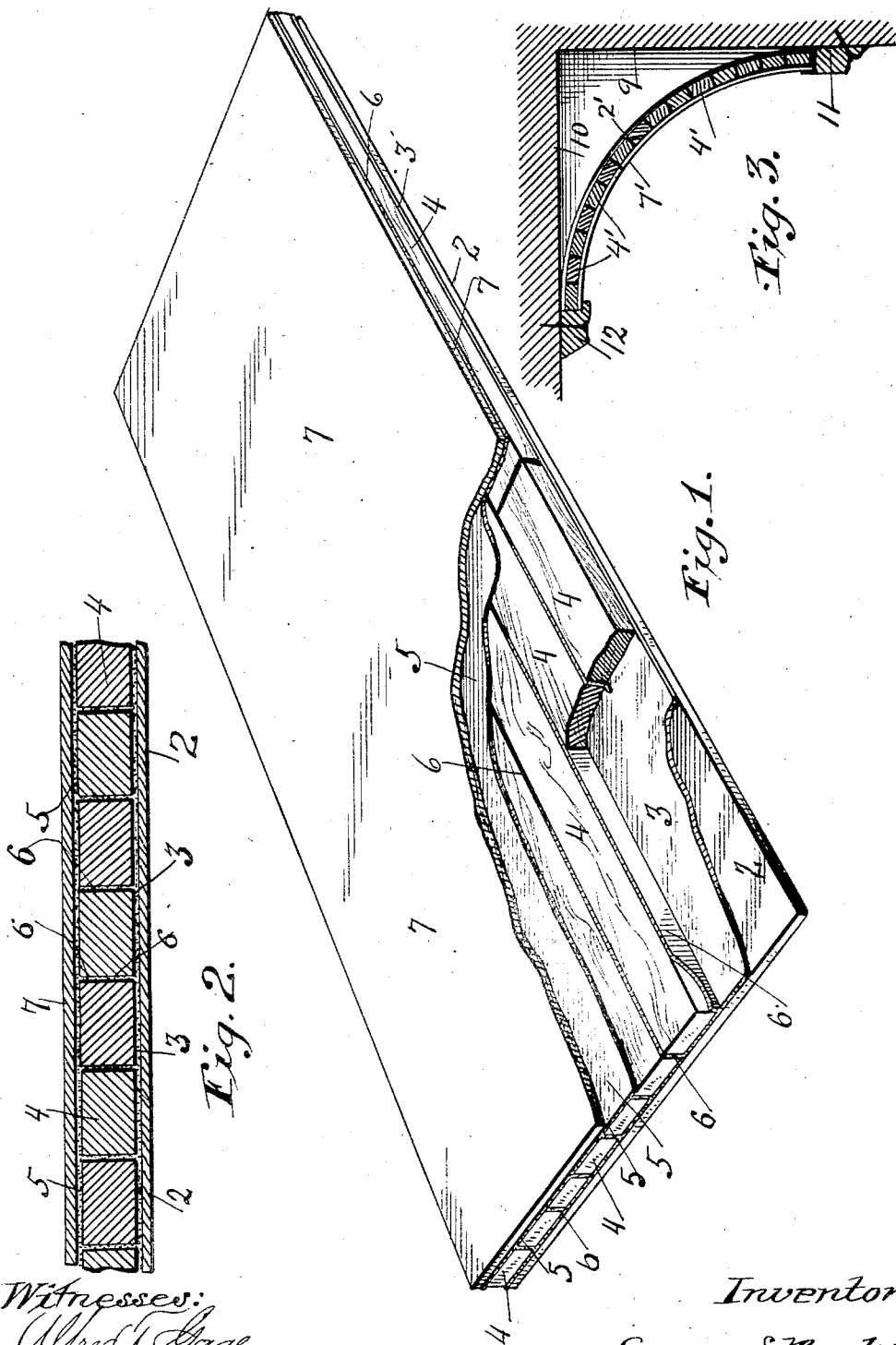


(No Model.)

