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## PLASTER BANDAGE AND METHOD AND COMPOSITION FOR MAKING SAME

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8 Claims. (Cl. 106—110)

1

This invention relates to a method for retarding the setting of plaster of Paris, and to plaster or Paris products including an improved set retarder or inhibitor therefor. This application is a continuation in part of application Serial No. 654,819, filed March 15, 1946, in the names of James J. Eberl and Alvin Richard Ingram, now abandoned.

Plaster of Paris which is a hemi-hydrate of calcium sulfate, is commonly prepared by heating gypsum to remove a portion of the water of crystallization therefrom. For many uses the plaster of Paris is mixed with water to form a paste, which after application to a surface or after formation to the desired shape is allowed to rehydrate and to dry whereby the plaster sets up as a hard mass. One of the early uses of this material was in the formation of casts to aid in the setting of broken bones.

More recently a plaster of Paris bandage that comprises particles of plaster of Paris adhering to a crinoline backing has been prepared for orthopedic use. The bandage is dipped in water for a brief period by the physician then wrapped around a portion of the body of the patient and allowed to set up as the cast. This plaster of Paris bandage is made by preparing a paste of plaster of Paris, spreading it upon a backing such as crinoline, and drying it without hydrating. It is necessary to inhibit setting up of the plaster while producing this bandage to prevent premature setting. The finished bandage product, however, should not be inhibited since a fast setting time is desirable when applying the plaster product to form a cast.

Inhibition of plaster setting during production of the bandage has been accomplished either by keeping the whole operation at a high temperature of the order of 95° C. or by adding a chemical inhibitor. Among such inhibitors were organic solvents of the water miscible type such as alcohol or acetic acid. These solvents would retard the setting of the plaster for a period of time sufficient to permit drying without setting during manufacture of the bandage and permit fast setting during preparation of the cast. These prior methods have certain inherent disadvantages. Acetic acid, for example, has to be used in large quantities and is therefore not only expensive, but obnoxious and difficult to dry. Alcohol requires use in even larger quantities at great cost and inconvenience.

2

Largely for non-orthopedic uses of plaster of Paris, permanent set retarders other than solvents are necessary and have been used to prevent the plaster from setting up while it is being worked. One or more of a number of salts including citrates, borax, succinates, alginates and proteinates have been applied to this purpose. These materials are ordinarily used in small proportions, say five per cent or less of the total composition. Nevertheless, they have a deleterious effect on the strength of the finished plaster. Moreover, they are not desirable for the manufacture of orthopedic bandages since they would lengthen the setting time of the finished product. For example, the setting time using these retarders might be ten or fifteen hours, whereas in application of an orthopedic bandage it is desirable to have a setting time of from about four to about eight minutes.

The object of this invention is to provide a process for the production of plaster of Paris products whereby the setting of the plaster is substantially retarded during preparation of a bandage or other product. It is a further object of the invention to provide a process for the production of finished plaster of Paris products that are substantially free of residual retarder.

Other objects of the invention are to provide a new and improved retarder for the setting of plaster of Paris and to provide an improved retarder, the retarding activity of which disappears readily from the plaster of Paris mix after preparation thereof.

Another object of the invention is to provide a process for the production of finished plaster of Paris products containing a transitory retarder having no retarding effect upon the setting of the finished plaster product. Provision of the products of the above processes forms a still further object of the invention.

These and other objects are accomplished by