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W. C. STONE

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MOISTUREPROOF WALL STRUCTURE AND METHOD OF MAKING SAME

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Fig. 1

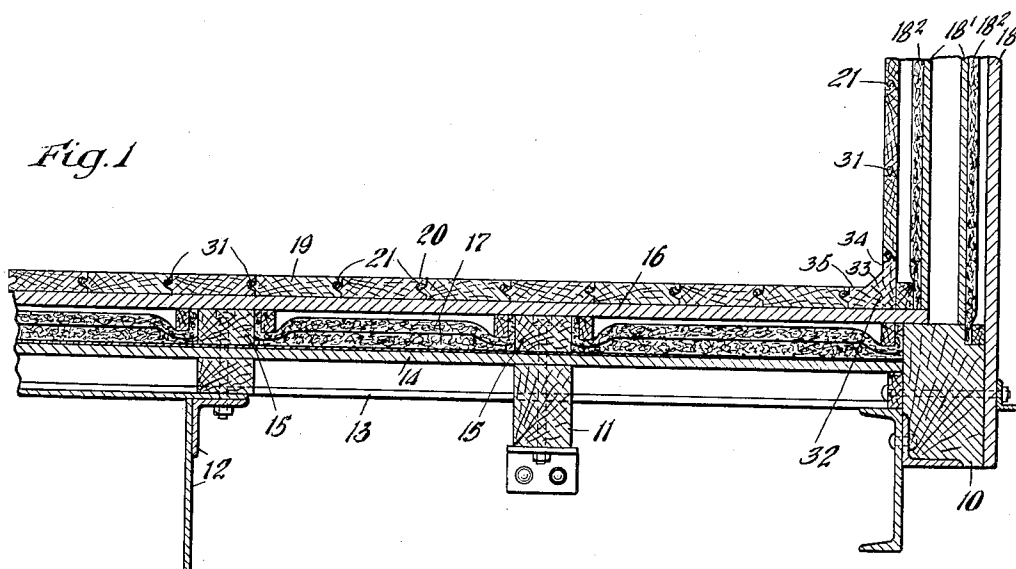


Fig. 2

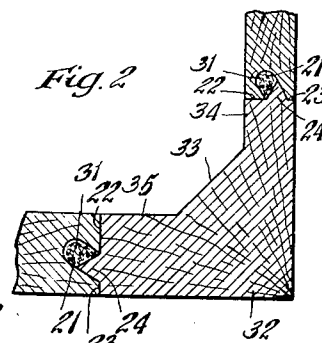
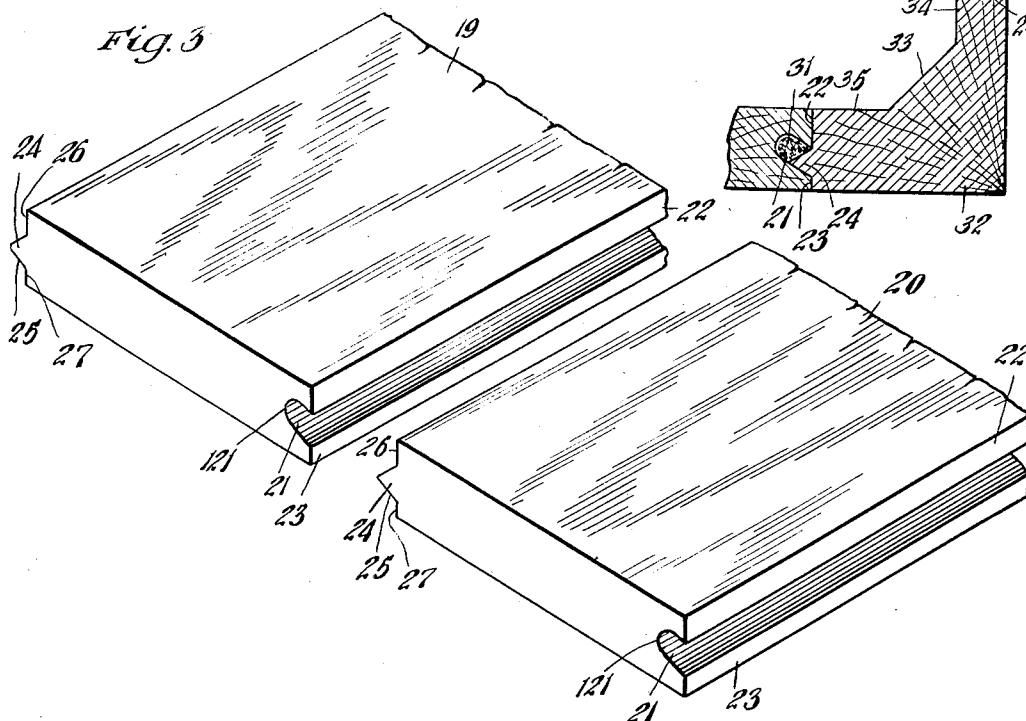


Fig. 3



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MOISTUREPROOF WALL STRUCTURE AND METHOD OF MAKING SAME

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This invention relates to improvements in moisture-proof wall structure and method of making same.

