S. W. BONSALL.

COMPOSITE BUILDING MATERIAL.

APPLICATION FILED NOV. 11, 1908.

944,592.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

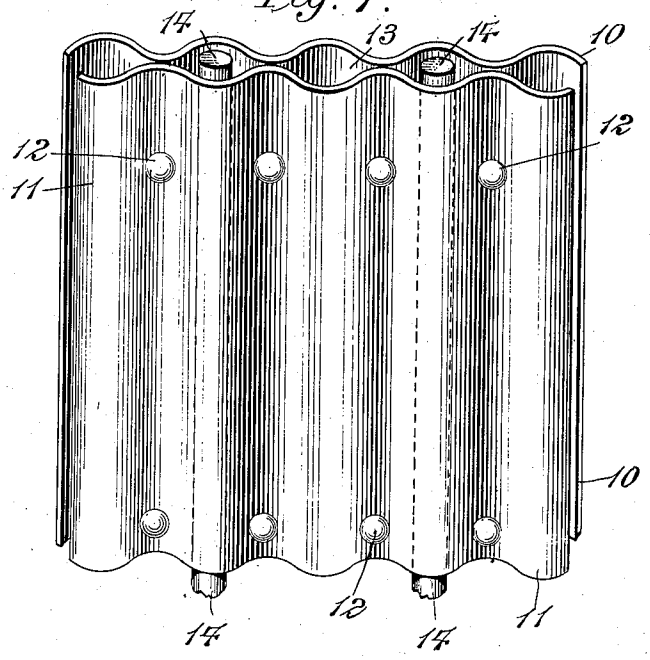


Fig. 2.

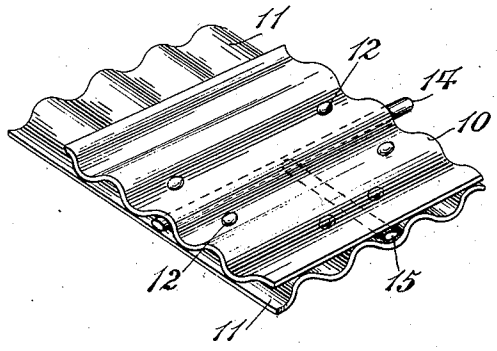
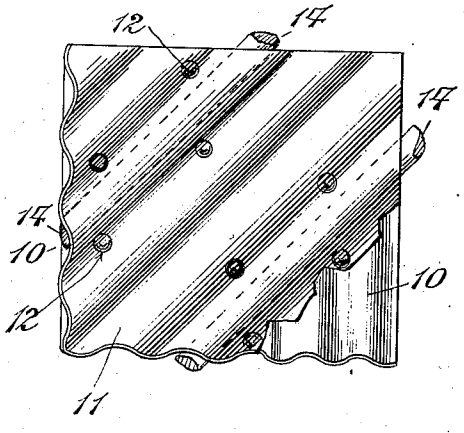


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

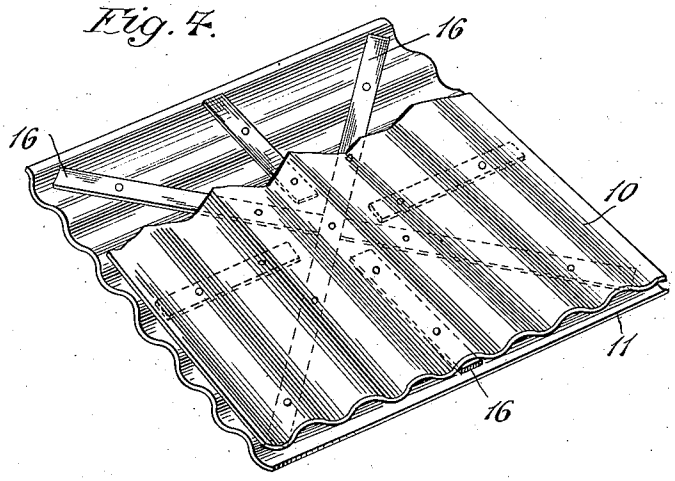


Fig. 5.

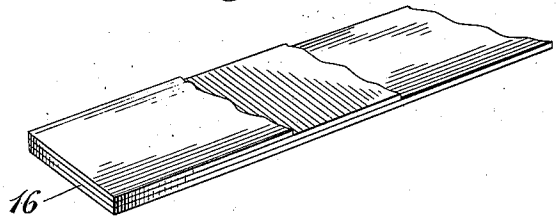
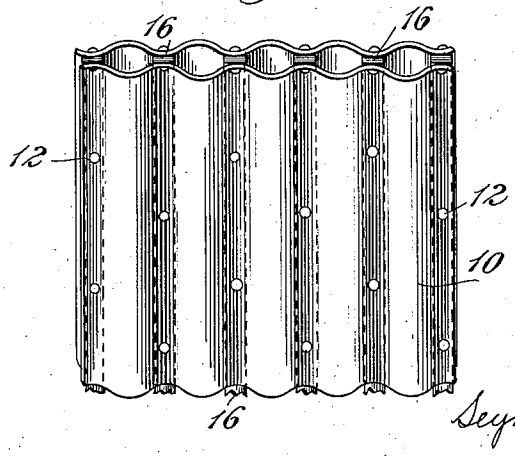


Fig. 6.



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UNITED STATES PATENT OFFICE.

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COMPOSITE BUILDING MATERIAL.

944,592. Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed November 11, 1908. Serial No. 462,158.

To all whom it may concern:

Be it known that I, SEYMOUR W. BONSALL, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented a certain new and useful Improvement in Composite Building Material, of which the following is a specification.

