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SHEET METAL SURFACING MATERIAL

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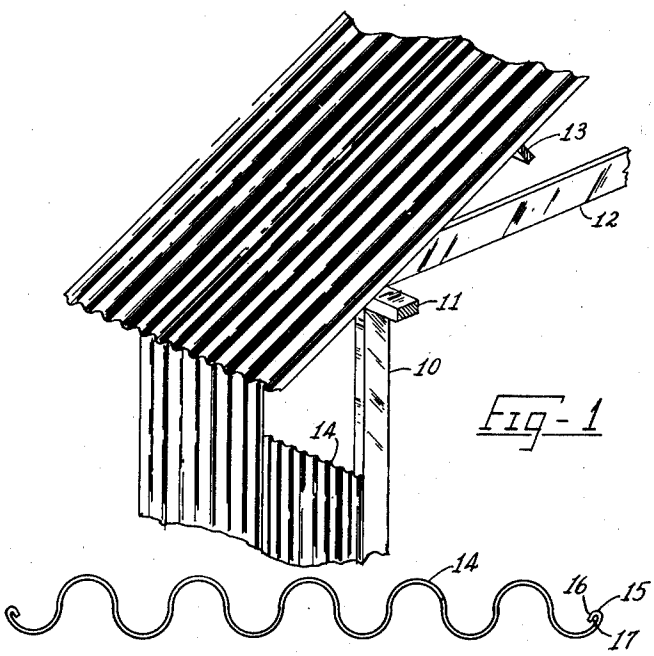


Fig- 1

Fig- 2

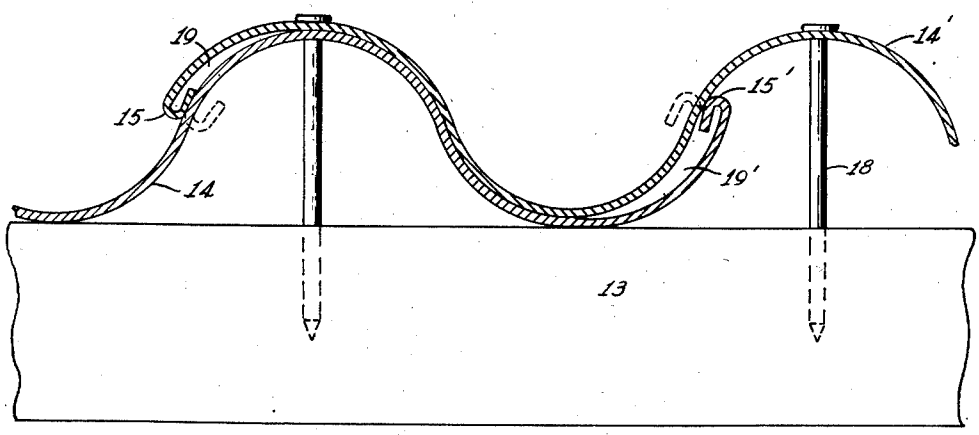


Fig- 3

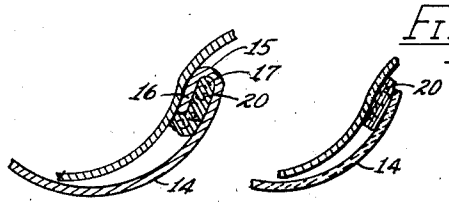


Fig- 4 Fig 5

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SHEET METAL SURFACING MATERIAL

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1 Claim. (Cl. 108—13)

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My invention relates to sheet metal surfacing material of the type adapted for roof and sides of buildings or the like, but more particularly to the type of surfacing material having lineal corrugations equally spaced along its transverse width, which corrugations are adapted to overlap duplicate corrugations of other sheets of the same material with the intention of forming a leak-proof joint in the roof or sides of a building.

In the conventional type of corrugated sheet metal surfacing material the sheets are laid transversely in overlapping relationship along their marginal edges. The overlapped portions of the roofing material are nailed to suitable purlins on the roof or sides of the building, the overlapping corrugations supposedly serving as a leak-proof joint between the two sheets.

