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Tantlinger

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[54] STAINLESS STEEL CLAD ALUMINUM STRAKES AND PANELS

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[52] **U.S. Cl.** **52/471**, 52/588, 105/401

[51] **Int. Cl.** **E04c 1/10**, E04c 2/08

[58] **Field of Search**.....52/471, 586, 619, 622, 588; 105/401; 287/189.36 D

[56] **References Cited**

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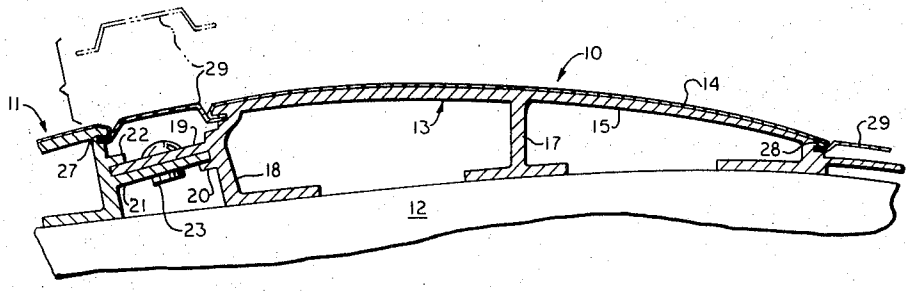
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[57] **ABSTRACT**

Aluminum extrusions for use as strakes and panels in making vehicle bodies and other structures are clad with thin, stainless steel sheet or foil bonded to their exterior surfaces. The edge portions of each stainless steel cladding sheet extend beyond edge portions of its respective extrusion, and are wrapped over such edges and tucked into grooves provided in the sides of the extrusions. The extrusions are mounted with the grooves of adjacent strakes in slightly spaced apart relation, and hat section or other suitable filler strips of stainless steel are mounted to extend across and bridge the gaps between adjacent grooves, the edges of each filler strip being inserted in the grooves along side the edge portions of the cladding material tucked therein.

