface or material may be included between the thicknesses of the side walls and bottom of the vault, thus further to secure the object of the invention.

Further and more specific details and advantages of the invention will be hereinafter more fully described and claimed.

As an illustration of a method of practising the invention, it will be assumed that the structure to be treated will embody a memorial and a sepulcher, such as shown in my Patents Nos. 1167291 and 1167292, Jan. 4, 1916, the latter being sunk into the ground, and the underside of the base of the memorial and the top of the sepulcher being preferably, though not necessarily, disposed on the ground line. The sepulcher, which may be of any preferred contour, is constructed from cement to present a one-piece structure, and may have arranged in its bottom portion a plurality of laterally disposed crypts, while the memorial may be constructed of concrete or from any desired character of stone.

In carrying the invention into effect, any suitable damp-proofing material may be employed, such as cementitious liquid, a powder, or a liquid metal. Where the former is employed, after the inner walls of the sepulcher have been coated with the damp-proofing materials, a self-created aeriform fluid pressure or one of a gaseous nature may be employed to force the damp-proofing material into the interstices of the wall; or compressed air, or gas under high pressure, either cold or ignited, can be forced into the sepulcher and will force the damp-proofing material into the walls and bottom, so as to cause these parts to be rendered absolutely damp-proof and impenetrable to the passage of moisture. It will be understood, of course, that in order to retain the fluid within the sepulcher under a pressure sufficient to secure the object sought, that egress of the fluid must be prevented, and this is accomplished by means of a closure arranged in the top of the sepulcher, or in, or forming the bottom of the memorial, or any other means may be employed to secure an hermetic sealing of the sepulcher.

As above stated, as a matter of further precaution, and to render the sepulcher absolutely water and damp-proof on its exterior, the latter may have applied thereto a coating or water-proofing surface of any suitable material. This latter precaution is found necessary in certain localities, notably at New Orleans, Louisiana, where no underground burials can take place and where it is practically impossible to secure a solid foundation for the sepulcher above ground, as, owing to the fact that there is no sub-soil, and that water can be found by digging in many places a few inches and in others one or two feet, that the constant pressure of the moisture or water would inevitably cause the sepulcher to become damp. By this external treatment of the sepulcher, it will be rendered absolutely damp-proof irrespective of the nature of the ground upon which it rests. Should it be desired

to sink the sepulcher into the ground in such soil, the sepulcher would first be constructed above ground, treated to render it damp-proof, and then lowered into an excavation previously prepared for its reception.

In some instances, a third water-proofing surface may be employed which will be included within the thicknesses of the walls of the sepulcher in the course of its building.

Where molten metal is used as the agent for rendering the sepulcher walls damp-proof, this may be applied by blowing it against the walls with a stream of ignited gas under heavy pressure, and the pressure, together with the impact between the metal and the walls, will cause the cohesion between the treated surfaces and the molten metal, and thus accomplish the same result as that obtained by the use of a cementitious substance.

Under some conditions, it may be found of advantage to use a metallic paint, as a coating for the walls of the sepulcher, and this may be subjected to the action of heavy pressure to cause it to permeate the walls.

As an example of one manner of supplying either heated or cool aeriform fluid to the sepulcher, the closure controlling the entrance to the sepulcher may be provided with a valved nipple to which may be connected a pipe leading to a suitable compressor for forcing the fluid to the sepulcher, or a pipe may be included in the walls of the sepulcher at any point and open therein, and be provided with means for closing egress of fluid. Where metallic paint or a cementitious coat is employed, the closure will be opened to permit the workman to descend into the sepulcher to coat the walls thereof with the damp-proofing material, after which the workman ascends, closes the door or trap and opens communication between the sepulcher and the compressor. Of course, air or gas stored in metallic cylinders, under heavy pressure, may be employed in lieu of a compressor.

Where liquid metal is used as the damp-proofing material, it is to be understood that the pressure is applied simultaneously with the application of the material.

Under some conditions, it may be found desirable after treating the walls with the damp-proofing material, to apply a coat of cementitious material thereto, of any desired thickness, and this coat may be allowed to dry while being held by cohesion to the walls of the sepulcher, or fluid pressure may be employed to cause it more firmly to cling to position. Under these conditions, the pressure will not be so great but that a workman may remain within the sepulcher during the coating operation.

In order to insure perfect union between the damp-proofing substance and the sepulcher walls, prior to the application of the substance, the sepulcher may be exhausted of air to withdraw any moisture present and which might condense upon the walls.

In addition to the damp-proofing materials mentioned, pitch, asphaltum, or any carbonaceous substance suited for the purpose may be employed.

In the procedure above described, the entire surfaces of the sepulcher walls are treated, but if preferred, relatively small areas may be blocked out and separately treated. Where crypts are employed, these will be subjected to the treatment above outlined.

Prior to sealing the sepulcher, the same may be thoroughly dried by any artificial heat to insure the removal of all moisture.

It is to be understood that any material suited for the purpose of rendering the sepulcher walls damp-proof may be employed, and that its manner of being applied may differ from that described, so long as the vital underlying principle of the invention remains, namely, the application to the walls of a sepulcher, vault, or other concrete structure, of a damp-proofing material, in such manner as to cause an intimate union, occlusion, or bonding between the walls or surfaces and the material.

Under some conditions, it may be found of advantage, instead of applying the water-proofing material to the walls of the structure, as a separate substance, to include such substance in the concrete or mixture, prior to forming it into the structure, so that instead of having merely a surface damp-proof, the whole body of the structure will be moisture resisting throughout.

What is claimed is:

The method of rendering burial vaults impervious to moisture which consists in coating the walls of the vault with damp-proofing material, closing the vault hermetically, and thereafter filling the closed vault with fluid under pressure whereby to drive the damp-proofing materials outwardly into said walls.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW W. GRAHAM.

Witnesses:

R. M. ELLIOTT,

ALBERT POPKINS.