It has been found, however, by those familiar with the actual application of this type of surfacing material, that in spite of the overlapping of the corrugated portions of adjacent sheets, water will, under certain circumstances, seep between the two layers of material and consequently cause a leak in the building. This leaking is attributed to the capillary attraction of water that falls on the roof by the closely spaced overlapped roof materials. It has been found that capillary attraction will cause water to be drawn over several raised corrugations of overlapping material and drip down between the supporting purlins into the building.

The same condition is also found where this type of surfacing material is applied to the sides of a building, especially if a blowing rain is directed at the proper angle. In this instance the pressure of the wind assists capillary attraction of the water in causing it to seep through the overlapping marginal portions of the surfacing material.

The main object of my invention therefore is to provide a surface covering material of the corrugated sheet-metal type which includes novel means on the overlapping edges of the sheets adapted to make a water-tight joint at the overlapped edges of the joined sheets to prevent water from seeping through the joint.

Another object of my invention is to provide a surface covering material wherein the overlapping edges are constructed to form a resilient joint by the action of one sheet against another when the sheets are applied as covering to a surface.

Another object of my invention is to provide means on the overlapping edge portions of corrugated roofing material for spacing the overlapped portions sufficiently far enough apart to defeat capillary attraction of water, a cause of leakage encountered in joints of this material used in prior art construction.

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With these and other objects in view, my invention consists in a construction and arrangement of parts more clearly pointed out in the accompanying drawings and defined in the appended claim.

In the drawing, Figure 1 is a partially broken perspective view showing an embodiment of my invention in a surfacing material as applied to the roof and sides of a building.

Figure 2 is an end view of a single sheet of my surfacing material.

Figure 3 is an enlarged broken cross-sectional view of the marginal side edges of two sheets of my surfacing material attached in overlapping relationship to a purlin or the like.

Figure 4 is a broken cross-sectional view of a side edge of my surfacing material in a modified form.

In the drawing numerals 10, 11, and 12 designate the studding, top plate and ceiling rafters respectively, of a building or the like. As can be seen here my surfacing material may be applied directly to the studs 10 as a siding material or may be laid across purlins 13 as roofing. It is intended that my surfacing material be manufactured in single sheets 14 simulating the conventional corrugated sheet-metal material well known to builders. My improvement, however, to the conventional corrugated metal sheet or other types of corrugated roofing or siding sheets consists in a novel arrangement and construction on the side edges of the sheets which I shall now describe.

In Figure 2 it can be seen that the roofing embodying my invention simulates the standard corrugated metal sheet familiar to builders, in which the corrugations are equally spaced and with a total over-all width equal to, or slightly greater than, the distance between standard stud spacings of a building or the like.

It will be remembered that the marginal side edges of a conventional metal roofing sheet terminates in semi-circular arcs with the outside edges falling approximately on the transverse central axis of the sheet. In this prior art type at least one and one-half overlaps of corrugations are recommended. This is done in an effort to minimize the force of capillary attraction which draws the water over and under the overlapped portions of corrugations. Even this amount of overlap has not prevented leakage due to capillary attraction.

It will be noted that I have provided a return bend 15 on each marginal edge of my sheet 14, the leg 16 of the return forming an open recess or pocket 17.

Reference to Figure 3 will show the advantage of such construction as mentioned above. This figure shows two adjacent marginal edges of my surfacing sheets 14 in overlapping relationship as

applied to a roof. While manufacturers of prior art types corrugated roofing recommended that their roofing sheets be overlapped one and one-half laps, in practice such material is overlapped often more in the making of a roof in an attempt to make water-tight joints.

Since it is never necessary to overlap sheets of roofing material embodying my inventive improvements more than one and one-half laps to make a water-tight joint it will be seen that in actual practice a given number of sheets of roofing material made according to my invention will cover a greater roof surface or wall surface than an equivalent number of sheets of prior art corrugated roof sheets of the same length and width as my improved roofing sheets.