There are many cases where it is highly desirable that the interior walls of a containing structure such as a refrigerator or refrigerator car, be made absolutely water or moisture-proof. Particularly is this true of the floor walls of a refrigerator car which are subject to heavy wear due to trucking and heavy loads imposed thereon and in which refrigerator cars water from the melting ice frequently flows on to the floor and has no proper method of draining. Heretofore it has been the general practice in attempting to waterproof the floors of refrigerator cars, as well as other structures requiring a water-proof wall structure, to lay a series of planks and then calk the joints between adjacent planks with some water-proofing material. This practice is expensive, particularly as it requires a great deal of hand labor; it is unsatisfactory in that the calking can seldom be done uniformly and for the further reason that the calking material will be softer than the planks themselves, thus accelerating wear and injury along the adjacent edges of the planks due to the lading and trucking thereover.

One object of my invention is to provide a simple and relatively inexpensive moisture-proof wall structure for buildings, refrigerator cars or the like, where such type of interior walls are desirable, wherein the walls may be laid or assembled in the simple manner of laying ordinary tongued and grooved floor boards.

Another object of my invention is to provide an improved method whereby moisture-proof walls of the character indicated in the preceding paragraph may be laid or formed with a minimum of manual labor.

In the drawing forming a part of this specification, I have chosen to illustrate my improvements in connection with a refrigerator car, the improvements being especially adapted for such service and more especially the floors of such refrigerator cars which are subject to a great deal of moisture and unusually heavy wear. In said drawing, Figure 1 is a vertical, transverse, sectional view of a por-

tion of a refrigerator car showing a part of the floor wall and substructure and a part of a side wall. Figure 2 is an enlarged vertical, sectional view of the corner portion of the interior of the refrigerator car showing my improvements in connection therewith. And Figure 3 is a perspective view of portions of two planks, the same being shown separated and as they appear before being inter-connected and laid.

In said drawing, the refrigerator car there illustrated is shown as comprising the usual side sills 10, longitudinal stringers 11; center sills 12; and cross sills 13, all of which enter into the under-frame structure of the car and are utilized for supporting the bottommost flooring 14. Mounted upon the bottommost flooring 14 are spacers or nailing strips 15—15 which support an intermediate flooring indicated at 16, the latter being comprised of planks extending transversely of the car and secured in the ordinary manner. As customary, layers of suitable insulating material as indicated at 17 are interposed between the bottommost and intermediate floorings 14 and 16. Each side wall of the car is provided, as customary, with an outer sheathing 18, spaced intermediate layers of tar paper or the like 18', with outer and inner layers of insulating material 18²—18².

In carrying out my invention, the interior walls of the refrigerator car are formed of novel planks and laid in a novel manner, and in this connection the term "wall" is used generically to indicate the floor proper, the side walls proper, the end walls, and the ceiling. In carrying out my invention I provide a series of relatively heavy wood planks adapted to be arranged edge to edge. Two of such planks are indicated in Figure 3 and there referenced 19 and 20. It will be understood that all of the planks are preferably made of the same construction, two separate references being employed to facilitate the description. Each plank is provided along one edge thereof with a relatively deep groove 21, the opening or entrance of which is disposed intermediate the top and bottom surfaces of the plank and preferably somewhat nearer

the bottom surface of the plank than the upper surface. Each said longitudinally extending groove 21 extends in a generally inclined direction from its mouth or entrance toward the upper or exposed surface of the plank, as viewed in the drawing, and at its inner edge, the groove is preferably rounded, as indicated at 121. It will be noted that the grooved edge of each plank is thus left with an upper flat surface 22 and a lower flat surface 23, said surfaces being in a plane normal to the main surfaces of the plank.

On its other edge, each plank is provided with a substantially wedge-shaped tongue 24, the same being so located as to be adapted to enter the mouth of the corresponding groove 21 of the next adjacent plank. The base section of each tongue 24 will preferably be made of a vertical height to just close the opening of the corresponding co-operating groove 21 and the lower surface 25 of each tongue 24 will be on a slant or bevel coinciding with the slant or bevel of the lower surface of the corresponding groove 21. With this arrangement and location of tongue 24 on each plank, it will be noted that upper and lower plane surfaces 26 and 27 are left, which are adapted to abut in tight engagement with the corresponding plane edge surfaces 22 and 23 of the next adjacent plank, when the planks are assembled in the floor structure.

