June 15, 1943. F. A. WILLIAMS 2,321,638

COATED MOLD AND METHOD OF MOLDING CONCRETE

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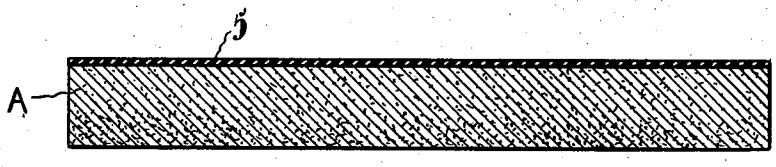


Fig. 1.

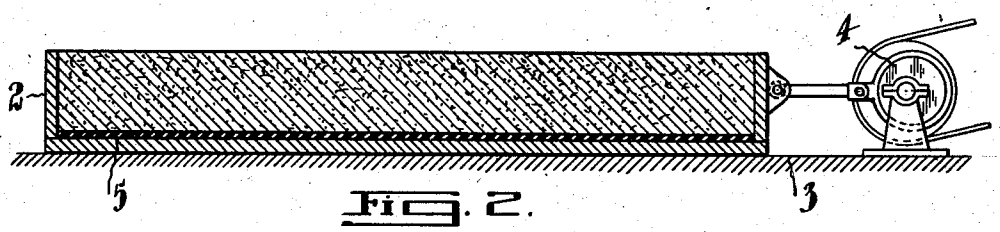


Fig. 2.

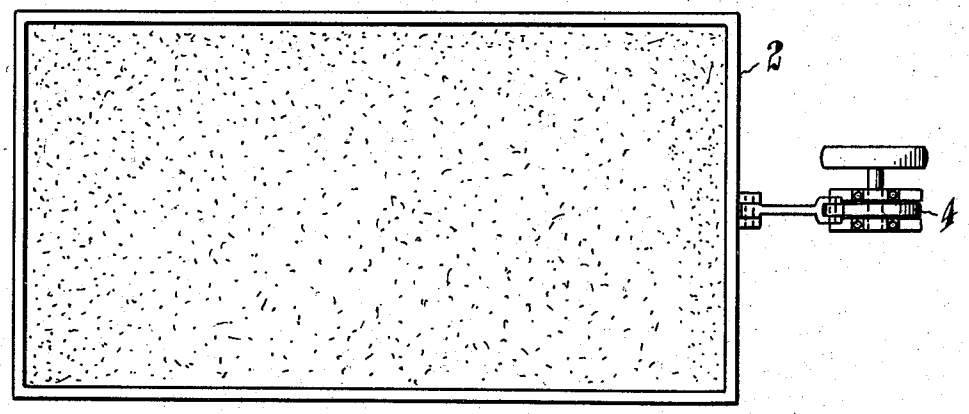


Fig. 3.

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COATED MOLD AND METHOD OF MOLDING CONCRETE

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2 Claims. (Cl. 25—122)

This invention relates to the surfacing of walls, slabs or blocks or other shapes made of concrete or other hardening material. In the making of such structures, a suitable mold or form is employed to hold the plastic material until the latter becomes sufficiently stiff to maintain its shape without the aid of the mold or form.

I have discovered that by forming the mold or form of a material having certain characteristics, or by lining or coating the mold or form with such material that an unexpected and valuable result is obtained in the surface finish of the concrete, namely, that the concrete has a glossy or glazed surface which is substantially impervious to moisture and which is very similar to a glazed tile or porcelain enamel finish.

The invention is hereinafter more specifically described and is illustrated in the accompanying drawing in which

Fig. 1 is a cross section of a concrete plate or slab constructed in accordance with my invention;

Fig. 2 a vertical section of a simple form of apparatus for carrying out the invention; and

Fig. 3 a plan view of the same.

In the drawing like numerals of reference indicate corresponding parts in the different figures.

Referring to Fig. 1, A indicates a concrete slab or plate which may be of any size or thickness depending on the purpose for which it is intended. The slab or plate may be of uniform texture throughout its mass, but for the sake of economy or other reasons it will usually have its rear portion formed of a different mixture than the face portion thereof.

The slab or plate is made from an ordinary wet mixture of cement and aggregate, except that for the face portion the mixture will be of a character and color to suit the requirements of the particular purpose for which the structure is required.

The facing material is placed in a mold or form 2, which is adapted to be rapidly vibrated on a suitable support 3, by means of any suitable actuating mechanism such, for example, as the crank mechanism 4. By rapidly agitating the form 2, the facing material is firmly compacted and the backing material is then positioned over the facing material and this is then compacted by agitation in a similar manner. It will be understood, of course, that the form may be stationary and the compacting of the concrete may be obtained by agitating or manipulating the concrete on or in the form.

The color of the facing will, of course, depend on the materials employed, a wide range being available.

