Oct. 4, 1927. 1,644,199

F. J. MOORE

WALL BOARD AND METHOD OF FORMING THE SAME

Original Filed Oct. 5, 1917 2 Sheets-Sheet 1

Fig. 1.

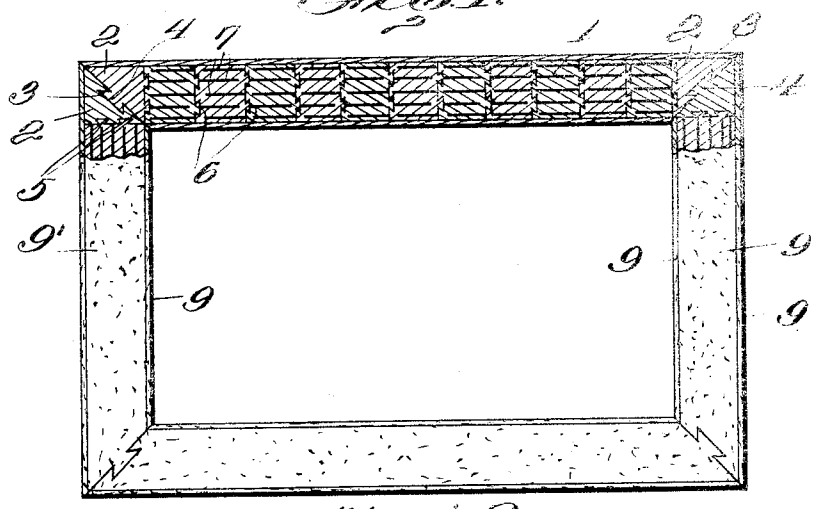


Fig. 2.

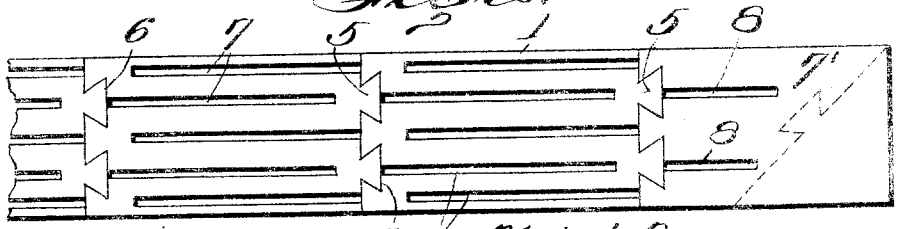
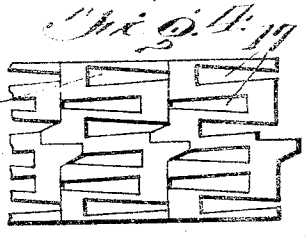


Fig. 4.



6 7 Fig. 3.

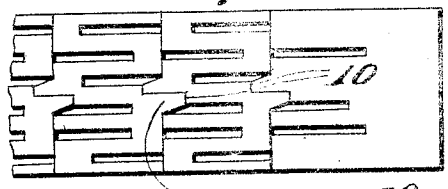


Fig. 7.

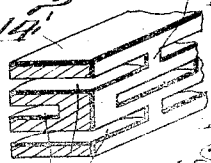


Fig. 6.



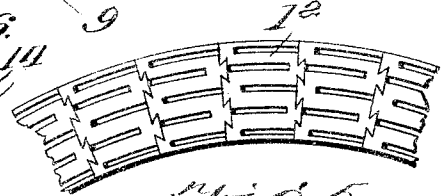
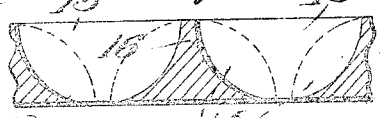


Fig. 5.

Fig. 8.



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By

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Oct. 4, 1927. 1,644,199

F. J. MOORE

WALL BOARD AND METHOD OF FORMING THE SAME

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Fig. 9.

