

April 9, 1929.

F. H. AULD

1,708,351

BUILDING STRUCTURE

Filed March 2, 1928

3 Sheets-Sheet 1

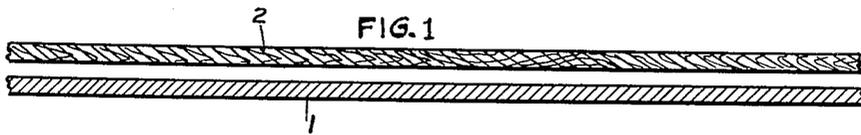


FIG. 1



FIG. 2

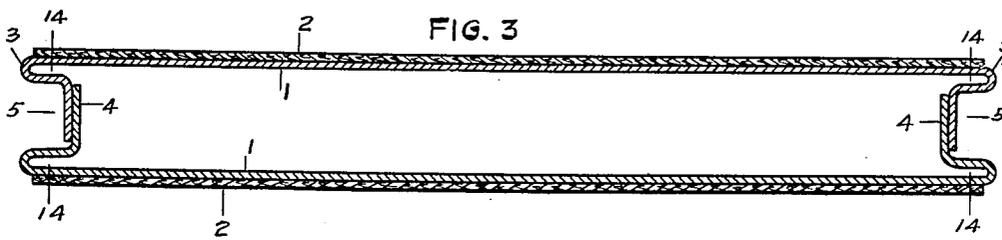


FIG. 3

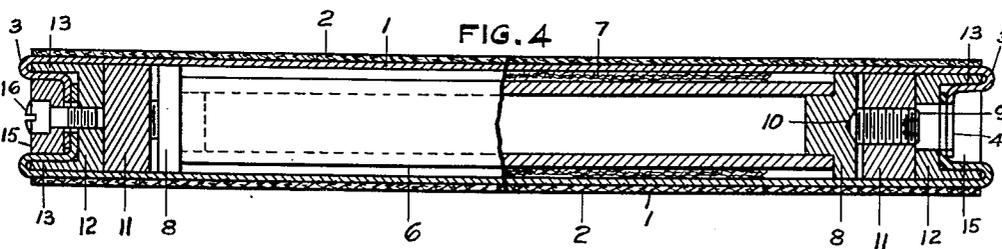


FIG. 4

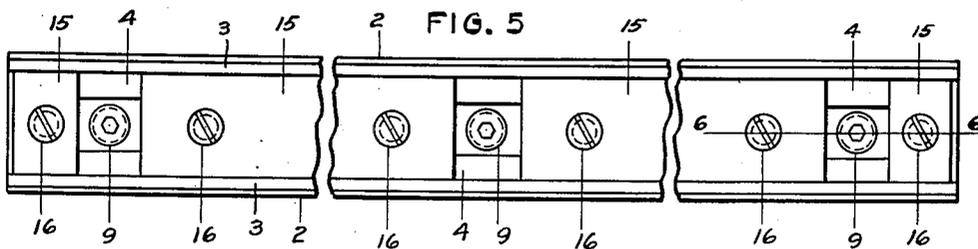


FIG. 5

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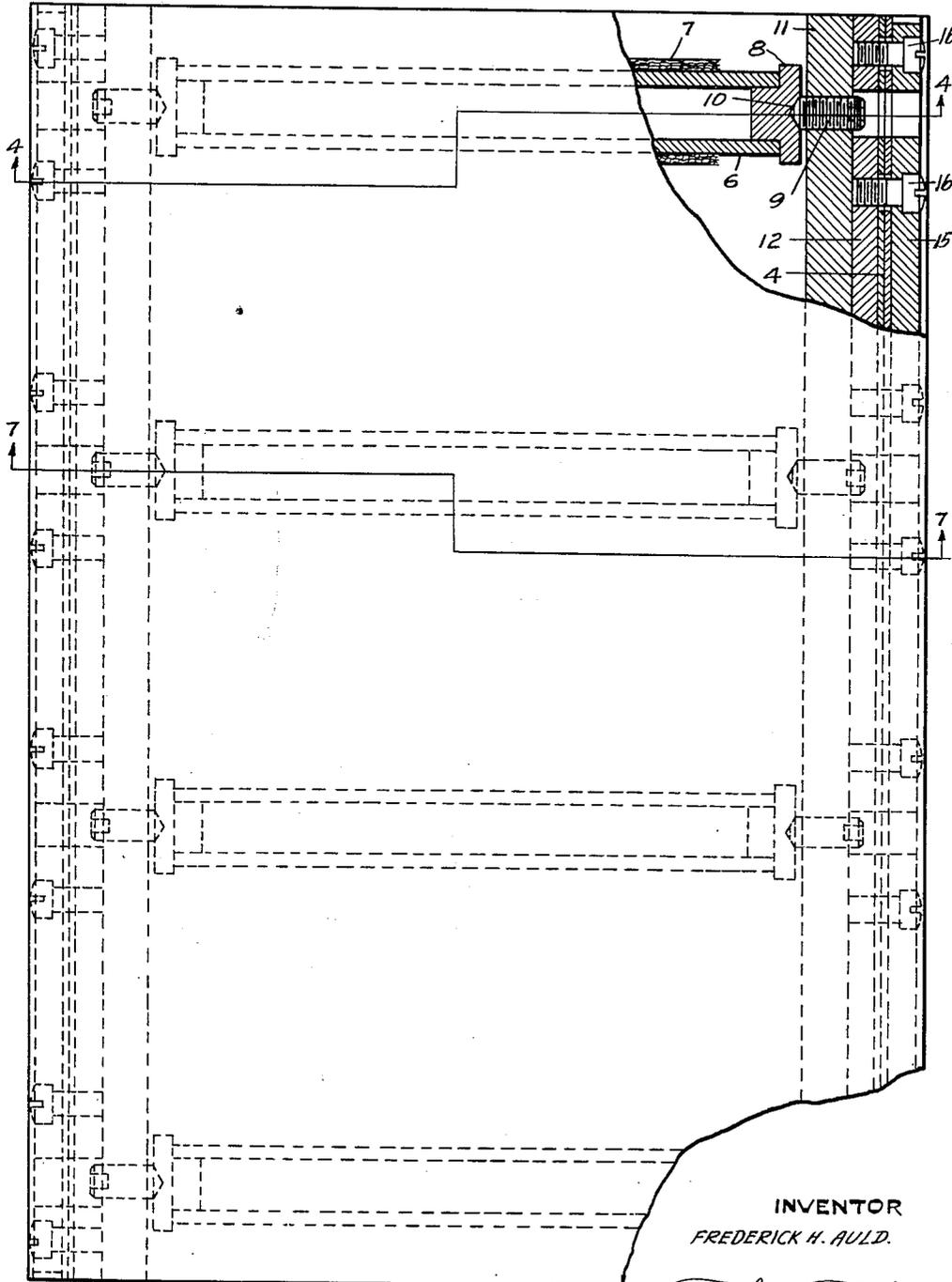
