

J. H. THICKENS.  
WALL BOARD.  
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1,121,951.

Patented Dec. 22, 1914.

Fig. 1.

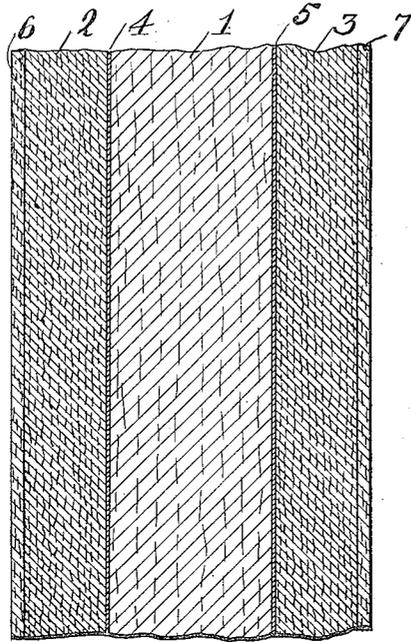
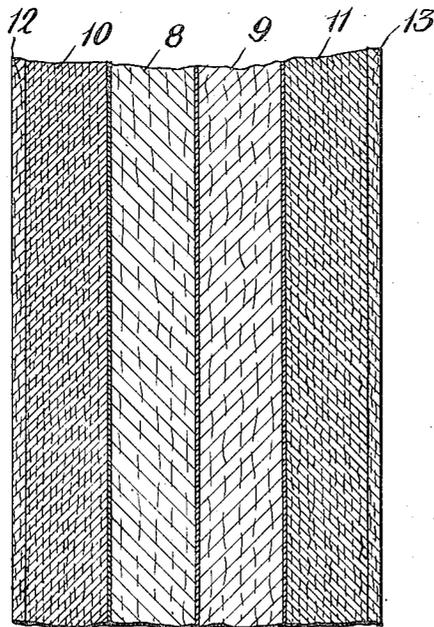


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## WALL-BOARD.

1,121,951.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, JOHN H. THICKENS, a citizen of the United States, residing at Buffalo, county of Erie, State of New York, have invented certain new and useful Improvements in Wall-Board; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to composite wood pulp sheets suitable for use in buildings in place of lath and plaster.

It is an object of the present invention to produce a wall board having high rigidity, high tensile strength, low moisture absorption, high resistance to puncture and having good heat-insulating and sound-deadening properties.

It is a further object of the invention to produce a composite wood pulp sheet which is to some extent fire resistant, and which can be used behind radiators, and around registers, and the like without danger of disintegration from the heat.

It is a further object of the present invention to produce a wall board, smooth and attractive on the surface, and well suited for ornamentation and so constituted as to be relatively free from warping, buckling and excessive shrinkage, to the end that the sheets of material may be nailed or tacked to the studding of a room and there decorated by painting or tinting to serve in place of lath and plaster.

In accomplishing the foregoing objects and others which will hereinafter appear, I form the composite sheet or wall board with a core of ground wood pulp to which is secured a facing of cooked wood pulp. The core may be multi-ply if desired, and the facing may be on both sides of the core and held in place with a silicate cement. Preferably, the cooked wood facings are covered with a thin layer of ground wood, light in color, to facilitate ornamentation.

For a better understanding of the present invention, reference is made to the accompanying drawing, wherein—

Figure 1 is a section, somewhat diagrammatic in character, through a composite sheet made in accordance with this invention, and Fig. 2 illustrates a modification in which the ground wood core is multi-ply.