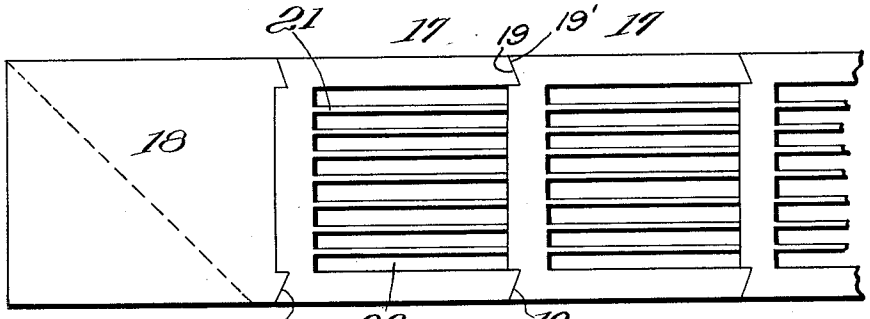


Fig. 10.

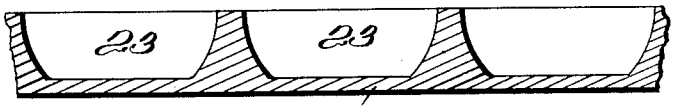


Fig. 11.

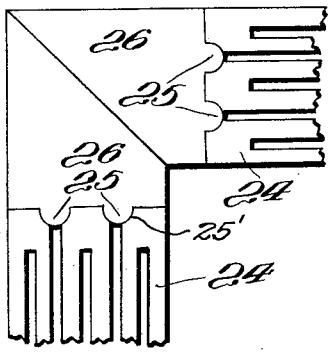


Fig. 12.

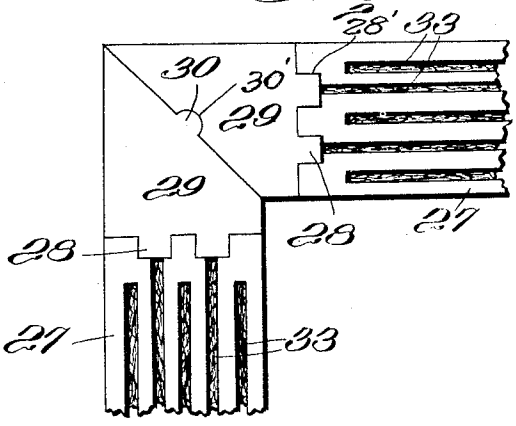
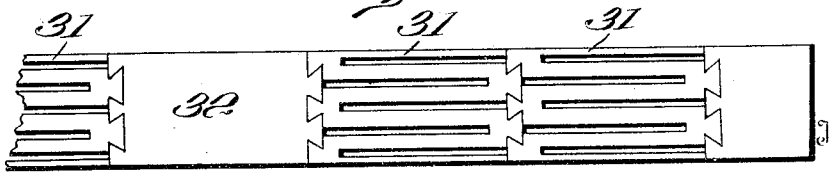


Fig. 13.



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Patented Oct. 4, 1927. 1,644,199

UNITED STATES PATENT OFFICE.

FRANK J. MOORE, OF NORTH TONAWANDA, NEW YORK.

WALL BOARD AND METHOD OF FORMING THE SAME.

Application filed October 5, 1917, Serial No. 194,979. Renewed March 3, 1926.

This invention relates to certain new and useful improvements in insulating wall boards and method of forming the same; the object being to provide a built-up wall board having grooves in the lateral faces of the strips constituting the same, forming air spaces to provide an insulation.

Another object of my invention is to provide a built-up insulating wall board, which can be formed on a wood-working machine, such as a Linderman sticker with special groove cutting attachment, pieces of the material being fed to the machine and delivered therefrom in a board form, whereby the cost of producing the board is greatly reduced, the machine being capable of forming board from 5 to 15 feet in length and of any width desired.