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FIG. 6



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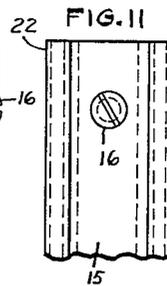
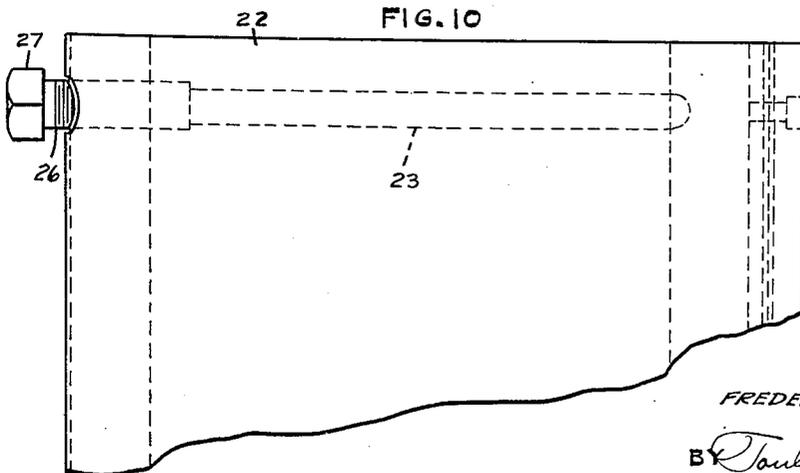
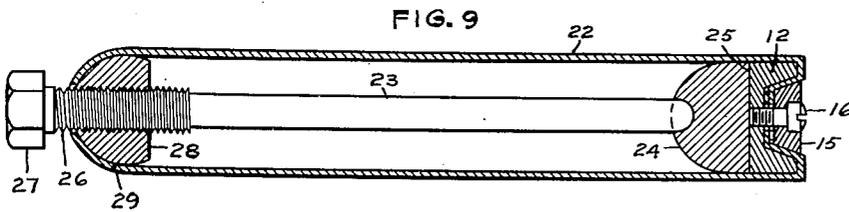
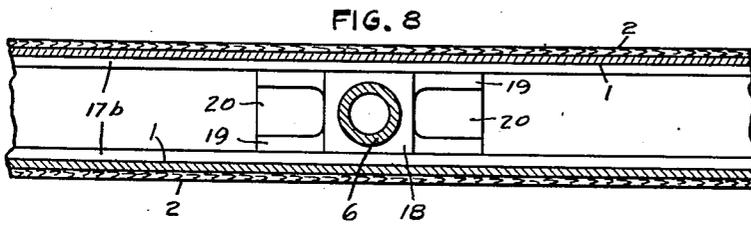
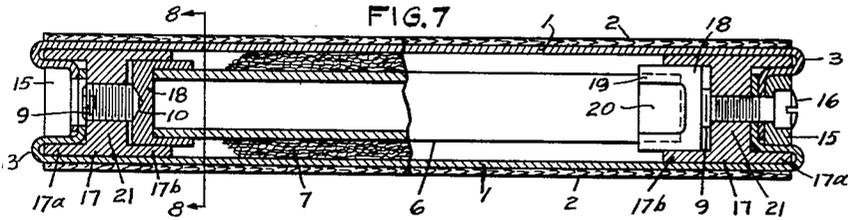
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BUILDING STRUCTURE

