UNITED STATES PATENT OFFICE

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WALL BOARD, SHEATHING LUMBER AND THE LIKE

No Drawing.

Application filed June 22, 1929. Serial No. 373,052.

The present invention relates to an improved method of treating wall board and sheathing lumber of the type prepared from redwood bark and the like, particularly as set forth in the co-pending application of Elton R. Darling, Serial No. 372,224, filed

June 19, 1929.

20 sorbent and open texture. For some purposes this is undesirable, and it therefore becomes necessary to treat said board or lumber with a sizing material, or the like, so as to cause a firmer adhesion of the fibres to 25 each other.

However, it is desirable to maintain the interior of the board in its open and porous condition, while substantially treating or impregnating the outer portions of the board.

One of the objects of the present invention is to treat finished porous sheathing lumber or wall board of the type outlined with a material that, while in liquid condition, may be readily applied to the board, possesses the 25 property of hardening comparatively rapidly and forming with the board a unitary structure whereby the board is provided with a mineral comparatively non-absorbent surface which may have the additional prop-so erties of being fire-retardent. For example, we may apply to the board, either after it has been dried or while undergoing drying, a thin coating of what inherently amounts to Sorel cement or the like. For example, we 35 may make a suspension of magnesium oxide in sufficient hydrochloric acid to form a certain amount of magnesium chloride as a result of the interaction of the magnesium oxide and the acid; having the suspension 40 thin enough so that it may be applied to the surface of the board, on either or both sides thereof, by means of a spray gun or may be applied by rollers or even by a brush, although the spray gun is to be preferred as 45 thereby the solution or suspension is caused to penetrate somewhat deeper into the board. This suspension of magnesium oxide in mag-

nesium chloride soon after it penetrates the

rounds the fibres near the surface thereof with a coating of magnesium oxychloride or Sorel cement. After the boards are dried, they will have thus been endowed with a penetrating coating infusible, insoluble and 55 fire-proof material.

It is also possible to suspend the mag-As ordinarily prepared, redwood bark nesium oxide in a solution of magnesium sheathing lumber has a comparatively ab-chloride, say of a strength of from 18° to 22° Baumé, the effect in either case being 60 the same. If it is desired to vary the color of the material, which in the case of magnesium oxide is substantially white, suitable pigments may be added.

As an alternative method for providing 65 the board with an interpenetrating surface of mineral material, it is also possible to apply thereto a creamy suspension of calcined gypsum, preferably of a type which is sufficiently retarded in its setting so that the ma- 70 terial may be sprayed thereon much in the manner of paint. Such a suspension may be obtained by mixing calcined gypsum with water in which a small amount of sodium phosphate has been dissolved, preferably the 75 disodium phosphate, although known organic retarders of the setting of gypsum may be employed with equal effect, the object being in either case so to retard the setting of the gypsum that the same will take place substantially simultaneously with the drying of the board.

A further alternative is the application to the board of a thin suspension of neat Portland cement and sufficient water to form a 85 sprayable suspension. If it is desired to endow the board with particular resistance to certain types of insects, this may be accomplished by spraying the board with a suspension of zinc oxide in zinc chloride, which also 90 has the properties of setting into a cementlike body.

We are aware of the use of solutions of organic sizes, glues, casein, and the like for the stiffening and water-proofing of wall board. 95 We are also aware of the use of said board as a base for plastering operations. We desire, therefore, to point out wherein our inboard will set into a cementitious body which vention differs from the known application 50 closes up the pores of the board and also sur- of cementitious material to the surface of a 100 board of this type. It is to be noted that we employ the suspension of the mineral material in such dilutions that there is obtained a substantial penetration of the interstices of the board by the material, so that but limited amounts of it remain on the surface of the board, the object being to reinforce and to coat the particles of the board with the mineral material without of necessity forming a distinct layer above the surface of the board.

Boards prepared in accordance with our invention may be employed as a plaster board, especially if the material applied thereto is of the same nature as the material which penetrates the fibres, as thereby a particularly good bond is obtained. A further advantage, especially when using the board as a base for plastering, is the fact that the suction or absorbent power of the board has already been partly compensated by the presence of the hardened mineral material surrounding the fibres.

Instead of applying water for making up 25 the solution of the magnesium chloride or for suspending the gypsum, we may employ the waste liquors resulting from the leaching of redwood bark, whereby we thus incorporate with the board all of the material originally 30 contained therein, the tannic acid naturally present in these leach waters acting as a natural retarder for the setting of the gypsum, so that nothing further will be required than to suspend the calcined gypsum in these leach liquors. In case magnesium chloride solutions are prepared, there will be 35 these leach liquors. formed a certain amount of magnesium tannate which is particularly desirable as a component of the finished board as it acts as a fire-proofing agency.

The board prepared in accordance with our invention has a substantially organic inner portion, consisting of redwood fibres (or other fibres, if they be used), while the outer portions of the fibres are provided with a coating of a set mineral cementitious substance which lends additional strength thereto and greatly diminishes the dusting usually encountered when handling redwood board.

We consider any suitable mineral cement as an equivalent for the Sorel cement, gypsum or Portland cement herein recited. The method of applying the cement is also purely a mechanical expedient and is immaterial in interpreting the hereunto appended claims.

We claim:
1. A board consisting of an inner layer of compacted felted fibres and an outer layer of similar fibres which individually are encased in a cementitious material, there being insufficient of the latter to form a distinct layer on the surface of the board.

2. Plaster-board consisting of a mass of compacted felted redwood bark fibres, the outer layers of said fibres being provided

with a coating of a set cement, the cement being insufficient in amount to form a substantially individual layer above the surface of the board.

3. Plaster-board consisting of a mass of compacted felted fibres, at least one side of said board having the fibres constituting the same provided with a coating of a set cement, the cement being insufficient in amount to form a substantially individual layer above 75 the surface of the board.

4. The process of making a building material in the form of a board which comprises sizing redwood bark fibres, forming the same into a compacted board and spraying or otherwise applying to at least one surface of said board a penetrating coating of a cementitious material capable of setting into a hardened insoluble mass, and drying said board.

5. The process of making a building material in the form of a board which comprises sizing redwood bark fibres, forming the same into a compacted board and spraying the same with a suspension of a cementitious substance in the leach waters from the treatment of said redwood bark.

6. The process of making a building material in the form of a board which comprises sizing redwood bark fibres, forming the same into a compacted board; suspending calcined gypsum in the leach-waters resulting from the leaching of said bark, and applying said suspension to said board in such manner that said suspension impregnates at least one side of said board to an appreciable depth and sets therein to a mass of hardened gypsum.

In witness whereof, we have hereunto subscribed our names.

CARL MARX. ELTON R. DARLING.

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