Another object of my invention is to provide the built-up wall board, formed of a series of strips of lumber interlocked together, having dead air spaces formed therein by grooves or recesses in the opposing faces thereof, in order to allow a wall to be readily formed which will offer resistance to the penetration of heat or cold or sound.

Another and further object of my invention is to provide an insulating board which is especially adapted to be used for constructing cold storage chambers, such as refrigerators and the like.

Another and still further object of the invention is to provide a built-up insulating board having end pieces, which can be cut so that a chamber can be formed by assembling four of these boards and a bottom and top, in order to produce a refrigerator with insulated walls, the side walls thereof being formed in such a manner that a refrigerator will be formed with better insulating efficiency.

I am aware that composite boards have been used for insulating purposes, but my invention differs from prior construction of insulating boards, in that in constructing my boards, strips of lumber of the desired thickness are secured together, having grooves in their abutting edges to produce air spaces, whereby the distance of travel of conduction in wood is increased and the direct transmission of heat greatly impeded by the air spaces, and I am able to manufacture the board on a wood-working machine of the Linderman type with special cutting attachment, whereby the strips will be grooved and interlocked together by tongue and grooves, and secured by glue. The dead air spaces may be formed by the grooves being constructed by the machine as the strips of lumber pass through the same.

Other and further objects and advantages of the invention will be, hereinafter, set forth and the novel features thereof defined by the appended claims.

In the drawings—

Figure 1, is a top plan view of a chamber, such as a refrigerator, formed of a number of insulating boards of my improved construction, one wall thereof being in section.

Figure 2, is an enlarged end view of a portion of a board constructed in accordance with my invention, showing the end piece provided with grooves to form dead air spaces, and in dotted lines cut to form a joint.

Figure 3, is an end view of a slightly modified form of board, showing a different form of tongue and groove.

Figure 4, is an end view of a portion of a board of still another modified form.

Figure 5, is an end view of a construction of board such as shown in Figures 1 and 2, cut on the arc of a circle to produce a curved board, in order to allow a number of such boards to be assembled to produce a curved wall.

Figure 6, is a detailed end view showing a slightly modified form of board showing the strips constituting the same, provided with registering grooves to form dead air spaces, in order to increase the distance of travel of conduction in the wood.

Figure 7, is a perspective view of a portion of a strip constituting one of the elements of a complete board, showing the same provided with recesses instead of grooves, in order to produce dead air spaces.

Figure 8, is a longitudinal section through a strip constructed, as shown in Figure 7.

Figure 9, is an end view of still another modified form of built-up wall board, showing the strips constituting the same provided with a series of longitudinally disposed grooves in one face thereof.

Figure 10, is a longitudinal section through a strip constructed somewhat similar to that disclosed in Figures 7 and 8, having recesses formed by the cutting means of a wood-working machine of a different shape.

Figure 11, is an end view of still another

modified form of board and manner of connecting the same.

Figure 12, is still another modified form showing the end pieces mitered and provided with ordinary form of tongue and groove, and Figure 13 is an end view of a board constructed as disclosed in Figure 1, with the exception that solid strips are inserted to provide nail receiving portions, in order to allow the board to be secured in position.

Like numerals of reference refer to like parts in the several figures of the drawings.

In Figure 1 of the drawing I have shown a chamber such as an ice box or refrigerator formed of boards 1 constructed in accordance with my invention, each board being provided with solid end piece 2 cut diagonally, one end piece being provided with a dove tailed groove 3 and the opposite end piece with a tongue 4 in order to allow four boards to be assembled to produce the walls of a chamber.