In the embodiment illustrated, the com-

posite sheet of Fig. 1 has a central core 1 of ground wood pulp made into the form of a sheet, say one-fourth of an inch thick, by usual methods. Ground wood pulp has a short, hard fiber loosely matted together, so that this core has good heat-insulating properties and good sound-deadening properties. The core is not, however, highly resistant to moisture, nor is it relatively strong either in tension or to resist puncture. According to the present invention, this sheet of porous, ground wood pulp is covered with tougher material, preferably in the form of a facing on both sides, consisting of sheets 2 and 3 of cooked wood pulp cemented in place at 4 and 5 with a sodium silicate cement. These sheets of cooked wood pulp may be made from the same kind of wood as the central core, but instead of grinding the wood, it is cut into two foot lengths and placed in a steam digester and there cooked in steam for six to eight hours at sixty to eighty pounds pressure, and then mechanically reduced to the form of pulp in usual manner. Cooked wood pulp has a long fiber, and sheets made therefrom are dense and have low moisture absorption, and when applied as illustrated in Fig. 1, give to the composite sheet, great strength and rigidity, and make the sheet highly resistance to puncture, this being a characteristic of relatively great importance in wall board. The sodium silicate used for cementing the sheets together is to some extent fire resistant, but what is more important for practical purposes, it is heat resistant so that the composite board can be used behind radiators, near registers and steam pipes, and will not disintegrate from the heat as would a composite board cemented with pitch or other similar compound.

It is not necessary that the cooked wood be of the same variety as the ground wood for the fact that the wood is cooked before grinding makes possible the production of a strong tough fiber from a large number of woods. Consequently, in this way, it is possible to utilize for wall board purposes many varieties which are not now in use.

In cooking wood to produce the long fibered pulp, the wood turns brown, whereas ordinary ground wood is white, and in order that users of this composite board may decorate the board with light tints, it has

been found desirable to cover the cooked wood layers with thin surface facings 6 and 7 of ground wood. These facings may be very thin and they give to the composite sheet a smooth and satisfactory surface without impairing substantially its resistance to moisture, puncture and the like. Preferably they are put on the brown ply during the process of manufacture on the board machine and without the use of cement for the fibers of the facings, when thus applied, interlock with the brown fibers adjacent, to make a good board.

In the modification shown in Fig. 2, the central core is multi-ply and includes a plurality of ground wood sheets 8 and 9 covered on the outside with layers of tough cooked wood 10 and 11 all fastened together with sodium silicate cement. The dark cooked wood coverings are faced with ground wood layers 12 and 13 as before.

The composite sheets above described are sound-deadening and heat-insulating because of their central core of porous, short, hard-fibered ground wood, and they are rigid, strong and resistant to puncture, because of the outer sheets of cooked wood with long, tough fibers closely packed together. The density of the cooked wood coverings keeps down the moisture absorption and so prevents abnormal buckling, warping and detrimental deformation and the sodium silicate cement holds the several layers against danger of separation even under trying heat conditions.

In commercial manufacture, it is expedient to arrange the core and its covering sheets with the fiber or grain running cross-wise or at an angle, as disclosed in United States Letters Patent No. 1,063,941, issued June 3, 1913, to J. P. Lewis. This arrangement of the fiber structure may likewise be applied to the several plies of the multi-ply core. By thus crossing the grain, the mechanical properties are to some extent improved.

I am aware that the proportions and ar-

angement of the component parts of the sheet need not be as illustrated in the two figures of the drawing, and these are to be taken as but diagrammatic illustrations and as showing but two of several modifications embraced in the invention as defined by the appended claims.

I claim:

1. Wall board comprising a sheet of porous ground wood pulp with a covering therefor of tough cooked wood pulp.

2. Wall board comprising a core of porous ground wood pulp faced on both sides with tough cooked wood pulp cemented in place.

3. A composite wood pulp sheet comprising a core of porous ground wood pulp faced with a sheet of tough cooked wood pulp held in place with a sodium silicate cement.

4. A composite wood pulp sheet comprising a multi-ply core of porous ground wood pulp, said core being covered on each side with a sheet of tough cooked wood pulp held in place with a silicate cement.

5. A composite wood pulp sheet, consisting of a central core of porous ground wood, said core being covered on each side with a sheet of tough cooked wood, and a thin surface facing for said cooked wood sheets consisting of ground wood, light in color, to facilitate ornamentation.

6. A composite wood pulp sheet, consisting of a multi-ply core of porous ground wood sheets cemented together, sheets of tough cooked wood covering said core and secured thereto with a silicate cement, and thin surface covering for said cooked wood sheets, consisting of ground wood of light color.

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

JOHN H. THICKENS.

Witnesses:

RALPH C. LOWARY,  
MARGARET LYONS.