

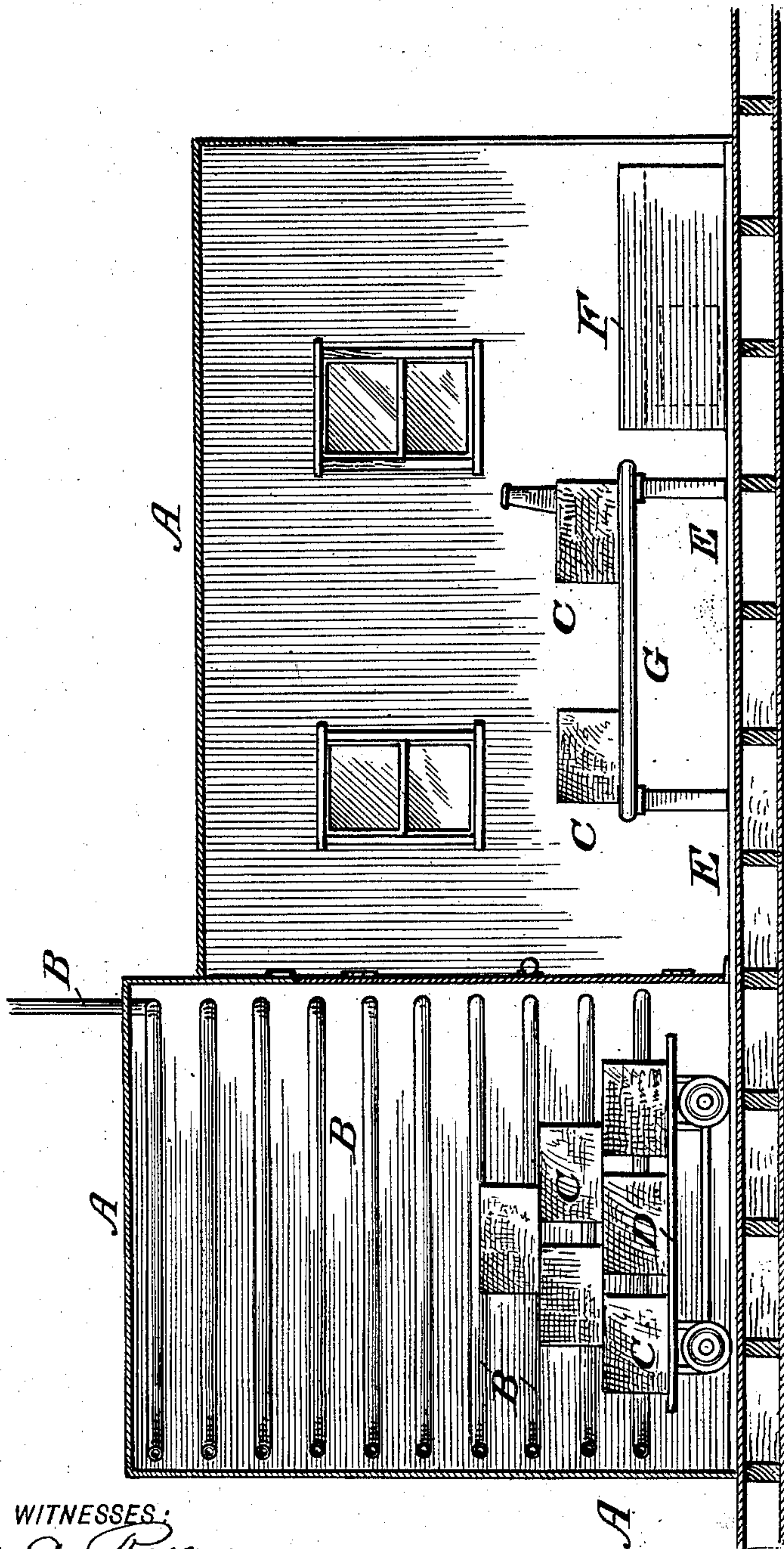
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W. A. McLAUGHLIN.
METHOD OF TREATING AND CLEAVING SLATE.

APPLICATION FILED MAY 9, 1903.

NO MODEL.



WITNESSES:

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WATSON A. McLAUGHLIN, OF DELTA, PENNSYLVANIA.

METHOD OF TREATING AND CLEAVING SLATE.