In constructing my improved built-up insulating board, strips of wood are fed to a Linderman wood-working machine with special cutting attachment, in which the abutting edges are formed with dove tailed tongues and grooves 5 and 6 and longitudinal grooves 7 which extend into the body of the strip from opposite edges different distances so that the grooves formed on one edge extend into the body of the strip beyond the termination of the grooves formed in an opposite edge. These strips are preferably glued together and are provided with end pieces 7′ which may be formed solid, as shown in Figure 1, or with grooves 8 as shown in Figure 2, and it will be seen by this manner of forming the boards that the complete board is produced in a wood-working machine, which may be of any width and length desired, which enables these board to be cut the desired length and assembled to produce a wall for a refrigerator or a cold storage plant, which will have a high insulating efficiency, as the grooves are so formed that dead air spaces are produced in a line extending transversely through each strip, in order to increase the travel of conduction and resistance to heat.

In constructing a highly ornamental wall a strip of veneer 9 is secured over each face of a board thus formed with the grain across the grain of the strips constituting the board, and I have shown the chamber in Figure 1, formed of boards having strips of veneer secured to their inner and outer faces.

In constructing a refrigerator, as shown in Figure 1, out of four boards, constructed in accordance with my invention, which have been previously cut to the desired length, the bottom can be either formed of an insulating board, or of any other desired material on which the side walls are placed, which forms a closure for the lower ends of the dead air spaces formed by the grooves, and the ends of these boards are preferably given a coat of pitch, as shown at 9^1 in Figure 1, so as to close the ends of the grooves and provide perfect dead air spaces in the walls. While I preferably employ pitch or filter for closing or sealing the ends of the boards, I do not wish to limit myself to any particular means for accomplishing this result, as a strip of material of any kind could be arranged over the ends, so as to close the grooves. In constructing a refrigerator I do not wish to limit myself to use of a board having a veneer facing, as a facing of any metal material could be employed, and if metal was used it would be an advantage in constructing a refrigerator, as a water proof lining would be provided for the chamber thus formed.

In Figure 3 of the drawing I have shown an insulating wall board built up of a series of strips having interlocking tongues and grooves 9 and 10 along their inner edges and secured together in a similar manner, as shown in the preferred form, the abutting faces being provided with grooves to produce dead air spaces and in this form the tongues and grooves are each provided with a bevel face, in order to obtain a wedging action, and as these strips are secured together by glue, I have found by experimenting that a board constructed in this manner will have sufficient strength to withstand the strain to which it is subjected, and this joint can be manufactured on a wood-working machine such as now in use.

In the modification shown in Figure 4, the strips constituting the complete board are constructed and interlocked together in substantially the same manner shown in Figure 1, but are provided with grooves 11 substantially V shape in cross section, in order to increase the area of the dead air spaces.

In Figure 5, the board 1^2 is constructed substantially as shown in Figures 1 and 2, but is cut to assume an arc of a circle, which enables a circular chamber to be formed by assembling a number of these boards.

In the modification shown in Figure 6, the strips 12 are provided with grooves 13 and 14 which register with one another, as clearly shown, in order to provide the complete board with dead air spaces, so arranged that the distance of travel of conduction in the wood is greatly increased.

In Figures 7 and 8 I show a strip 14′ having recesses 15 in its opposing faces to produce spaced dead air spaces, as the saws employed in forming these grooves are raised intermittently to produce the partition 16. By this construction when a series of strips are assembled and interlocked together either by tongues and grooves as shown in

the other forms, or by an adhesive material, the complete board will have perfect dead air spaces. In some instances it will not be necessary to close the ends as if the boards are cut, so as to intersect the partition, the dead air spaces will be closed. Under other conditions it may be found necessary and would probably be an advantage to coat the ends with a preservative such as pitch. By constructing the board of strips having recesses formed in this manner the strength of the material is increased.

In the modification shown in Figure 9 I show a board composed of a series of strips 17 and end piece 18 provided with tongues 19 and grooves 19′, the strips 17 being provided with a series of longitudinally disposed grooves 20 separated by partitions 21 and it will be seen that when these strips are secured together by interlocking the tongues and grooves formed on the edges thereof, the air spaces will be closed by the adjacent strips, and when the ends are sealed dead air spaces are provided.