G. S. MAYHEW.
COMPOSITION MATERIAL.

No. 468,355.

Patented Feb. 9, 1892.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE S. MAYHEW, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO CHARLES A. SMITH, OF SAME PLACE.

COMPOSITION MATERIAL.

SPECIFICATION forming part of Letters Patent No. 468,355, dated February 9, 1892.

Application filed August 15, 1891. Serial No. 402,717. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE S. MAYHEW, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented an Improved Composition Material, of which the following is a specification.

My invention relates to a novel material for use in building houses, railway-cars, and in many other departments of building and manufacture.

The object of my invention is to provide a simple and cheap composition material capable of being made up in large sheets, which sheets may be given during the process of manufacture a curved, an angular, or a flat shape, as best suited to the use to which the material is to be put, the latter being the most common.

The further object is to provide a composite board or slab which may be worked into any convenient shape with ordinary carpenter's tools, while at the same time possessing the properties of strength, rigidity, and of durability, and which will not warp or shrink.

With these objects in view my invention consists in a composition material made up of sheets or pieces of straw or other pulp board and strips or slats of wood interposed and secured together and between said sheets by an adhesive compound which, when dried, forms a hard inflexible and inelastic connection between the parts, whereby a stiff and durable composite board is produced; in a composition material constructed as above, with the exception that either the said paper-board or the said adhesive compound, or both, are previously prepared and adapted to make the finished composition material fire or water proof, or both, as required; in a method of manufacturing said material in which the same is subjected to heavy pressure and to a drying process, whereby the material is given a final firmness, solidity, and rigidity which it is impossible to obtain in any other way; in adapting such material to use in flat, or curved, or angular shapes and forms; and in particular constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

My invention will be more readily under-

stood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a composition board or slab embodying my invention, portions of the same being broken away to more clearly show the construction or composition thereof. Fig. 2 is a cross-section of a piece of my material, showing large wooden strips arranged between two sheets of thick paper. Fig. 3 shows a wall and ceiling cove constructed of my material.

The general and simplest form of my composition material is shown in detail in Fig. 1, where 2 represents the first layer or sheet of thick straw or other pulp board. In the process of manufacture the upper surface of this sheet 2 is covered with a layer or thick coat 3 of adhesive compound, which compound is made up originally of an adhesive material which has been previously dissolved and then mixed with an earthy or mineral substance to the proper consistency, and which, when the solvent is absorbed and evaporated, assumes a perfectly hard and stony character and is entirely without the properties of elasticity and flexibility. Immediately after the coat of adhesive compound is applied to the sheet 2 and while the compound is still soft and before it sets or hardens the narrow wooden strips or slats are laid close together upon the same. This body layer or course of wooden slats 4 is next covered or coated with a layer or coat 5 of the same adhesive compound, care being taken before or after or at the time the slats are laid in position to force the compound into all parts of the cracks or openings 6 between the slats and into all cracks or openings or recesses therein to thoroughly and completely fill the same. Immediately after this coat of compound is applied the other and second sheet 7, made up of material the same as or similar to that of the sheet 2, is placed on the slats and the whole composite slab thus formed in then subjected to a heavy and equal pressure adapted to force the parts firmly together. This pressure suddenly applied forces the adhesive compound into every crack or recess between or in the slats and paper, and in fact into the soft wood and into the thick paper,

and the greater proportion of the solvent employed in the adhesive compound is forcibly disseminated into and absorbed by the wood and the thick porous paper, thus greatly hastening the final setting or hardening of the adhesive compound, and thereby the rigid connection of the parts. The setting of the adhesive compound is thus forced and made practically instantaneous, thereby rendering the manufacture of the material speedy and convenient. The firm board so formed is now more thoroughly and finally dried, and is then ready for use.

