

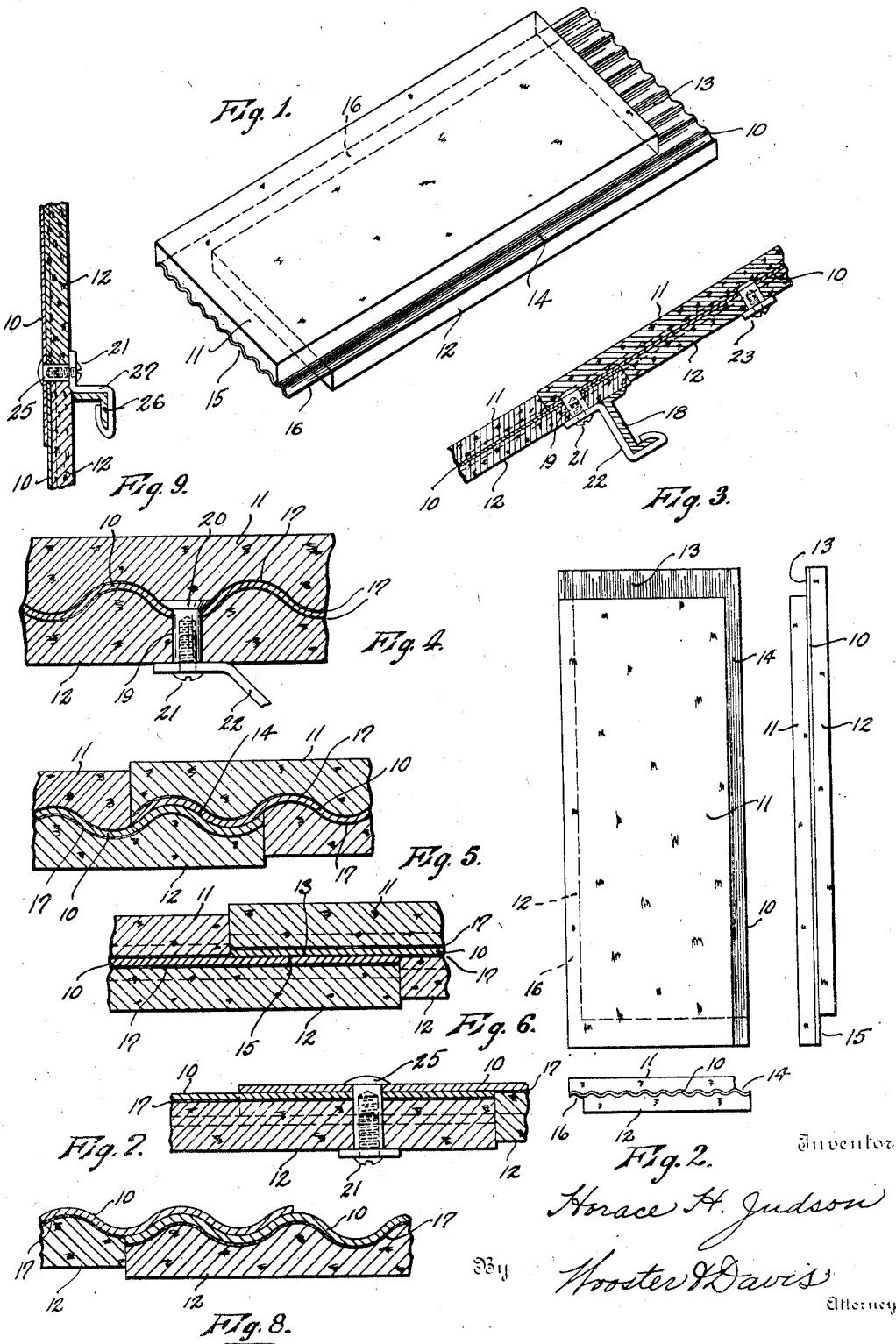
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CORK COVERED METAL BUILDING SHEET

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CORK-COVERED METAL BUILDING SHEET.

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This invention relates to a building material for roofing or walls of buildings, partitions, floors, and so forth, and has for an object to provide a material for this purpose which may be manufactured and erected at low cost, which will be light in weight, practically fireproof, which will be a poor conductor of heat and will be acid and fume proof to a large extent.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification, similar reference numerals being employed throughout the various figures to indicate corresponding elements. In this drawing,

Fig. 1 is a perspective view of a laminated sheet constructed according to my invention.

Fig. 2 is a top plan, side and end elevation of the sheet shown in Fig. 1.