7 Claims, 3 Drawing Figures



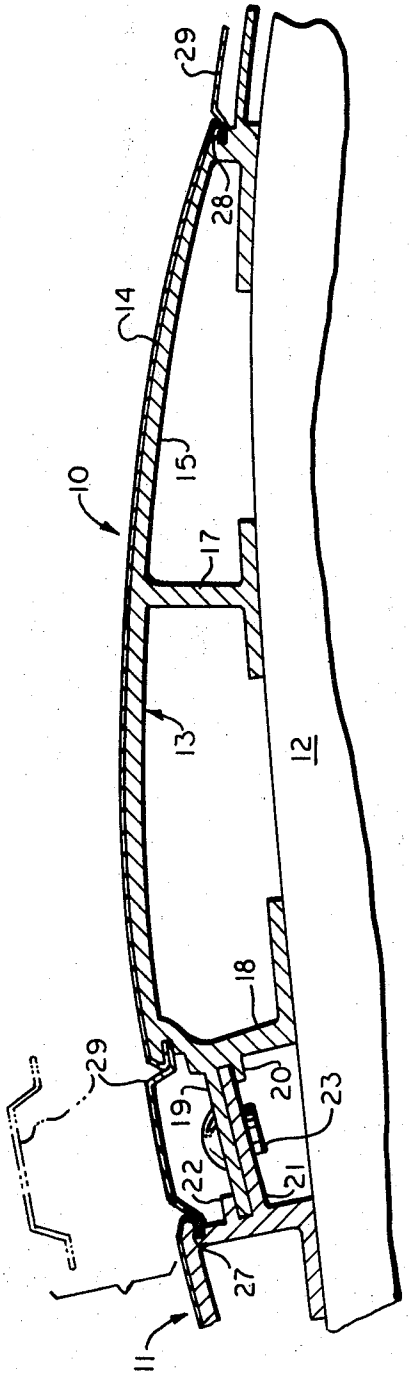


FIG. 1

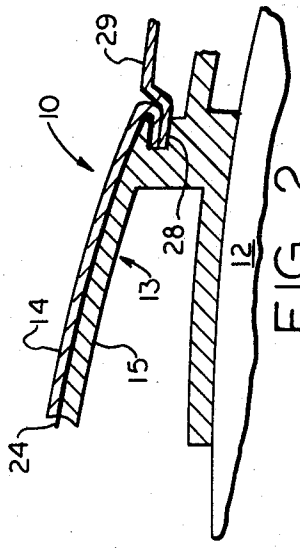


FIG. 2

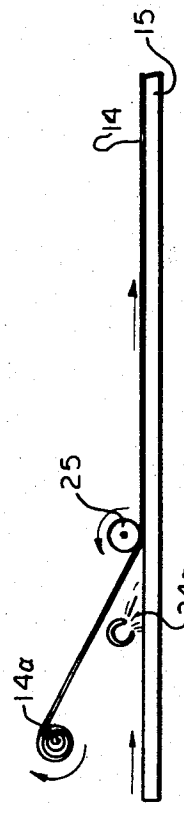


FIG. 3

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STAINLESS STEEL CLAD ALUMINUM STRAKES AND PANELS

BACKGROUND OF THE INVENTION

In many branches of industry it is desirable to use stainless steel for the making of relatively large structures intended for outdoor use, for example, commercial truck bodies, railway car bodies, automobile body panels, and many others. However, stainless steel is expensive, heavy, and not easy to manufacture without the use of expensive equipment. In thin gauges, unless heavily corrugated, stainless steel sheet may show marked surface irregularities which, in bright light, and particularly when viewed at a small, acute angle to the surface, are accentuated by "optical leverage". Extruded aluminum strakes and panels have been found excellent in many respects for such use, but the relatively soft aluminum oxidizes readily, is easy to mar and scratch, and is subject to attack by many substances, some of which might be present in cleaning solutions.

A type of strake joint illustrated in the drawings of the present application is separately disclosed and claimed in pending U.S. Pat. application Ser. No. 81,639, filed Oct. 19, 1970, and assigned to the assignee of the present invention.

SUMMARY OF THE INVENTION

A primary objective of the present invention is to provide a stainless steel clad, extruded aluminum strake or panel for use in the making of structures exposed to wear and weather. A further objective of the invention is to smooth on and bond in conforming relation to an exposed face of an aluminum extrusion a layer of thin sheet or foil of stainless steel, the bonding being accomplished by an interposed, preferably impervious layer of adhesive material. The edges of the stainless steel cladding material are wrapped over edges of the extrusions and tucked into grooves provided along the sides of the extrusions. The grooves of adjacent extrusions are spaced apart, and a sealing strip of stainless steel sheet has the edges thereof inserted into the grooves, thereby spanning and sealing the joint.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing objectives and advantages of the present invention will be apparent from the following description and the accompanying drawings, wherein:

FIG. **1** is a transverse, sectional view of a stainless steel clad strake and a portion of another embodying the invention as they appear when assembled to form the body of a mass transit vehicle, one of the joint spanning strips and a portion of another also being shown.

FIG. **2** is an enlarged showing of the right hand portion of FIG. **1**.

FIG. **3** is a diagrammatic showing, in reduced scale, of one type of mechanism for applying and bonding the stainless steel cladding sheet to the aluminum extrusion.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to the drawings in detail, a plurality of strakes, such as the strakes **10** and **11** of FIG. **1**, are designed to be mounted on a suitable framework, including a frame member **12**, to form the body shell of a railway car (not shown) of a type designed for use in a mass transit railway system. The arrangement is illustrative only, and is intended to be modified as required, in accordance with accepted design engineering procedures, for each type of structure in which the invention is to be embodied.

The strake **10**, which is representative, comprises an aluminum extrusion **13** clad on its weather side with a thin layer **14** of stainless steel. The extrusion **13** has a transversely curved body web **15** with an integral central supporting rib **17**. An integral support flange **18** is also provided along the left hand edge of the body portion **15**, see FIG. **1**, and this same edge is also provided with a long tongue **19** and short tongue **20** spaced apart to receive a similar long tongue **21** provided on the right hand edge of adjacent strake **11**. The right hand edge of the latter strake has also a short tongue **22**, which overlies the long tongue **19** of the strake **10**, and the two long tongues **19** and **21** are secured together by suitable fastening means, such as rivets **23**. The specific type of joint employed for structurally connecting the strakes is not material to the invention, but the illustrated joint is satisfactory, and is the subject of a separate patent application as mentioned previously herein.

