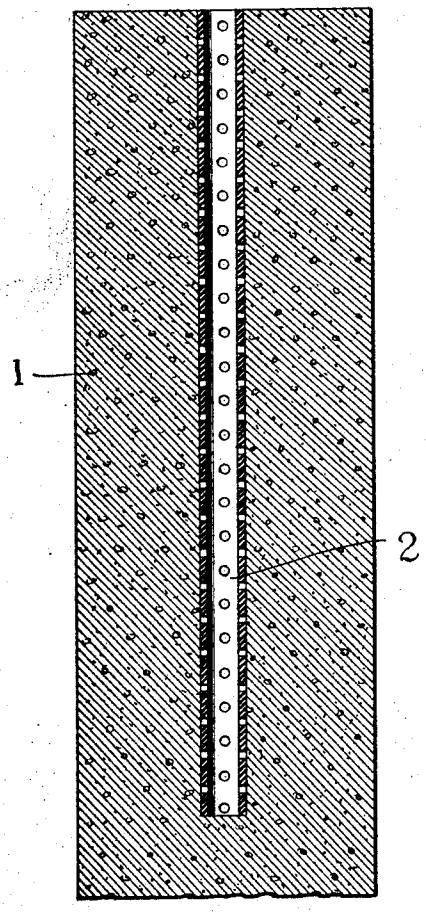
Oct. 29, 1929. A. E. SCHUTTE 1,733,699

METHOD OF PRODUCING CONCRETE STRUCTURES

Filed March 7, 1928



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UNITED STATES PATENT OFFICE

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METHOD OF PRODUCING CONCRETE STRUCTURES

Application filed March 7, 1928. Serial No. 259,529.

The improvement refers especially to concrete which has been coated, impregnated, or saturated with an asphaltic like waterproofing substance.

By my process, plain or reinforced piles are saturated with a bituminous cement, by creating, in a channel formed at the center of the pile, a vacuum which not only withdraws all the moisture and steam formed during that treatment, but also by suction causes the bituminous material to fill all voids and spaces in the concrete forming the pile. It is obvious that not only can there be created a vacuum in the center of the pile, but that the whole pile can be placed in a receptacle and pressure applied so that the waterproofing material is not only drawn in by the vacuum formed in the center of the pile but is also forced in from the outside by the increased pressure in the cylinder or tank containing the bituminous composition as well as the pile. Again it is obvious that instead of forming a vacuum in the pile I can reverse the process and pump the heated material into the center of the pile and force it by pressure from the center to the outside of the structure thus filling all its voids.

In order to manufacture the piles under my process, there is placed in the pile one or more perforated pipes or perforated mandrels forming a central passage having openings all along the inner wall. Such an arrangement is shown in the annexed drawing and in which 1 denotes a concrete body or pile and 2 a perforate pipe or mandrel extending longitudinally thereof. After the structure has been cured, the pile is immersed in a vat or tank containing the heated asphalt, a suction pump is connected by suitable means to the end of the pipe (or pipes) and a vacuum formed which will cause the flow of the waterproofing material centrally into the open passage until all pores and voids are filled. It will be understood of course that the pump may be attached previous to immersion.

With some structures it is advantageous to reverse the process and pump the hot material into the interior of the structure while the same is either immersed or not in the same medium, or, as stated before, the pressure could be applied by suitable means from the outside while a vacuum is formed inside, or a vacuum formed outside while the waterproofing medium is forced into the inside.

In the broader aspect of the invention the pipe or mandrel may be withdrawn and pressure or vacuum established within the pile by inserting a suitable perforate closure in the opening left in the pile to which the suction or vacuum pump may be attached.

I am aware that attempts are being made in numerous ways to saturate and impregnate piles, or similar structures, with water-proofing material such as asphalt, but I am not aware of any impregnated structure in which the impregnating process was conducted under less or more than an atmospheric pressure, or by a combination of both.

What is claimed is:

1. A method of forming and saturating concrete structures which consists in casting the structure with an opening therein; allowing such structure to cure; immersing the cured structure in a tank of liquid asphalt; and finally effecting a differential in pressure between the exterior surface of the structure and the wall of the opening.

2. A method of forming and saturating concrete structures which consists in casting the structure about a perforate mandrel; allowing the structure to cure; immersing the cured structure in a body of molten asphalt; and finally creating a differential in pressure between the outer surface of the structure and the interior of the mandrel.

3. A method of forming and saturating concrete structures which consists in casting the structure with an opening extending longitudinally thereof; allowing such structure to cure; immersing the cured structure in a tank of liquid asphalt; and finally forcing liquid asphalt under pressure into the opening.

4. A method of forming and saturating concrete structures which consists in casting the structure about a perforate mandrel; allowing the structure to cure; immersing the cured structure in a body of molten asphalt; forcing molten asphalt into the perforate mandrel; and simultaneously lower-

ing the pressure upon the surface of the body surrounding the structure.

5. That method of forming and saturating concrete structures which consists of casting the structure with an opening extending therethrough; allowing such structure to cure; immersing the cured structure in a body of molten asphalt; and finally setting up a differential pressure between the exterior surface of the structure and the wall of the opening.

In testimony whereof I have signed my name to this specification.

AUGUST E. SCHUTTE.