Fig. 3 is a section through a portion of a roof showing one method of mounting these sheets to form a roof structure.

Fig. 4 is a section through a portion of one of these sheets showing how it may be fastened to a supporting means.

Fig. 5 is a transverse section through the joint at the sides of two adjacent sheets.

Fig. 6 is a longitudinal section through the joint at the ends of two adjacent sheets.

Fig. 7 is a similar section through a joint showing a slightly different construction of the sheets, this joint being the joint between the ends of two adjacent sheets.

Fig. 8 is a transverse section through the joint at the longitudinal edges of two adjacent sheets of the type shown in Fig. 7, and

Fig. 9 is a vertical section through a portion of a side wall showing one method of mounting the sheets of the type shown in Figs. 7 and 8.

The building construction is made up of a plurality of elements each of which comprises a laminated sheet of which I have shown two forms. In the first form, shown in Figs. 1 to 6 inclusive, there is a sheet metal reinforcement or core 10, preferably of steel, which is corrugated to stiffen it and give it greater resistance to bending. This corrugation also facilitates the joining of the various sheets together, as will presently appear. In this form of the element the opposite sides of the corrugated metal reinforcement are covered with sheets of mould-

ed or pressed granulated cork 11 and 12. These cork sheets are made by heating the granulated cork and placing it under pressure which will cause the granules of the cork to adhere by means of an adhesive substance which comes to the surface of the granules through the heating, and thus when cooled the cork granules form a unitary structure. The cork sheets are, therefore, free from extraneous binder. These sheets may be made of any thickness desired and the surface which is to be placed next to the corrugated metal sheet is corrugated to correspond with the corrugations of the metal so that the surface of the cork will be in juxtaposition to the surface of the metal throughout. The opposite surface of the cork may also be corrugated if desired, but I prefer to make this surface plain as shown, as it gives a better finish and it is easier to apply the finishing materials, as desired. This surface may be painted, plastered or given other finishes as desired.

The metal sheet is substantially rectangular as are also the cork sheets, but the metal sheet is of greater length and width than the cork sheets, as shown in Figs. 1 and 2, and the cork sheets are so placed on the metal sheets that one longitudinal edge and one end will be substantially flush with one end and one edge of the metal sheet so that the metal sheet will overhang the other end and opposite edge, as shown at 13 and 14 respectively, in Fig. 1. The other sheet 12 is so positioned that one end and one longitudinal edge thereof are substantially flush with this overhanging end and edge of the metal sheet so that the opposite end and opposite edge of the metal sheet, as indicated at 15 and 16, will overhang the opposite end and opposite edge of this cork sheet. Thus when building up the wall or roof the ends and the edges of adjacent sheets are overlapped, as shown in Figs. 3, 5 and 6, making a continuous surface of cork. The nesting of the corrugations of the overhanging sides of the metal form a locked joint, as shown in Fig. 5. The overlapping of the adjacent metal sheets is sufficient to bring the edges and ends of the cork sheets together to give a continuous sheet of cork on each side of the wall. The cork sheets may be attached to the metal sheet in various ways but I prefer to cement them to

the metal sheet by a suitable adhesive 17, preferably an asphaltum cement, so that the entire surface of the cork sheets is securely fastened to the surface of the metal sheet.

5 In building a roof of these sheets, as indicated in Fig. 3, the individual elements are of sufficient length to extend between two longitudinally extending purlins 18, which in the present case are channel irons, 10 so that these elements are self supporting, no other supporting means than purlins or corresponding beams being required, and the lapped joints at the adjacent ends of the elements are preferably formed over 15 these purlins. Suitable bolts may be passed through the elements for fastening them to the purlins but a convenient and satisfactory securing means is shown in Figs. 3 and 4. This securing means comprises a bolt 19 20 extending through an opening in the corrugated metal sheet and also through the cork with its head 20 engaging the metal. The openings for these bolts may be punched in the metal and the cork may be drilled. 25 These bolts are of such a length that the outer end is flush with the surface of the cork and it is drilled and tapped from this end. Any number desired are properly positioned throughout the elements and when 30 mounting in position all that is necessary to secure them is to pass a screw 21 through an opening in the securing strap 22 and thread it into the bolt. Thus these securing elements not only securely fasten the laminated 35 sheets in position on the supports but also provide mechanical means for securing the cork sheets to the corrugated metal sheets, so that should the cement let go for any reason there is still a means for preventing the cork 40 sheets separating from the metal sheets. If desired separate holding elements may be provided away from the joints, as shown at 23 Fig. 3. It will be noted that the upper cork sheet effectively protects the head of 45 the bolts. It is preferred that the entire surface of the cork be cemented to the metal as the surface of this metal is then thoroughly protected.

