

# UNITED STATES PATENT OFFICE.

MELVIN B. CHURCH, OF GRAND RAPIDS, MICHIGAN.

## PROCESS OF FORMING RETARDED GYPSUM.

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(No specimens.)

*To all whom it may concern:*

Be it known that I, MELVIN B. CHURCH, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Processes of Forming Retarded Gypsum, of which the following is a specification.

My invention relates to the manufacture of the well known compositions of gypsum in which glue is mixed with calcined gypsum as a retarding agent, when the gypsum is used for mechanical purposes, such as plastering, the coating of walls, and as a substitute for the ordinary mortar composed of lime and sand. Heretofore glue used for this purpose has been the ordinary glue of commerce which is in a dry and solid condition. Ordinarily the glue in the manufacture of wall coatings has been ground finely and mixed in a dry state with finely ground calcined gypsum. Other methods have also been devised, such as mixing the glue reduced to a liquid form with the gypsum and subjecting both to heat during the process of calcination. I have discovered after long experience that the qualities of the glue best adapted as a retarder for calcined gypsum, are impaired by the process of drying, so that when wet again for use it is not so effective, and that a liquid glue, or glue taken in its jelly-like condition and before it has been subjected to desiccation is a better retarder, and is effective therefor in smaller quantities, and that it is much more uniform in its effects on gypsum as a retarder, than the glue which has been dried and is in the solid condition, whether it be used as a powder, or subsequently re-melted. I have also discovered that by using the glue as it comes from the rendering tanks and without subjecting it to the drying process I may use the poorer kinds of glue as a retarder in mixture with calcined gypsum with substantially the same effect, or with better effect than that produced by the better grades of glue heretofore used in its ordinary commercial and dry condition or in subsequent solution of the same; and the essential point in my invention therefore lies in mixing with the calcined gypsum the glue as it comes

from the glue maker's kettle without having been exposed to the air as when submitted to a drying process.

The precise nature of the change which the glue undergoes in drying by reason of which it is better fitted to act as an adhesive agent [as is well known] but is worse fitted to act as a retarder of gypsum, and to delay its crystallization, without finally affecting the completeness of that crystallization, or the strength of the gypsum when set, I am unable to explain, as I am also advised that experts are yet unable to explain how glue acts as a retarder. But the fact remains that the drying which appears to be beneficial for the perfecting or preservation of the adhesive qualities of the glue, detracts from its retarding qualities when used with calcined gypsum.

In practical application of my invention, I preferably take the cheaper kinds of glue, that is to say, glue of less value in respect to its adhesive qualities, the retarding action of which kind of glue is more seriously impaired by the drying process than the better grades. The glue may be taken directly from the kettle and put into casks for shipment. This undried glue I mix with calcined gypsum in any of the well known ways. For example, I sometimes mix it with gypsum in the calcining kettle, by reducing it with water from the condition in which it is taken from the kettle in the glue factory.

The various methods of reducing gypsum with glue are well known and need not be here described. An important element, however, in connection with my improved method relates to sanitary considerations. The preparations of gypsum and glue are for the greater part used in the plastering and coating of the walls and ceilings of dwelling houses. For the healthfulness of such walls and ceilings it is obviously desirable that the glue should suffer as little exposure as possible to the atmosphere before it is combined with gypsum, since such exposure necessarily fills the glue with living germs derived from the surrounding atmosphere to which the glue is exposed in drying, and these are retained when the glue is mixed with the gypsum. But when the glue is kept or trans-

ported before using it is reduced in the rendering tank to a stiffer condition, and is substantially impervious to the air, and is but slightly exposed, and after it is mixed with the gypsum, it is protected thereby, its proportion to the gypsum being very small, and the dry sulphate of lime being an antiseptic.

I claim as my invention—

The hereinbefore described process of forming a retarded gypsum composed of calcined gypsum and glue, the same consisting in tak-

ing the glue in the condition in which it comes from the rendering tank, in the process of making glue, and mixing it without previous drying with calcined gypsum, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MELVIN B. CHURCH.

Witnesses:

HENRY E. COOPER,

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