The outer or weather side of the strake **10** is clad with a thin layer **14** of stainless steel sheet or foil, applied smoothly thereon, and adhesively secured thereto by a preferably impervious layer **24**, see FIG. **2**, of suitable adhesive material.

The stainless steel sheet or foil cladding layer **14** may be applied from a roll **14***a* thereof as shown in FIG. **2**, suitable adhesive material being applied as at **24***a*, and the cladding layer **14** pressed to the extrusion **14** by a smoothing roller **25**, after which the extending edge portions of the cladding layer **14** may be tucked into the grooves **27** and **28** in a well known manner as by the use of conventional rollers, not shown. The method application of the cladding layer is not, per se, a feature of the invention, and can be done in any one of several different ways which will be apparent to those familiar with such matters. As shown, the cladding layer **14** is smooth, but it is intended that mildly contoured or patterned light stainless sheet steel or foil may be used if desired, which material is applied in a generally similar manner, as will be apparent to one familiar with the industry.

The type of adhesive material employed for bonding the cladding material to the extrusions is important to the enduring character of the completed structure, since the material should be impervious to moisture so as to reduce the possibility of corrosion. A thin sheet of polyimylidine chloride resin (Dow Chemical Company Saran) coated on both sides with a heat sensitive adhesive is presently preferred.

The stainless steel cladding sheet **14** is of a width to extend beyond edges of the extrusion **13** to which it is applied, and projecting edge portions of the cladding layer **14** are wrapped over side edges of the extrusion **13** and are tucked into the grooves **27** and **28** provided one along each side of the extrusion.

The strakes **10** and **11** are so designed that when they are assembled, the grooves of adjacent strakes on opposite sides of each strake joint are spaced apart to

receive therein, in addition to the edge portions of the cladding layer **14**, the edge portions of a stainless steel filler and sealing strip **29** which spans each structural joint connecting adjacent strakes, see FIGS. **1** and **2**.

The edges of each sealing strip **29** are fitted into the grooves **27** and **28**, alongside the tucked-in edges of the cladding layer, and, unless a pressure sealed fit is provided in the joint between each strip **29** and the cladding layers. These joints preferably are sealed by the use of suitable sealant material. The latter material can be applied in any one of numerous ways which will be apparent to those familiar with such procedure, and which is not, per se, a feature of the present invention.

The invention provides a weather resistant, mar resistant strake structure which has many of the advantages of extruded aluminum, while at the same time providing a sealed, stainless steel surface layer with its obvious advantages, some of which are mentioned previously herein.

Having thus described by invention, what I claim as new and useful and desire to protect by U.S. Letters Patent is:

1. A stainless steel sheathed, extruded aluminum strake structure wherein the invention comprises

an extruded aluminum strake body portion having an outer surface either flat or of simple curvature, and having a groove along each side thereof,

an integral, structural joint portion on each side of each extrusion and formed for structurally interconnecting adjacent strakes with their side grooves spaced apart to receive the edges of a sealing filler strip therein,

a sheathing layer of thin, stainless steel sheet material applied to the outer face of each strake extrusion, an edge portion of each stainless steel sheathing layer along each side thereof being tucked into the side groove along the corresponding side of each extrusion,

a layer of adhesive bonding material interposed between each strake extrusion and its respective stainless steel sheathing, and

means for sealing to each other the sheathing material of adjacent strakes.

2. A strake structure as claimed in claim **1** wherein the means for sealing to each other the sheathing material of adjacent strakes comprises a filler strip extending transversely across each such joint, and with the edge portions of each filler strip in fitted relation with the edge portions of the sheathing material of each of the adjacent strakes.

3. A strake structure as claimed in claim **2** wherein each filler strip is of stainless steel sheet material, and the edge portions of each filler strip are inserted alongside the tucked-in edge portions of the sheathing layers of the strakes on both sides of each such joint.

4. A strake structure as claimed in claim **3** wherein each edge of each sealing strip is sealed to the edge portion of the sheathing material in the same extrusion edge groove therewith.

5. A strake structure as claimed in claim **4** wherein each edge portion of each sealing strip is coated with sealant material prior to being inserted in its respective extrusion edge groove.

6. A strake structure as claimed in claim **1** wherein the adhesive bonding material forms an impervious seal between the aluminum of the extrusion ahd the stainless steel of the cladding layer of stainless steel.

7. A strake as claimed in claim **6** wherein the adhesive bonding material is a dielectric.

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