50 In Figs. 7, 8 and 9, I have shown a construction where one of the cork sheets, as the upper sheet 11 is omitted, so that one surface only of the corrugated sheet is covered with the cork. In this construction, however, the metal sheet is still of greater dimensions 55 than the cork sheet so as to overhang it at one end and along one longitudinal edge. In building up the wall these overlap one end and one longitudinal edge of the adjacent element, as shown in Figs. 7, 8 and 9, 60 the same as in the first form, so that the ends and sides of the cork sheets will abut to form a continuous cork surface. The elements are secured to their supports in the same manner as in the first form by bolts 25 and 65 screws 21 made in the same manner. In Fig.

9, I have shown this form as used to build a side wall in which they are attached to spaced longitudinal supports, such as an angle iron 26, the bolts 25 being located just above the edge of the next adjacent element 70 and secured to strap 27. If desired, however, the bolt may be passed through the overlapping portions of the metal sheet at the joint, as shown in Fig. 7. This will provide a convenient means for clamping the 75 two elements together at the joint and preventing opening of the joint. The outer surface of the metal sheet in this form may be painted or given any other desired form of protective coating. 80

In these constructions the corrugated metal sheet provides a strong supporting means for each element and the cork sheets protect this metal sheet, the elements being self supporting. The cork is also a very poor 85 conductor of heat so that this construction greatly reduces the heat radiation or transfer from a building made of this material over a building made of metal, thus effecting a great saving in the cost of heating. 90 Furthermore, this cork is practically fire-proof in that it is not combustible in the ordinary sense of the term. The cork is waterproof and is also acid and fume proof to a large extent. A very important feature 95 of this construction is that it is a very poor conductor of heat, and thus when used for roofs in factories where there is a moist atmosphere there will not be a condensation of moisture on the under side of the roof which 100 will drip therefrom, as is the case with metal roofs. The cork is a waste product and so is relatively cheap and may be made practically any thickness desired. It is also 105 of light weight and so heavy structural framing for the building or heavy roof supports are unnecessary. It is still further a poor conductor of sound.

Having thus set forth the nature of my invention, what I claim is: 110

1. A structural building element comprising a corrugated sheet of metal and a pre-formed sheet of granulated cork pressed together while heated so that the granules 115 of the cork adhere through the adhesive substance brought to the surface thereof by the heat to form a unitary structure free from extraneous binder, said cork sheet being cemented to said metal sheet, and the surface of said cork sheet being corrugated 120 to correspond with the corrugations of the metal sheet.

2. A structural building element comprising a corrugated sheet of metal and pre-formed sheets of granulated cork pressed together while heated so that the granules 125 of the cork adhere through the adhesive substance brought to the surface thereof by the heat to form a unitary structure free from extraneous binder, said cork sheet being ce- 130

mented to each of the opposite surfaces of said metal sheet, and the contiguous surfaces of said cork sheets being corrugated to correspond with the corrugations of the metal sheet.

5 3. A structural building element comprising a corrugated substantially rectangular sheet of metal and preformed sheets of granulated cork pressed together while heated so that the granules of the cork adhere through the adhesive substance brought to the surface thereof by the heat to form a unitary structure free from extraneous binder, said cork sheet being cemented to each of the opposite surfaces of said metal sheet, the contiguous surfaces of said cork sheets being corrugated to correspond with the corrugations of the metal, said metal sheet being larger both in length and width than the cork sheets and the sheets being so arranged that the edges of one cork sheet at one end and one side thereof are substantially flush with the corresponding edges of the metal sheet and the opposite end and opposite side of the other cork sheet are sub-

stantially flush with the opposite end and opposite side of the metal sheet.

4. A structural building element comprising a sheet of metal, a sheet of moulded or pressed granulated cork cemented to one surface of said metal sheet, a one piece headed bolt extending through the metal and terminating substantially flush with the surface of the cork, said bolt being drilled and tapped from said latter end, and a securing screw threaded in said bolt.

5. A structural building element comprising a corrugated sheet of metal, a sheet of moulded or pressed granulated cork having one surface corrugated to fit the corrugations of the metal sheet, a one piece securing bolt extending through the metal and cork, said bolt having a head engaging the metal and terminating at its opposite end substantially flush with the surface of the cork, said bolt having a threaded opening extending from said latter end, and a screw in said opening.

In testimony whereof I affix my signature.

HORACE H. JUDSON.