My present invention has relation to an improved composite structure for walls capable of an indefinite number of uses wherever strength is to be combined with extreme lightness. There is a large class of cases wherein these qualities in combination are extremely desirable. In constructing automobiles, for instance, inasmuch as the driving machinery is necessarily heavy, it becomes all the more important that the body should be constructed of the lightest possible material to lessen the pressure on the tires; and for this purpose my improved wall material is particularly useful. Aeroplanes, and other forms of devices intended for flight, are coming constantly more and more into use, and the combined strength and lightness of the composite structure forming the subject of my invention makes it admirably adapted for use in all kinds of flying machines.

My improved material can be easily adapted for use in constructing motor boats, racing shells and the like, and indeed numberless applications of the same will occur to those skilled in the art.

My invention is illustrated in the accompanying drawing, wherein—

Figures 1, 2, 3, 4, and 6 each represents in perspective a portion of a wall made in accordance with a separate modification of said invention, and Fig. 5 is a perspective view of a preferred form of stiffening strip.

In the form shown in Fig. 1, I use two sheets of light corrugated material preferably vulcanized fiber, 10, 11, which are placed against each other with their corrugations parallel, and are secured together in this position by means of rivets 12 or equivalent fastenings. When two corrugated sheets are so arranged, approximately circular channels 13 are formed between them. I prefer to secure stiffening strips 14, within some of the channels formed between the sheets 10 and 11 as aforesaid, and these are placed near together or far apart according to the degree of stiffness required and the weight permissible. These stiffening strips may be made of ratan, wood or other sufficiently light and strong material. As shown in Fig. 1, I prefer to arrange the rivets 12 in rows along the two sides of the stiffening strips, whereby the latter are the better confined. This arrangement is not essential to my invention, however.

In Fig. 2 I have shown a modified structure wherein the sheets 10, 11, are laid together with their corrugations at right angles to each other. Here the stiffening strips may occupy some of the corrugations in either one of the sheets. If desired, indeed, stiffening strips may be placed in corrugations of both of the sheets, 10, 11. In Fig. 2 this last named construction is illustrated, and, as shown at 15, some of the stiffening strips, instead of crossing those running at right angles, are cut off so as to abut against the latter. This is to avoid a double thickness at points of crossing.

In Fig. 3 is shown a third modification which is within the scope of this invention. Here the corrugations of the two sheets run obliquely to each other. These different forms are intended to illustrate the fact that my invention covers all possible relative positions of the corrugations.

In the modifications so far shown, the stiffening strips take the form of round bars, and the rivets preferably act to hold the strips by compression from each side. It is equally within my invention to secure the strips by rivets passing through said strips themselves, as well as through the corrugated sheets.

In the modification of my invention shown in Fig. 4, the stiffening strips 16, which are flat, are placed between the sheets at various angles thereto. These strips may be made to cross, as shown, and may be located with relation to the specific use to which the material is to be put. The one which I have shown is one which has been found to provide great stiffness, while involving very little weight.

While any suitable flat material may be used for the stiffening strips, as shown in Figs. 4 and 6, I prefer three-ply wood veneer. In using this material the grain should run in opposite directions in the alternate layers, as shown in Fig. 5.

Where the flat strips 16 are used, I prefer that some of the rivets, at least, which se-

cure the corrugated sheets together should pass through the stiffening strips, as shown, thus adding to the firmness of the entire structure by confining the parts more firmly in place.

In Fig. 6 I have shown a modification of my device, wherein the corrugations of the two sheets run parallel, as in Fig. 2, but wherein flat strips 16 are interposed where the sheets bend toward each other and between the channels formed by the corrugations.

What I claim is—

1. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together with stiffening strips of relatively elastic material between them, substantially as described.

2. A composite wall structure comprising two sheets of corrugated vulcanized fiber, rivets securing the same together, and stiffening strips of relatively elastic material secured between said sheets, substantially as described.

3. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together, and stiffening strips occupying some of the channels of one of said sheets, substantially as described.

4. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together, and stiffening strips occupying some of the channels of both of said sheets, substantially as described.

5. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together with their corrugations making an angle with each other, and stiffening strips occupying some of the corrugations of one of said sheets, substantially as described.

6. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together with their corrugations placed at right angles with each other and stiffening strips secured between them, substantially as described.

7. A composite wall structure comprising two sheets of corrugated vulcanized fiber, stiffening strips between them occupying some of the corrugations of one of said sheets, and rivets set in rows along the two sides of said strips for securing said sheets together, substantially as described.

8. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together with their corrugations making an angle with each other, and stiffening strips occupying some of the corrugations in both sheets, some of said rods abutting at the sides of other rods making an angle with them, substantially as described.

9. A composite wall structure comprising two sheets of light corrugated material secured together by rivets, and light stiffening strips secured between them and occupying some of the corrugations in one of said sheets, substantially as described.

10. A composite wall structure comprising two sheets of light corrugated material secured together with flat stiffening strips of relatively elastic material riveted between them, substantially as described.

11. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together with flat stiffening strips of relatively elastic material secured between them, substantially as described.

12. A composite wall structure comprising two sheets of corrugated vulcanized fiber secured together with stiffening strips between them composed of a number of thin layers of wood, substantially as described.

13. A composite wall structure comprising two sheets of corrugated vulcanized fiber, flat stiffening strips between them, and rivets securing the whole together, some of which pass through said strips, substantially as described.

14. A composite wall structure comprising two sheets of corrugated vulcanized fiber, flat stiffening strips crossing each other between them, and rivets securing the whole together, substantially as described.

15. A composite wall structure comprising two sheets of corrugated vulcanized fiber set face to face with parallel oppositely arranged corrugations, stiffening strips between said sheets placed where they approach each other between corrugations, and rivets passing through said sheets and said strips, substantially as described.

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Witnesses:
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