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3 Sheets-Sheet 3



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# UNITED STATES PATENT OFFICE.

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## BUILDING STRUCTURE.

Application filed March 2, 1928. Serial No. 258,533.

The object of my invention is to provide a building structure, preferably with a decorated surface, for use as partitions in railway cars or any other building structure in vehicles or dwellings.

It is the object of my invention to provide a very light and rigid, noiseless and easily assembled structure which will have its side walls of such character that they may be drawn taut and maintained in taut position without rattling, while at the same time obviating a heavy and rigid structure which cannot be disassembled and must be built up permanently, of such weight as to be able to sustain the effect of presses and the like when exterior coatings are applied to the walls of the structure.

Heretofore it has been necessary to build up a structure for partitions in railway cars, for instance, where it is necessary to build the side wall supports integral with the side walls and of such heavy character that the heavy side walls and the supports therefor would accommodate the necessary pressure lateral of the structure.

This makes the structure not only prohibitively heavy but also very expensive and complicated to manufacture. When once assembled it cannot be disassembled.

It is my object to provide a structure which can be readily assembled and disassembled, which can have a veneer applied to very light and thin side walls while the side walls are in a disassembled condition, and then the resulting composite product can be assembled into the structure of my invention, thus greatly reducing the weight and reducing cost.

My structure is adapted to a wide variety of uses only a few of which are partitions in railway cars, office partitions, furniture and the like. Where surfaces forming a part of my invention become marred or injured they can be removed without completely destroying the entire structure and a new one substituted.

Referring to the drawings:

Figure 1 shows in section a sheet of veneer and a sheet of metal prior to assembly.

Figure 2 shows a sheet of veneer and a sheet of metal forming the side wall of the structure of my invention in condition ready to be assembled.

Figure 3 shows both side walls in their preliminary assembled position.

Figure 4 is a section showing the complete assembly of the structure. This is a section on the line 4—4 of Figure 6.

Figure 5 is a side elevation thereof.

Figure 6 is a top plan view of a panel partially broken away to show the construction in section along the line 6—6 of Figure 5.

Figure 7 is a section on the line 7—7 of Figure 6 but showing a modified construction.

Figure 8 is a section on the line 8—8 of Figure 7.

Figure 9 is a section of a modified form of my invention.

Figure 10 is a plan view thereof.

Figure 11 is an end elevation thereof.

Referring to these drawings in detail, 1 is a sheet of metal such as .020" steel or aluminum or aluminum alloy sheet. To this is applied, in any desired manner, a surface coating of any character, such as a veneer of wood. If this coating must be applied under pressure, heat or any other condition which would make it undesirable to apply the coating when the structure is assembled, it can be readily and cheaply placed upon the sheet 1 in any desired manner prior to assembly, which is one of the great advantages of my invention.

The ends of the metal sheet may be veneered or coated, or left uncoated. They are bent so as to form a U-shaped loop at the end designated 3, the free end of which is provided with a laterally extending flange 4. Two adjacent sheets are positioned with respect to one another so that their flanges 4 overlap to form a U-shaped trough along the margin of the composite structure, such trough being generally designated 5.

