

Patented Aug. 18, 1925.

1,550,355

UNITED STATES PATENT OFFICE.

FRANK GUY, OF HOLME LEA, CHELSEA, VICTORIA, AUSTRALIA, ASSIGNOR OF ONE-FIFTH TO MILTON LIVINGSTONE DAVEY, OF MELBOURNE, VICTORIA, AUSTRALIA.

COMPOSITION FOR USE IN THE MANUFACTURE OF CONCRETE STRUCTURES AND THE LIKE.

No Drawing.

Application filed January 16, 1923. Serial No. 613,048.

To all whom it may concern:

Be it known that I, FRANK GUY, residing at Holme Lea, Chelsea, in the State of Victoria, Commonwealth of Australia (whose post-office address is Holme Lea, Chelsea, Victoria), have invented certain new and useful Improvements in an Improved Composition for Use in the Manufacture of Concrete Structures and the like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved composition for use in the manufacture of concrete structures and the like and refers more especially to a composition for adding to concrete mixtures used for forming structures such as buildings, tiles, bricks, wash troughs, baths, sanitary ware and other articles of a similar description.

The object of this invention is to provide a composition for use in the manufacture of concrete structures whereby a water-proofing or fire-proofing effect or both water-proofing and fire-proofing may be obtained. In this way concrete articles may be formed to which a porcelain or glazed surface may be applied in the ordinary way.

This composition is capable of being made up in quantities and used in such proportions as may be required by simple addition to the concrete in its manufacture whereby the desired fire-proofing or water proofing effect may be obtained by the use of ordinary unskilled labour as usually employed in the manufacture of concrete structures and articles. Consequently the employment of skilled labour necessary for the careful manipulation of definitely proportioned constituents may be avoided.

I accomplish this object by providing a composition for use in the manufacture of concrete structures which consists of a mixture of soap, sand and alum formed by mixing a soapy solution whilst hot with sand in such proportions as to produce a solid mass when cooled and set, pulverising this mass and adding thereto an amount of powdered alum.

This composition is added to the concrete used in the manufacture of structures and

articles in certain proportions in accordance with the effect it is desired to produce.

For the purpose of forming this composition, we take a quantity of ordinary household soap or common laundry soap and dissolve the same in water heated at boiling point. In practice, we have found that a certain soap on the local market known as "Household soap" found by analysis to contain approximately about 40% of moisture and about 50% of anhydrous soap and about 10% of sodium silicate gives most satisfactory results.

In practice, instead of employing soap in the manner indicated, we may proceed to the manufacture of the soapy solution by taking the requisite quantities of caustic soda, sodium silicate and fatty matter, with or without resins as may be required to produce a soapy solution of the nature indicated.

To this soapy solution is added a sufficient quantity of clean sand to form a stiff paste. In practice, the proportions we have employed have been in the ratio of 1 of soap to 3 of sand by weight, the amount of water used being about one and a half times the weight of the soap. This mixture is poured into moulds whilst hot and allowed to set. The blocks so formed are then ground and a quantity of ground alum is added. The proportion of ground soap-sand mixture to the alum is governed by the purpose to which the "settling" mixture is to be applied. For example, when proceeding to produce a water proofing effect in the resultant concrete we use two parts by weight of the soap-sand mixture to one part of ground alum, whilst when proceeding to produce a fire-proofing effect, we employ proportions of soap-sand mixture to ground alum of one to one by weight. The additions of ground alum to the ground soap-sand mixture causes the latter to become dry and granular and in a suitable condition for storing for use as required. This "setting" composition is added to the concrete and thoroughly incorporated therewith in proportions according to the effect required. For example the mixtures produced for the purpose of a water proofing and fire-proofing effect are added in about the proportions of one to one and a half lbs. to every cubic foot of concrete.

In the manufacture of concrete structures

55

60

65

70

75

80

85

90

95

100

105

or articles, the concrete is formed in the ordinary way, such as with clinker or breeze, sand and cement, thoroughly mixed in a suitable machine with the requisite quantity of water.

Before adding the cement it is desirable to sieve out the fines from the clinker breeze and sand and other aggregates used. The quantity of cement added to the granulated clinker or breeze and sand is about one-third, more or less by measure, according to the strength required in the article or structure.

The requisite quantity of our improved composition is then added to this concrete mixture and the same thoroughly incorporated and the concrete is then fed into the forms or moulds and allowed to set, or may be employed in any ordinary manner in which concrete is employed.

It is then found that the finished concrete article or structure is capable of resisting penetration by moisture and is waterproof to a remarkable extent. In addition, it has been found that the concrete so formed is capable of resisting heat at a relatively high temperature and if desired concrete articles (such as wash basins, wash-troughs, baths and other sanitary ware) may be heated to the temperature necessary for the fusion of glazes usually employed in giving a porcelain enamel coating to such articles.

I wish it to be clearly understood that I do not confine myself to the quantities and proportions of the various ingredients mentioned in this specification and that the same are to be taken by way of illustration only.

I claim:

1. An improved composition for use in the manufacture of concrete structures and the like, consisting of a mixture of soap, sand and alum, formed by mixing a soapy solution with sand, allowing the same to set, pulverizing the same and adding powdered alum.

2. An improved composition for use in the manufacture of concrete structures and the like consisting of a mixture of soap, sand and alum, formed by mixing a soapy solution whilst hot (at about the boiling point of water) with sand, allowing the same to set, pulverizing the same and adding powdered alum.

3. An improved composition for adding to concrete mixtures formed by making a hot solution of soap containing approximately 40% of water, 50% anhydrous soap and 10% sodium silicate, mixing finely granulated material such as sand with the hot soap solution and then allowing same to set into blocks, pulverizing the blocks, and then adding powdered alum to the pulverized material.

4. A composition for adding to concrete mixtures formed by making a hot solution of soap, adding three times the weight of sand to the solution whilst hot, pouring the mixture into moulds and allowing same to set into blocks, pulverizing the blocks, and then adding alum in the proportion of from half to equal quantities by weight of the pulverized materials.

5. An improved concrete composition consisting of ordinary concrete to which has been added a composition comprising a mixture of soap sand and alum formed by mixing a soapy solution with sand allowing the same to set, pulverizing the same and adding powdered alum.

6. A process of making waterproof and fireproof concrete consisting in mixing cement and granular material with water and then admixing therewith a composition of soap, sodium silicate and alum substantially as described.

In testimony whereof he has affixed his signature.

FRANK GUY.