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UNITED STATES PATENT OFFICE

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METHOD OF MAKING CEMENTITIOUS MATERIAL OF CELLULAR TEXTURE

No Drawing.

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This invention relates to processes of making a cementitious material of cellular structure and it comprises a process in which a cement pulp containing a frothing agent, such as flotation oil, is aerated to include very small bubbles of air and thereafter further aerated in a manner to include relatively larger bubbles of air whereby the set product obtained is characterized by including large bubbles defined by walls of cellular cement.

In my Patent 1,657,716 dated January 31, 1928, I describe processes of preparing cellular cementitious material in which I aerate a cement pulp containing flotation oil.

If this cementitious material of cellular texture be made of fairly large bubbles of approximately the same size, the material in section will resemble a honey-comb and the spaces between the bubbles will be solid walls of neat cement. But this material will be improved in strength for a given weight of cement if the walls between the large bubbles be not of solid cement but be themselves made of very small cement coated bubbles.

That is, it is proposed to make the ground mass of my material also of cellular texture. In other words this invention is of a method of coating bubbles of air with a film of cement in which are embedded smaller bubbles resulting in a product of cellular walls between bubbles of air, a texture of great structural strength. With the machines and principles already invented this object may be attained quite easily.

In carrying out the method of the present invention, I may employ the apparatus illustrated in Patent No. 1,687,067 granted to me under date of October 9, 1928, or the apparatus shown and described in Patent No. 1,733,577 granted to me under date of October 22, 1929. In the first patent, there is shown an apparatus for aerating and agitating an admixture of cement pulp or grout and a small quantity of a frothing flotation reagent to form a cellular fabric consisting of a body of

adherent bubbles, each having a shell or envelope of cement. As stated in the patent, the entering air is divided into separated bubbles by the rotating disk and the size of the bubbles can be regulated by the speed of the rotation of the disk. In the second patent, a complete plant for carrying out the method, including a special form of apparatus employed for regulating the sizes of the bubbles formed, is fully illustrated and described.

The admixture of cement pulp and a flotation reagent is supplied with air, which is broken up into bubbles of small but uniform size, the size being controlled by the speed of rotation of the special devices for subdividing the air and these small air bubbles are introduced into and agitated with the pulp and take on a thin shell or coating of cement, so that the resultant product is a spumous mass of froth of fine bubbles each having a separate shell or coating of cement. I then introduce into this froth air bubbles of relatively larger size, which size is controlled by the speed of operation of the air dividing means, and the admixture of air bubbles and froth is agitated, so that the larger bubbles are dispersed throughout and are completely enveloped by the smaller bubbles and there results, after the cement has set, a cellular fabric in which the larger bubbles are bounded by walls of cement, which include the smaller cement coated bubbles. Thus a cementitious material of cellular texture in which the cells are of different and controlled size can be made by first aerating cement pulp in the presence of flotation oil or similar acting substance with small bubbles of air and then passing this product into another machine where larger bubbles of controlled size are incorporated, as described.

In the appended claim by the term "frothing agent" I mean such substances as reduce the surface tension of water or otherwise aid in bubble formation.

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Having thus described my invention what I claim is:

5 The method of making a cellular fabric which comprises aerating and agitating a mixture of cement pulp and a frothing flotation reagent to form a froth of cement coated bubbles of small and substantially uniform size, incorporating in the froth bubbles of larger size, whereby the larger bubbles will be enveloped by the smaller bubbles.

10 In testimony whereof I have affixed my signature.

GEO. B. HINTON.

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