

UNITED STATES PATENT OFFICE.

CHARLES BERGER, OF EAST SAGINAW, ASSIGNOR TO HIMSELF, CHARLES L. ORTMANN, AND JOHN NERRETER, OF SAME PLACE, AND SIGMUND ROTHSCHILD AND ARNOLD KAICHEN, OF DETROIT, MICHIGAN.

IMPROVEMENT IN COMPOSITIONS FOR FILLING FIRE-PROOF SAFES, VAULTS, &c.

Specification forming part of Letters Patent No. 126,011, dated April 23, 1872.

Specification of an Improved Composition for Filling Fire-Proof Safes, Vaults, &c., invented by CHARLES BERGER, of East Saginaw, in the county of Saginaw, State of Michigan.

My invention consists in preparing wood-ashes in a peculiar manner, hereinafter described, combining this material with asbestos, and using this compound in the interior of the fire-proof wall, with a body of the prepared ashes alone on the inside and outside.

In carrying out my invention I employ ashes preferably from hard wood, in a dry condition, and prepared in a peculiar manner. The previous preparation of the ashes is effected by atmospheric exposure; the moisture and oxygen from the air, uniting with the ashes, reduces the latter to a condition adapting them to be compacted together into a close mass. This preparation is carried out by exposing the ashes to the atmosphere within a suitable receptacle, with perforations or openings adapted to allow a free passage of air, but to be closed in wet weather to prevent the entrance of rain or too heavy moisture. The process of preparing the ashes may occupy three months, more or less, according to the state of the atmosphere, or until the ashes are found to cohere when pressed together, the material being turned from time to time to subject all parts to a uniform exposure. With wood-ashes prepared as above I mix about an equal quantity of asbestos, or what is termed by the Germans *feder alumn*.

In applying the invention, I introduce this compound in an interior part of the wall to be made fire-proof, and on the inner and outer sides apply a body of the prepared ashes alone. This may be done either with or without partitions of metal between.

To make it more plain, I will specifically describe an effective mode of applying the invention, but do not desire to be understood as limiting myself to dimensions or other special details.

Supposing the wall to be four and one-half inches thick; I may introduce within it two parallel partitions of copper, iron, or other material, leaving a space of an inch between one of them and one side of the external shell, and

an inch between the two partitions. The inner space, or that between the partitions, I fill with the composition of asbestos and prepared ashes, and the outer spaces I fill with the prepared ashes alone.

The prepared ashes I find to be a very superior non-conducting medium, and by the combination of the three strata, as above described, the transmission of any destructive amount of heat from the hottest fire is entirely prevented.

Wood-ashes prepared in the manner hereinbefore described are found far superior to either new ashes or ashes which have been wet, and their preparation cannot be accomplished as effectively in any other manner as by prolonged atmospheric exposure in the way I have explained. In addition to its uses as an envelope to exclude fire from an object, the described material may also be used to envelop fire, as a covering for boilers or furnaces to prevent access of the heat of the fire to surrounding objects—as on board ships or in any other position, as, for example, in compartment-walls and fire-proof partitions—and as a protection for receptacles containing gunpowder and other inflammable matter, both in ships and buildings; also for filling metallic columns in buildings.

I am aware that asbestos has been used before as a filling for fire-proof safes. Its use for this purpose is referred to in Appleton's Cyclopaedia, originally published in 1857; and also in Webster's Dictionary, edition of 1849. I am also aware that it has been proposed to use ashes as a non-conducting lagging for boilers, as, per example, in C. M. O'Hara's patent of November 23, 1869. My mode of preparing the ashes renders this material greatly superior in its effect, for reasons before stated. The asbestos has also a useful mechanical function in connection with the ashes, forming a more compact mass. I do not claim the combination of asbestos with earths, or with chemical salts, as described in Theodore Hyat's patent of March 8, 1870.

Claims.

I claim as my invention—

1. Hard-wood ashes, prepared in the man-

ner herein described, as a non-conducting material for fire-proof safes or vaults.

2. A composition of asbestos and prepared wood-ashes, substantially as and for the purposes set forth.

3. As an improvement in filling fire-proof walls or doors, I claim a composition of asbes-

tus and prepared wood-ashes, protected on the inner and outer sides with prepared ashes, substantially as described.

CHARLES BERGER.

Witnesses:

OCTAVIUS KNIGHT,

WALTER ALLEN.