SPECIFICATION forming part of Letters Patent No. 748,518, dated December 29, 1903.

Application filed May 9, 1903. Serial No. 156,492. (No specimens.)

To all whom it may concern:

Be it known that I, WATSON A. McLAUGHLIN, a citizen of the United States, residing at Delta, in the county of York and State of Pennsylvania, have made certain new and useful Improvements in Methods of Treating and Cleaving Slate, of which the following is a specification.

In the usual method of producing slate for roofing and various other purposes blocks of varying size are cut from the quarry and then split into laminæ or plates of a desired thickness by means of a chisel or wedge introduced into the fissures between the plates. A certain percentage of such blocks have a defective cleavage, the laminæ not being flat and even, or, in other words, the cleavage planes being more or less irregular. The consequence is that only a certain portion of such blocks can be split into serviceable plates, the loss usually varying from fifty to eighty-five per cent. I have practically applied a method of treatment and cleavage of such "bad blocks," whereby the percentage of loss is greatly reduced, it being frequently but fifteen per cent. Thus I am enabled to work at a profit quarries which are unprofitable in the ordinary course and to also greatly increase the marketable output of quarries of the best class.

In carrying out my method I require a refrigerating apparatus one element of which is a box or chamber in which a duly low temperature can be economically maintained for a sufficient length of time to thoroughly congeal the water present in the fissures of the slate.

The accompanying drawing indicates the elements or parts of an apparatus which may be employed.

A indicates a refrigerating-chamber which will in practice have hinged doors, and B a pipe-coil arranged therein for carrying ammonia or other refrigerating agent. The slate blocks C may be economically conveyed into and removed from the chamber A by means of a flat or platform car D, the floor of such chamber being for the purpose on the same or nearly the same plane with an exterior floor or track E. The latter is preferably inclosed, as shown at A', to protect the workmen from the weather and especially

for warding off the calorific effect of the sun's rays upon the blocks C when removed from the refrigerating-chamber and while being split into plates.

Slate blocks contain when quarried a certain quantity of water in the fissures, and ordinarily this suffices when the blocks are frozen to the required degree to expand them sufficiently to enable a good cleavage to be effected, even in bad blocks.

In some cases the slate is too dry to enable the cleavage to be made to the best advantage and profit, and I therefore supply the lack of water artificially. Thus I immerse the slate blocks in water, say, for twelve hours. For this purpose I provide a tank F, which is to be suitably constructed and located to enable the blocks to be conveniently placed in and removed from it. The blocks are retained in the refrigerating-chamber until fully congealed—that is to say, until their contained water is converted into ice. If the temperature is zero Fahrenheit and is maintained for twenty-four hours, it will suffice. It is to be understood, however, that the time may be varied with the temperature. Thus in case liquid air be employed as the congealing agent the time required to freeze a block will be very greatly reduced.

It is highly important that when the blocks have been duly frozen cleavage shall be effected without allowing them to be again exposed so long to the sun's rays or to a relatively high temperature as to melt the ice crystals to a considerable extent. In other words, the blocks must be cleft while still frozen or it will be impossible to effect a profitable cleavage. In fact, blocks once frozen and again exposed to a higher temperature, whereby the frost is driven out, even partly, are always very difficult and often impossible to cleave to advantage. I therefore cleave the blocks C at once they are duly congealed, and for this purpose I may remove them from chamber A to a bench G or other firm support within the inclosure D, where a chisel is inserted between the laminæ to separate them, which may be easily and quickly effected. Thus by my improved method slate blocks having a distorted or irregular stratification may be cleft as easily as those of the most regular lamination, so that the loss incident

to cleavage in the usual way is for the most part avoided.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of treating and cleaving slate blocks, which consists in submitting the blocks containing water to an artificially-produced temperature below 32° Fahrenheit, for
10 a length of time sufficient to congeal the water contained in the fissures, and then separating the laminæ while the blocks remain congealed, as described.

2. The method herein described, consisting
15 in saturating slate blocks with water, then

artificially congealing the water held in the fissures, and next separating the laminæ while the water is still congealed, as specified.

3. The method herein described, consisting in subjecting slate blocks to a water-bath for
20 about twelve hours, then to an artificial produced temperature of about zero Fahrenheit for a period of about twenty-four hours for congealing the water held in the fissures, and
25 lastly cleaving the blocks while still frozen, as specified.

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Witnesses:

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