As clearly indicated in the drawing, the cross sectional area of the grooves 21 is considerably greater than the cross sectional area of the co-operating tongues 24, and this is done in order to provide a seating for packing material of moisture insulating quality. This packing material 31 may be of oakum, hemp, jute, cotton or any other suitable packing material which is preferably first saturated with some water-proofing liquid. This packing material is formed in strips and is preferably seated lengthwise within the grooves of the planks when the latter are fabricated. Due to the inclined or under-cut formation of the grooves, said packing material will readily be retained within the grooves after once seated therein and during shipment and handling. In practice, the quantity of packing material will be made such that it will be compressed or compacted when two adjacent planks are properly assembled.

In laying the floor wall or the other wall structures of the refrigerator car, the planks, prepared as above indicated, will be assembled edge to edge and tightly wedged against each other with the tongue of one plank entering the groove of the next adjacent plank and the adjacent planks brought into abutting contact with the plane surfaces of the edges. This may be done either by the use of jacks or by assembling a plurality of the planks in a somewhat arcuate form and

pressing the same down into a single plane. In this manner it will be observed that the packing material is compressed by the entering tongue of the adjacent plank and is permanently retained in place and, furthermore, the tongue and groove formations interlock adjacent planks to prevent relative separation. It will also be observed that the exposed surfaces of the wall structures present a practically continuous surface of uniform wearing quality and danger of the exposed edges of the planks chipping off or breaking down due to trucking, is minimized. With my arrangement, the usual calking is entirely eliminated and the joints between planks are automatically made water-proof by the mere assembling of the planks, as will be obvious from the preceding description.

Where two walls at right angles to each other meet, I preferably provide a special corner piece or section 32 having its outer surfaces at right angles to each other and with an interior beveled surface 33 with upwardly and horizontally extending legs 34 and 35. The edges of the leg sections 34 and 35 will be formed preferably with tongue sections in each instance to co-operate with correspondingly formed grooved sections of the adjacent planks, which grooved sections will contain packing 31, as previously described. With this special corner arrangement, I avoid a defect which has heretofore been very difficult to overcome at the corners due to the almost impossibility of properly calking the joint between the vertical walls and the floor wall, which are liable to separate when the car is in service.

With my improvements, particularly as applied to refrigerator cars, the life of the walls is materially increased due primarily to the prevention of moisture seeping through and getting into the heat insulating material, which causes rapid deterioration thereof and further, in connection with the flooring, my improvements prolong the life thereof due to the minimization of the abrasive effects of trucking and lading placed upon the flooring. The expense of fabrication is materially reduced in that the necessity of hand calking is entirely eliminated.

While I have herein shown and described what I now consider the preferred manner of carrying out my invention, the same is merely illustrative, and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. A wall structure composed of a plurality of sections arranged edge to edge, the adjacent edges of said sections presenting flat engaging surfaces, one of said members carrying a tongue and the adjacent member a groove adapted to receive the said tongue, said groove being of such a size as to accommodate

the tongue and provide an interior pocket to accommodate packing material; and packing material disposed within said groove, a face of said tongue being angularly disposed with respect to the pocket of the groove, to wedge the packing material into said pocket.

2. A method of forming a wall structure for refrigerator cars, including the following steps: forming a plurality of oblong members having flat faces on the longitudinal side edges thereof, so that said members are adapted to be laid in edge to edge engagement along said longitudinal edges; providing the cooperating edges of adjacent members with cooperating interengaging means by forming a tongue having a flat face extending along the entire length of said edge of one of said adjacent members and forming a groove along the entire length of the cooperating edge of the other member having an interior offset portion extending the entire length of the groove, presenting a continuous pocket, said groove being of such a size as to accommodate the tongue adjacent said pocket with said surface of the tongue disposed at an angle to the pocket; inserting a continuous length of compressible packing material within said groove and pocket; arranging said members edge to edge and entering the tongues thereof within the grooves of the adjacent members; and forcing said members together to bring said flat engaging faces into intimate contact and to wedge said tongues in said grooves with said flat surface of each tongue bearing on the corresponding length of packing material, compressing and wedging said packing material into its pocket.

In witness that I claim the foregoing I have hereunto subscribed my name this 25th day of June, 1926.

WALTER C. STONE.