

UNITED STATES PATENT OFFICE.

EMIL RUEFF, OF NEW YORK, N. Y.

FIREPROOFING AND INSULATING COMPOUND AND METHOD OF PRODUCING SAME.

SPECIFICATION forming part of Letters Patent No. 630,115, dated August 1, 1899.

Application filed August 3, 1898. Serial No. 687,595. (No specimens.)

To all whom it may concern:

Be it known that I, EMIL RUEFF, a resident of the city, county, and State of New York, have invented Improvements in Fireproofing and Heat and Sound Insulating Compounds and Method of Producing the Same, of which the following is a specification.

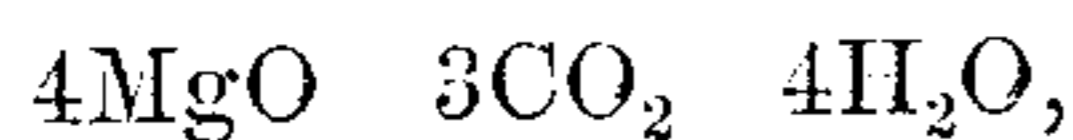
This invention relates to improvements in fireproofing and heat and sound insulating media, and has for its object to produce a compound and a method of making the same, which compound may be used for building-blocks, boiler-coverings, and in like situations where a non-conducting fireproof compound is desirable.

To this end the invention consists in the process and article hereinafter set forth and claimed.

In carrying out my invention I produce in admixture with a fibrous material a compound of magnesia different from the ordinary carbonate of magnesia of commerce in that it has a greater percentage of water than the said ordinary carbonate of magnesia. The carbonate of magnesia of commerce is either the light carbonate of magnesia, the heavy carbonate of magnesia, or the mineral magnesite. The light carbonate of magnesia may be said to have the following two formulæ:



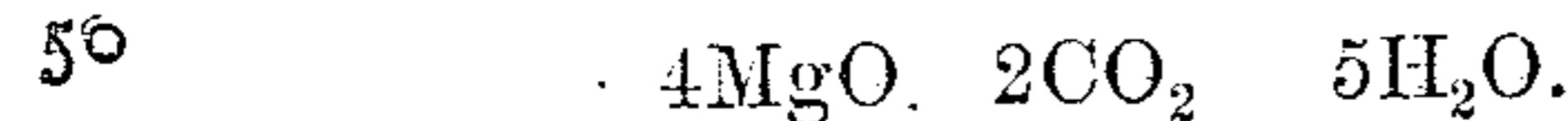
or



which latter formula also represents the composition of heavy carbonate of magnesia of commerce. The mineral magnesite:



The basic or alkaline carbonates which I produce contain more water and are in part indicated by the following formulæ:



This new carbonate of magnesia I shall hereinafter designate as "alkaline magnesite."

In producing alkaline magnesite for mixing with fibrous material I may proceed in various ways. One way to produce alkaline magnesite is as follows: I mix one part of powdered calcined magnesite with twenty parts of water and conduct to such mixture while in a state of agitation carbonic-acid gas under a pressure of about twenty-five pounds per square inch until the mixture has absorbed less than one part, by weight, of the carbonic-acid gas, so as to prevent the formation of a normal carbonate of magnesia. The whole mass is then heated gradually to a temperature less than or preferably to about 160° Fahrenheit, drained, dried, and may then be compressed under a pressure of from two hundred to one thousand pounds per square inch into the desired shape. This material according to this invention is used in admixture with a fibrous material such as asbestos, paper-pulp, sawdust, vegetable fibers, and so on; but I prefer to use asbestos.

I may mix the fibrous material with the alkaline magnesite directly, or I may add the fibrous material to the alkaline magnesite while the latter is in the state of formation or also to the raw material from which the alkaline magnesite is to be obtained.

In carrying out my invention I may proceed in various ways, one of which is as follows: I take eighty pounds of powdered calcined magnesite, twelve pounds of fibrous material, such as asbestos, and sixteen hundred pounds of water, and mix the same intimately. I then aerate the mixture with carbonic acid or a gaseous medium containing carbonic-acid gas under a pressure of twenty-five pounds per square inch for a length of time determined by the quality of the product desired and the amount of carbonic acid which the gaseous medium contains. When the desired action has taken place, I heat the mass gradually to about 160° Fahrenheit, drain the mass, dry it, and finally compress it to the desired shape under a pressure of from two hundred to one thousand pounds per square inch. The alkaline magnesite acts upon the asbestos chemically after the compression of the mass, and thereby a very close union of the constituents ensues, which greatly contributes to the hardening of the mass.

The chemical action of the alkaline mag-

nesite upon the asbestos is shown by the facts that dilute hydrochloric acid removes from the original mixture only the alkaline magnesite, while if the substances have been in contact for some time hydrochloric acid does not only dissolve the magnesite of the alkaline magnesite, but also magnesia from the asbestos. The latter alone does not lose any magnesia by treatment with acid.

The article thus obtained is a carbonate of magnesia which contains less carbonic acid and more chemically-bound water than any other commercial carbonate of magnesia heretofore produced. The alkaline magnesite thus obtained differs from the ordinary magnesite in that it contains in proportion to its magnesia less carbon dioxid than ordinary magnesite and also in that it contains chemically-combined water, which is not present in ordinary magnesite. The ordinary magnesite is a heavy and dense mineral, while the article which I produce is a very finely-divided and light product. It will of course be well understood that the asbestos is used as a binder.

The excess of chemically-bound water and the method of preparing the mass vastly improves the condition of the substance. It is very light in weight, and, unlike other articles of the same class, it possesses great tensile strength and elasticity and is able to withstand not only the roughest handling, but also the severest test to which any building material used for lining interior walls,

ceilings, &c., may be subjected. This substance has great resistance to the influence of heat and may be used for fireproofing, and, being a non-conductor of sound, may be also used as an isolating lining for covering walls, ceilings, ice-boxes, safes, &c., and may be used as a pipe or boiler covering. It can be handled in the same manner as wood, as it may be sawed, filed, or nailed.

I do not herein claim the alkaline magnesite described, as the same forms the subject-matter of an application for patent filed by me on June 23, 1899, Serial No. 721,616.

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described method of producing a non-conducting sheathing or covering material, which consists in mixing calcined magnesite with fibrous material in the presence of water, and thereupon treating the mass with less carbon dioxid than is necessary to produce a normal carbonate, heating and drying the mass and finally compressing it into the desired form.

2. The herein-described composition comprising alkaline magnesite containing an excess of chemically-bound water combined with a fibrous material associated together in a solid mass.

EMIL RUEFF.

Witnesses:

G. E. MORSE,
OTTO V. SCHRENK.