My surfacing material is applied to the roof purlins **13** by suitable roofing nails **18**. When the overlap is made and the nails **18** are driven into the purlins **13**, the edges of my sheets **14** and **14'** are sprung from their normal position as shown by the dotted lines into a position where the inside edges of the return bends **15** and **15'** make frictional contact with the sheets **14** and **14'** as shown; thus making a tight seal for interrupting the flow of water under the forces of capillary attraction. Should any water be blown or find its way beyond one of the return bends **15** or **15'** into the hollow spaces **19** or **19'**, and seek its way by capillary attraction for the full length of the overlap, it would be stopped in its travel by the return bend that seals the opposite side of the overlap. The increase in spread of the two sheets at the overlapping portions of the joint would interrupt the force of capillary attraction and thereby stop the water in its travel and cause it to be trapped in one of the hollow spaces **19** or **19'**, from whence it will flow the full length of the sheet and out onto the roof. In any case no water would travel beyond the bends **15** and **15'**; not even that driven by wind pressure.

It will be seen that both the marginal edge portions of the sheets **14** and **14'** as well as the legs **16** and **16'** of the return bends **15** and **15'** offer resistance to the bending caused by nailing the sheets in place. Therefore, the overlapped sheets through the resiliency of the metal of which they are constructed, form a frictionally engaged seal under pressure capable of preventing the flow of water through the overlapped sheets except in the case of tiny cracks that might occur from irregularities in edge portions of the joined sheets of material. As will be explained later any slight seepages of water will be arrested before such seepage water can travel entirely through the joint.

My invention in a surfacing material is highly advantageous in that no fitting, crimping or otherwise extra work is required to make a convenient and permanent seal against leaks caused by the capillary attraction of water between overlapping sheets.

Such method of sealing against water leaks is just as effective against air, where it is desired to seal against all air leaks in a building having a central system of heating or cooling.

Figure 4 of the drawing shows an embodiment of my invention in modified form. In this instance the pocket **17** of the return bend **15** is filled with a felt spacing strip **20**. The strip **20** may be held in the pocket **17** by glue or the like

or may be simply packed into the pocket with the leg **16** forming a constricted opening to prevent the spacing strip **20** from coming out. While I have used felt by way of illustration, it is understood that the spacing strip **20** may be made out of rubber, plastic or of any other material that is absorptive or water repellent in quality. Where the spacing strip **20** is incorporated any seepage of water between adjacent sheets of my surfacing material due to irregularities in the edge of the material would either be absorbed or prevented from entering the joint. If any water entered from the opposite side of the joint and reached the strip such water would be completely repelled back into the hollow spaces **19** between the sheets and be turned back on to the roof for ordinary drainage. It will be remembered that the same resilient contacts are made between the marginal edges of the sheets of this modified type as are made in the above described preferred type.

Within the scope of my invention such packing strips may be applied to non-metallic roofing material such as corrugated asbestos, slate or the like. In the case of such material the strips would be glued or manufactured into the edges of the sheet in alignment with them and preferably fastened to the sheets in a manner to align the strips evenly with the edges or projecting slightly beyond the edges of the sheet as illustrated in Figure 5 of the drawing.

Having thus described my invention, I claim:

A surfacing sheet consisting in a transversely flexible, lengthwise rigid, corrugated, rectangular sheet adapted to be nailed in overlapping relationship along its marginal longitudinal edge with a similarly corrugated sheet to the frameworkof a building or the like, wherein the side edges of said sheet terminate in reverse bends extending from a common side of the sheet defining elongated slots, and wherein the external longitudinally extending areas of said reverse bends extend inwardly and substantially parallel to the contiguous longitudinal marginal edge surfaces of said sheet out of which they were formed, whereby when a pair of said sheets are laid in opposed positions and in overlapping relationship with one another along their marginal longitudinal edges said external longitudinally extending areas make a seal with the opposed surfacing sheet along said external longitudinally extending areas and space the edge portions of said sheets out of their normal sinuous line of contact forming air pockets between said surfacing sheets adapted to interrupt capillary flows of water through the joint formed by the overlapped portions of said surfacing sheets, said reverse bends constituting water deflectors adapted to reverse wind blown films of water backwardly on the said surfacing sheets.

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