Between these overlapping ends 4 are placed spaced supporting and spacing members which are preferably tubular, designated 6. Around the tubular members may be wrapped any sound-insulating and preferably fireproof compound, such as asbestos 7. It is desirable to have this wrapping located on the center of the tube 6 in order to form a bridge-like structure so that the side sheets can be drawn against this projecting portion of the asbestos 7 to form a noiseless and tight structure.

The ends of the tubes are provided with tube filler blocks 8, which project into the ends of the tubes. These filler blocks are

engaged with the compression screws 9, which freely revolve against the blocks, preferably in a depression 10.

The compression screws are threaded within the block 11 to pass freely through the channel iron member 12, which is located behind the overlapping flanges 4 of the side sheets and which has its right-angle plates 13 projecting into the space 14 formed by the U-shaped ends of the sheets. In order to retain the overlapping ends of the sheets on this channel iron 12, filler blocks 15, or filler strips, are located in the U-shaped depression or channel 5 and attached by screws 16 through the overlapping flanges 4 to the channel iron 12.

When the screws 9 are actuated the side sheets are stretched over the frame formed by the tubes 6 and tube filler blocks 8, thus stretching the light side walls so they are held rigidly without vibration.

Turning to the form shown in Figures 7 and 8, a slight modification will be seen in that instead of using a channel member 12, I have utilized an I-beam construction, designated 17, having forwardly extending flanges 17<sup>a</sup> to extend into the space 14, and rearwardly extending flanges 17<sup>b</sup> to embrace the sides of the tubular filler block 18, which in this case is adapted to surround the end of the tubular member or spacer 6 and is provided with outwardly extending walls 19 having depressions 20 in the center thereof for the purpose of lightening the weight.

The central wall 21 of the I-beam construction is heavy enough to support the compression screws 9. This central portion of the I-beam has connected to it the blocks 15 by the screws 16.

In the form shown in Figures 9, 10 and 11, which is an execution of the same idea, I have provided a continuous sheet which forms both the side walls and is designated 22, having its free ends overlapping, as in the case of the other sheets. The spacer is a tubular member 23 having one end turning in a block 24, which has a flat face 25 engaging with the rear surface of the channel iron member 12. The screws 16 attach the filler strips 15 to the channel member 12 in the usual manner.

The compression is effected by forming one end of the spacer 23 into a screw 26 so that it may be rotated by a head 27, or in any similar manner, in a block 28 having an arcuate face 29 fitting within the curvature of the connecting portion of the two side walls formed from a continuous sheet, designated 22. This arcuate portion constitutes the edge of the structure.

It is obvious that this screw member may be placed at the other end of the structure so that the arcuate edge may be perfectly smooth and free from any adjusting mecha-

nism. The same result can be accomplished in the other forms by making the sheet continuous and mounting it over a block of the proper configuration against which the spacer can abut to take the thrust of the compression screws.

I desire to comprehend within my invention such modifications as may be clearly embraced within my claims and the scope of my invention.

Having thus fully described my invention, what I claim is new and desire to secure by Letters Patent, is:

1. In a building structure, a covering means forming an inclosure, means to support said covering means, and means within the ends of the covering means to place said covering means under tension to stretch it over the supporting means.

2. In a building structure, a covering means forming an inclosure, means within said inclosure to support said covering means, means between the ends of the covering means to place said covering means under tension to stretch it over the supporting means, and means to adjust said tension and to hold the parts in a condition of predetermined tension.

3. In combination in a building structure, frame members, a covering means attached thereto and forming an inclosure, and means to internally expand said frame to place said covering means under tension.

4. In a building structure, the combination of a relatively thin covering means forming an inclosure, a frame concealed thereby, and means for internally expanding said frame to place said covering means under tension.

5. In a building structure, a pair of spaced covering members forming an inclosure, a frame for supporting said covering within said covering means, said frame having portions connected one to the other, means hidden thereby, means for attaching said covering members to one portion of said frame, and means of moving one portion of said frame so attached with respect to another portion of said frame.

6. In a building structure, relatively thin covering members, means to support and attach the ends thereof to one another to form an inclosure, and interconnected means within said inclosure adapted to place said covering members under tension.