The care which is exercised to insure the thorough and complete filling of all cracks, openings, depressions, or recesses between and in the several parts, and the application of very heavy pressure after the assembling of the same to solidify the whole, result in the production of a piece of composition material constituting in reality one homogeneous, strong, inflexible, and durable board, the component parts of which are thereafter practically inseparable.

So long as the standard rigidity and inflexibility is maintained the thickness and weight of these boards may be varied to almost any extent by the employment in their manufacture of wood strips and of paper-board of the various thicknesses, and therewith the required amount of the adhesive compound, which amount in practice decreases as the pressure increases, and the length and breadth of the boards are only limited in extent by the length in which lumber can be cut and handled, and the size in which the pulp-board can be made. The wood and paper employed being comparatively soft, and the dry adhesive compound, though hard and stony, being in thin layers or plates, and therefore readily broken, the composition material may be easily and cheaply worked with ordinary tools. My composition boards therefore, possessing, as they do, any required size and a density about equal to that of wood and a strength in many cases greater than wood, are not only suitable for use in place thereof, but preferable to wood, for the reason that my composition boards are free from the objectionable tendency of natural boards to warp, shrink, bulge, and split. Further, the straw, wood, or other pulp paper forming the sides of the boards readily admits of the application thereto of any ornamental or decorative or preservative substance or article, thereby especially adapting the material to any of the uses known to the building or decorative art.

As commonly manufactured, an adhesive compound composed of a solvent, glue and whiting, plaster-of-paris, or clay is employed to weld the parts of the board together. This compound in itself is neither fire nor water proof; but by employing in place thereof a compound possessing in itself fire or water proof properties, or both, my composition material may be made to possess those qualities. For

instance, in the manufacture of water-proof material a compound composed of clay, pitch, and dextrine is commonly employed, while in the manufacture of a fire-proof material I preferably use a compound made up of clay or of the whiting or plaster-of-paris above mentioned and dextrine and creosote. The same result may be attained by constituting the paper employed fire or water proof, or both, in itself. For example, fire-proof paper suitable for this use may be made by a thorough saturation of the pulp-board with oil of creosote or any of the silicates, while the same paper may be made water-proof by soaking it thoroughly in oil, the paper in each case being thoroughly dried before use in the manufacture of the board.

It will be seen that all of the various compounds have in common the earthy or mineral ingredient which gives to the same when dry the hard, inflexible stony character, the same being in fact stronger than either the paper or the wood. For this reason it follows that all of the scraps and waste in the wood and paper may be used up in the manufacture of the board; for the joints between the pieces are really stronger than the other parts of the boards.

One of the great advantages accruing from the use of the narrow slips is that the material may be made up originally in practically any curved or angular form, and when dry will be retained in form by the hard material wedged in between the strips.

One of the most valuable forms in which I have constructed my boards is that of a cove for use between the wall and ceiling of an apartment or chamber to convert the angle into a curve. Such a cove I have shown in Fig. 3, where the strips 4' and the sheets of paper 2' and 7', with the adhesive compound between, correspond to the parts 2 and 7 of Fig. 1. The curved board, the end of which is shown in this figure, may be secured in the angle between the wall 9 and the ceiling 10 by any suitable means. The molding-strips 11 and 12, secured to the wall and ceiling, and extending along the edges of the cove, being usually employed for this purpose.

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

1. A composition material composed of a body of wooden strips or slats arranged edge to edge and rigidly cemented together, and thick sheets of straw or other pulp board rigidly cemented on opposite sides of said body, whereby a single strong, rigid, and inflexible composite board is formed, substantially as described.

2. A composition material composed of a body of parallel slats or strips, sheets of thick straw or other pulp board arranged on the sides of said body, and an adhesive compound interposed between said slats and between the same and said sheets of paper and form-

ing when dry a hard substance rigidly connecting said parts, the whole forming a rigid inflexible homogeneous material, substantially as described.