Concrete, of course, has a tendency to adhere to the mold or form surface, and therefore considerable care has to be taken in the choice of the mold or form facing with which the concrete contacts.

To obtain the glossy or glazed surface finish desired, it has been found that it is very important that the surface moisture be not allowed to escape into the form from the face side of the structure, or air come in contact with said face side, and the mold or form therefore is provided with a lining or coating of a material which is non-absorbent of moisture, which has substantially no bonding affinity with the concrete, and which is substantially unaffected by the concrete.

This lining or coating is allowed to remain in contact with the surface of the concrete until the latter has set and hardened sufficiently to retain enough of the fine surface particles to give the desired gloss or glaze, and it is found that the more the hardening of the concrete has advanced before the lining or coating is removed, the higher the gloss the finished surface of the concrete will have. It will be apparent, therefore, that if a medium gloss is required, the lining or coating will be removed sooner than if a full gloss is required.

It has been found that with ordinary concrete a partial gloss is obtained if the lining or coating is left in contact with the concrete for twenty-four hours, and the gloss is heightened by leaving the lining or coating in place for longer periods up to that degree of hardening which will ensure that the fine particles of the surface will remain in undisturbed position and so give the surface a light reflecting quality similar to polished granite or glazed porcelain. Under average conditions, a quite high gloss is obtained, in the case of ordinary concrete, by allowing the lining to remain in place for approximately 72 hours.

As stated above, the mold or form itself may be made of a material having the above characteristics of being non-absorbent of moisture, non-bonding with the concrete and non-affected by the concrete itself, but the preferred method will usually be to provide that part of the form with which the front of the finished structure contacts with a thin lining of suitable material in sheet form, or it may be applied as a liquid by a dipping, brushing or spraying process. This

lining or coating is indicated by the numeral 5 in Figs. 1 and 2.

It has been discovered that one suitable material for lining the form, which possesses all three necessary characteristics is hydrochloride of rubber, and particularly the variety of this product, which is commonly marketed in sheet form by Goodyear Rubber Co. under the trade name "Pliofilm."

It is found that by interposing "Pliofilm" sheeting, or other material having similar characteristics, between the concrete and the mold and allowing the sheeting to remain in contact with the concrete face until the latter is substantially hardened, the surface of the concrete retains a finish very smooth and hard, similar to the finish of glazed tiles or porcelain enamel. The form sheeting or coating, being non-absorbent and relatively airtight, does not allow the fine particles of the surface to dry out faster than the body concrete and this sheeting or coating having no bonding affinity for concrete does not attach to itself the fine particles of the surface, and therefore its removal does not roughen the surface, but leaves it unbroken and glassily smooth whether the surface be level or uneven, with its natural light reflecting and water resisting qualities unimpaired.

The terms "non-bonding" and "having no bonding affinity for the concrete," are used to indicate that the lining or coating may be readily separated from the concrete when the latter has cured without pulling away any of the concrete surface. It will be apparent that if sheeting is applied to freshly placed concrete and immediately pulled away, some moisture together with some surface material carried thereby will adhere thereto, but as the concrete becomes hardened the tendency of the surface material to lift decreases as the hardness of the concrete increases, until when the mass is sufficiently hard, there is no pulling of the surface when the sheeting or form is removed.

A sheeting or coating of the nature described has a very smooth surface, and being unaffected by the concrete facing material, the latter may readily shift around under agitation to form a very compact layer of material immediately adjacent the lining.

The coating or lining being flexible and adapted to be stretched will readily follow the shaping or patterning of the mold or form, and therefore will not interfere with the imparting of the mold or form pattern to the molded concrete.

It is found that the concrete surface so obtained is highly moistureproof, is very hard and will therefore stand a lot of wear, is weather resisting and further is very easily washed in the same manner as glazed tile or porcelain enamel.

While the invention is particularly adapted for use with cement, I have found that a glazed or shiny finish may be obtained with other hardening materials such as plaster of Paris.

It has been found that molds of plaster of Paris, which have had surfaces prepared in this manner, may be used for molding concrete without the necessity of using soap, oil or other coatings usually employed to prevent adhesion of the concrete to the mold.

It will be seen that I have been able to produce a glossy or glaze finish without the addition of glazing materials and without the use of heat as is usually required in forming glazed surfaces and without a secondary or additional operation.

What I claim as my invention is:

1. A method of forming a structure of an ordinary hydraulic cement concrete having a glossy or glazed face, which comprises placing said concrete in a form having a covering of hydrochloride of rubber; compacting the concrete to ensure intimate contact with said covering; allowing the covering to remain in contact with said concrete until the concrete has sufficiently hardened to obtain the desired height of gloss; and finally separating the covering from the hardened concrete.

2. For use in molding structures of cementitious material, a form having at least a portion of its molding surface formed of hydrochloride of rubber.

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