7. In a building structure, relatively thin covering members, means to support and attach the ends thereof to one another to form an inclosure, means within said inclosure adapted to place said covering members under tension, said means consisting of spacing members engaging with opposite portions of said covering means, and means for moving said spacing members relatively one to the other.

8. In combination, covering plates, means to support the ends thereof, means to attach the ends thereof to said support spacing means located between the ends of said covering means and their supports, means for carrying compression screws to place said covering means under tension, the ends of said compression screws being adapted to engage the ends of said spacing means.
9. In combination in a building structure, spaced covering sheets having overlapping ends, supports for said ends, compression screws connected therewith, spacing members located between the ends of said covering members adapted to be engaged by said compression screws for stretching said covering members.
10. In combination, relatively thin covering sheets having U-shaped ends with inwardly disposed flanges adapted to have their adjacent ends overlapping, means for attaching said flanges to supports extending within the overturned ends, a compression screw associated with said support and spacing member having a block in the end thereof adapted to engage with said screw.
11. In combination, relatively thin covering sheets having U-shaped ends with inwardly disposed flanges adapted to have their adjacent ends overlapping, means for attaching said flanges to supports extending within the overturned ends, a compression screw associated with said support and spacing member having a block in the end thereof adapted to engage with said screw, and a compression screw block carrying said screw located between said support and the filler block in the end of the spacing means.
12. In combination, relatively thin covering sheets having U-shaped ends with inwardly disposed flanges adapted to have their adjacent ends overlapping, means for attaching said flanges to supports extending within the overturned ends, a compression screw associated with said support and spacing member having a block in the end thereof adapted to engage with said screw, and a compression screw block carrying said screw located between said support and the filler block in the end of the spacing means, said spacing means being tubular.
13. In combination, a relatively thin metallic covering means, a veneer covering mounted thereon, and a frame means within said metallic covering adapted to stretch and support in tensioned condition said metallic means.
14. In combination, a pair of spaced relatively thin metallic plates having U-shaped ends with inwardly disposed angular flanges adapted to overlap their adjacent flanges, veneers mounted on said plates, a spacing frame mounted within said plates, means for joining the ends of said plates, and means to expand said frame to maintain said plates under tension.
15. In combination, a pair of spaced relatively thin metallic plates having U-shaped ends with inwardly disposed angular flanges adapted to overlap their adjacent flanges, veneers mounted on said plates, a spacing frame mounted within said plates, means for joining the ends of said plates, means to expand said frame to maintain said plates under tension, and means to support the inner ends of said plates attached thereto cooperating with said spacing means.
16. In combination, a pair of spaced relatively thin metallic plates having U-shaped ends with inwardly disposed angular flanges adapted to overlap their adjacent flanges, veneers mounted on said plates, a spacing frame mounted within said plates, means for joining the ends of said plates, means to expand said frame to maintain said plates under tension, means to support the inner ends of said plates attached thereto cooperating with said spacing means, and means to fill the space between the ends of said plates on the exterior thereof cooperating with said end supporting means for maintaining the ends of said plate in clamped condition to prevent the detachment during tension.
17. In combination, covering plates, means of clamping the ends thereof in spaced overlapping relationship to form an inclosure, a supporting and tensioning frame mounted therein, and means to expand said frame against the interior of the supporting and clamping means for the ends of the plates to place the plates under tension.
18. In combination, covering plates, means of clamping the ends thereof in spaced overlapping relationship to form an inclosure, a supporting and tensioning frame mounted therein, means to expand said frame against the interior of the supporting and clamping means for the ends of the plates to place the plates under tension, and a veneer mounted on the exterior of said plates.
19. In a process of forming a veneered structure, applying a veneer to a relatively thin supporting member in unformed condition forming said member, supporting said member in formed position and placing said member under tension.
20. In combination, side wall members having their ends formed in U-shape with laterally projecting, inwardly disposed overlapping flanges, an I-beam running parallel to said flanges having two of the projecting portions of said beam projecting within the U-shaped ends of the side members, a spacing member extending within the oppositely disposed flanges of the I-beam, a filler block mounted thereon, a compression screw

mounted in said I-beam engaging with said filler block, and means of retaining said ends of the covering members within said I-beam.

5 21. In combination, a continuous covering strip adapted to form an inclosure having its free ends disposed inwardly in overlapping relationship, supporting means therefor, means to clamp said free ends to said supporting means, a spacing frame 10 therein, and means for expanding said spacing frame for placing said covering strip under tension.

In testimony whereof, I affix my signature.

FREDERICK H. AULD.