3. A rigid and inflexible composition material composed of a body of parallel wooden slats, thick sheets of paper board arranged on the sides of said body, and an adhesive compound interposed between and connecting said slats together and with said paper-boards, substantially as described.

4. A rigid and inflexible composition material composed of a layer or body of parallel wooden slats or strips, sheets of thick paper-board arranged upon the sides of said strips, and said strips and paper being rigidly cemented together by an adhesive compound which when dry is of a hard inflexible character, substantially as described.

5. A rigid and inflexible composition material composed of a layer or body of parallel wooden slats, sheets of thick paper or other pulp board on the side of said body, and an adhesive compound having an earthy or mineral ingredient and interposed and dried between said slats and between the slats and said pulp-board, substantially as described.

6. A rigid and inflexible composition composed of a body or layer of narrow parallel wooden slats or strips, two equally strong sheets of heavy paper-board arranged on the sides of said body, and an adhesive compound interposed between and adapted to rigidly cement said slats and the slats and said sheets together, said compound having an earthy or mineral ingredient adapted to give the same a hard stony character when desired, substantially as described.

7. A rigid inflexible composition material composed of a layer or course of wood strips, thick paper facings therefor, and an adhesive compound interposed between the same and between said strips, said compound possessing in itself fire-proof properties, substantially as described.

8. A rigid inflexible composition material composed of a layer or course of wood strips, thick paper facings therefor, and an adhesive compound interposed between the same and between said strips, said compound possessing in itself water-proof properties, substantially as described.

9. A rigid and inflexible composition material composed of a layer or course of wooden slats or strips, thick paper facings therefor, and an adhesive compound interposed between the same and between said strips, said compound possessing in itself fire and water proof properties, substantially as described.

10. A rigid and inflexible composition material composed of a layer or body of wooden slats or strips, sheets of thick pulp-board arranged on the sides of said body, and an adhesive compound interposed between said sheets and entirely surrounding each of said

strips, said pulp-board having in itself fire-proof properties, substantially as described.

11. A rigid and inflexible composition material composed of a layer or body of wooden slats or strips, sheets of thick pulp-board arranged on the sides of said body, and an adhesive compound interposed between said sheets and entirely surrounding each of said strips, said pulp-board having in itself water-proof properties, substantially as described.

12. A rigid and inflexible composition material composed of a layer or body of wooden slats or strips, sheets of thick pulp-board arranged on the sides of said body, and an adhesive compound interposed between said sheets and entirely surrounding each of said strips, said pulp-board having in itself fire and water proof properties, substantially as described.

13. A rigid inflexible composition material composed of a body of wooden slats, thick sheets of paper-board embracing the same, and an adhesive compound possessing an earthy or mineral ingredient and interposed between said parts, the whole being subjected to heavy pressure while the said compound is still soft, whereby the material is solidified and rendered durable and inflexible, substantially as described.

14. The process of manufacturing rigid inflexible material, which consists in arranging between thick sheets of paper or other pulp board parallel slats or strips, interposing between those parts an adhesive compound adapted to assume a hard inflexible character when dried and subjecting the whole to heavy pressure, whereby the same is made solid and inflexible and the setting of the compound hastened, substantially as described.

15. The process of manufacturing a rigid and inflexible composition material, which consists in arranging a layer or body of parallel narrow wooden slats or strips between sheets of thick paper or other pulp board, and during the operation interposing between said strips and the same and said sheets an adhesive compound having an earthy or mineral ingredient, then forcing said parts together and thus disseminating the compound and the solvent thereof between and into said parts, and finally drying the product, substantially as and for the purposes specified.

16. The combination, with the thick sheets of paper, of the wood slats arranged between the same and secured together and thereto by an adhesive compound having an earthy ingredient, the whole being formed into a cove during manufacture, substantially as described.

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

GEORGE S. MAYHEW.

Witnesses:

EWELL A. DICK,
C. G. HAWLEY.