In the modification shown in Figure 10 the strips 22 are provided with recesses 23 in one face thereof, formed by the cutting mechanism of the wood-working machine, these recesses being elongated in order to increase their size. This construction of strip can be readily formed by attaching a circular saw to the Linderman type of wood-working machine in which the material is in motion, when the saw is brought into engagement therewith which produces a recess of the shape shown.

In the modification shown in Figure 11, the strips 24 are provided with grooves constructed similar to that shown in Figures 2 and 3, and are provided with curved tongues 25 and grooves 25′ the corner pieces 26 being cut diagonally to form a plain miter, and secured together by any suitable means.

In the modification shown in Figure 12, the strips 27 are interlocked by tongues 28 and grooves 28′ and the end pieces 29 are cut diagonally to form a miter, and are provided with tongues 30 and grooves 30′ to form a tight joint. In the various forms of end pieces shown, some are formed solid and others with grooves to form air spaces, and I have found that chambers can be readily formed by strips of boards constructed in accordance with my invention, by securing these strips together in the manner shown, but I do not wish to limit myself to any particular construction of joint for connecting boards together to produce a chamber.

In the modification shown in Figure 13, I show a construction of strip 31 formed substantially in the same manner as shown in Figure 1, with the exception that in building the board, plain strips 32 are employed, so that when the board is completed it will be provided, with nail receiving portions for securing the same in position on a support.

I have also found that the board can be readily coated with a water proof, or a fire proof composition, so as to resist moisture and heat, and I do not wish to limit myself to any particular manner or means of facing the board formed on the wood-working machine, as the main object of my invention is to provide a built-up insulating board, formed of wooden strips of the desired thickness, laterally grooved, secured together to produce a board having a high insulating efficiency.

In carrying out my invention I have found in some instances that a better insulating board can be provided by filling the grooves with an insulating material, such as a fibrous material, and in Figure 12 I have shown the air spaces formed by the grooves filled with an insulating material 33.

From the foregoing description it will be seen that I have produced an insulating wood built-up board, and a method of constructing the same out of strips of wood on a wood-working machine, which enables me to form the wall of a chamber by assembling a number of these boards which will form a wall, having vertically disposed dead air spaces, but is, of course, understood that my board is also capable of being used to form a wall in which the dead air spaces are horizontally disposed, as by laying the boards on edges, a wall could be constructed, but I have found that better results can be obtained when the boards are arranged on ends.

I claim:

1. An insulating wall board formed of a series of parallel arranged strips having their edges interlocked together, said strips having longitudinally disposed grooves in their contacting edges forming dead air spaces, the grooving in one edge of each strip extending into the body thereof beyond the termination of the grooving formed in the other edge of the strip.

2. A built-up wall board composed of a series of parallel arranged strips having tongues and grooves in their contacting edges for interlocking said strips together, each strip being provided with a series of longitudinally disposed grooves along each edge, the grooves in one edge of one strip being out of alignment with the grooves in the contacting edge of the adjacent strip, each set of grooves being closed by the contacting edges of the adjacent strip to provide dead air spaces.

3. A built-up wall board composed of a series of parallel arranged strips each having tongues formed in one edge and grooves formed in the other edge, said strips being interlocked together, each strip being pro-

vided with a series of longitudinally disposed grooves along each edge, said longitudinally disposed grooves formed in one edge of each strip extending into the body of the strip beyond the termination of said longitudinally disposed grooves formed in the other edge.

4. The method of forming a built-up insulating wall board which consists in forming longitudinal grooves in the edges of a series of strips and simultaneously forming tongues and grooves in the edges and then interlocking said strips together so as to seal the longitudinal grooves to form dead air spaces.

In testimony whereof I hereunto affix my signature.

FRANK J. MOORE.