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F. V. ANDRE
BUILDING WALL STRUCTURE
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Fig. 1

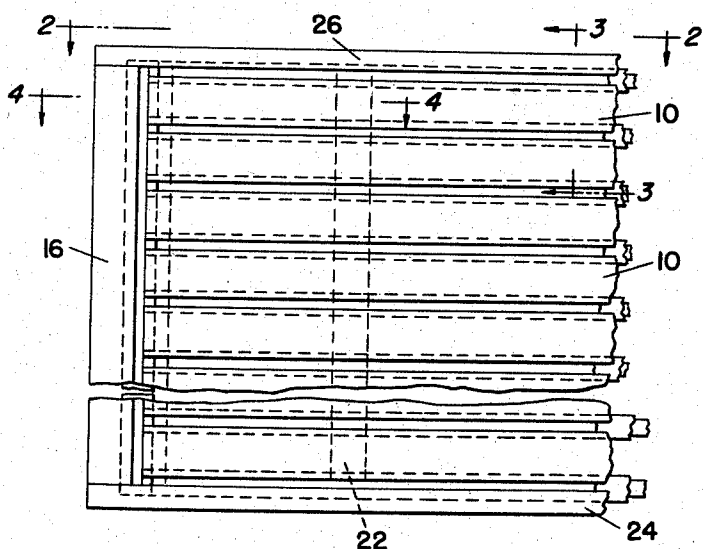


Fig. 2

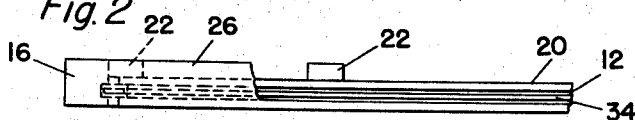


Fig. 3

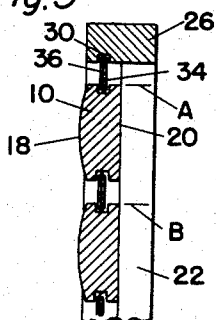


Fig. 4

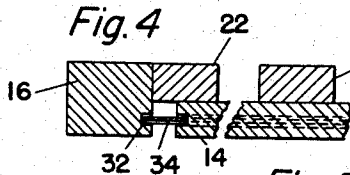


Fig. 6

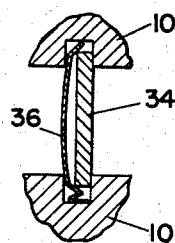


Fig. 5

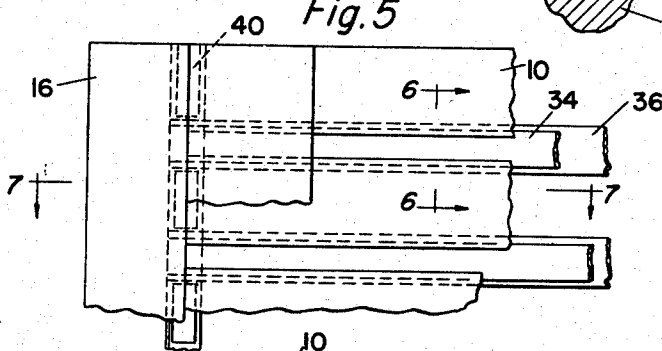
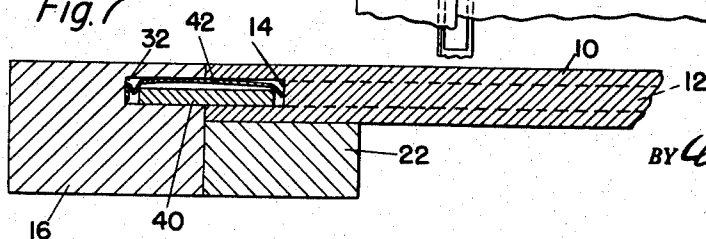


Fig. 7



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1

2,875,478

BUILDING WALL STRUCTURE

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1 Claim. (Cl. 20—4)

This invention relates to an improved building construction and, in particular, it relates to means for joining together a plurality of assembled building elements forming an exterior wall.

Walls of this general type have been suggested for the construction of cabins, motels and resort shelters. However, under conditions of weather extremes, the structures presently erected tend to lose dimensional stability requiring constant maintenance at considerable cost. It is an object of this invention to disclose a structure of this type which is weather tight under all conditions and low in maintenance costs.

The loss of dimensional stability is generally caused by the expansion and contraction of the separate members resulting in the wall losing its structural firmness and weather tight qualities. These faults are common in structures using wooden strips or splines as structural features and tongue and groove joints in general. The requirement of exact measurement and fashioning of the elements of the structure although possible, is immediately affected by the absorption of moisture. Consequently the initial erection of the structure as well as its ultimate weather-tight qualities are affected by conditions beyond the control of the manufacturer. A further object is therefore, to provide a splined joint structure easy to manufacture and erect, and which remains sealed at the splined joints and firm under all weather conditions.

These and other objects will be evident in the detailed description of the invention given later in the specification. Briefly it discloses an improvement in spline joint structures whereby the wooden splines or spacers are fitted with a metal cover extending into the attached elements. By making the metal cover from a spring material, weather resistant, and fashioning it to exercise a clip action on the wooden spacer, a firm and weather repellant joint is the result. These metal covers and the wooden splines are installed together as the wall is erected, and the spacing is maintained at the most effective dimension for expansion and contraction at the erection site by use of construction guides. Finally the structural advantage of the splined joint which affords a free floating connection leaving connected members undisturbed by weather is enhanced by the use of a thin metal cover of spring material made to cover the exposed face of the wooden spline.

A better understanding of the invention may be had by reference to the following detailed explanation read with reference to the accompanying drawing in which:

Figure 1 is an elevational view showing the assembled elements.

Figure 2 is a plan view of Figure 1 taken on line 2—2.

Figure 3 is a sectional view of Figure 1 taken on line 3—3.

Figure 4 is an enlargement of a detail of Figure 1 showing assembly features.

Figure 5 is an enlarged elevational detail showing an alternate corner construction.

Figure 6 is a sectional detail of the joint construction.

2

Figure 7 is a sectional plan view detail showing the alternate corner construction.

Several solutions to the problem of weather tight, decay free splined joints have been offered. To the earliest structure using a simple wooden spacer fitted into the joined adjacent pieces have been added fillers, completely covering the space, or substitutions have been made of metal and other substances for the wooden spline or spacer. The basic problems of decay and weather-tight failure still remain.

A proper solution of the first of these basic problems requires accessibility to as much of the surface of the connected pieces as is possible for decay prevention maintenance. This can be achieved only by reducing the covering of the spaced apart section to a minimum and shedding of water from the normally affected areas of the spline and the splined joint.

Maintenance of a weather-tight structure of this type also depends on refusing water admission to the joint area. This problem requires, in addition, a joint that is tight under all conditions affecting its dimensions. In addition such joint must be easy to assemble, and for some special structures such as portable buildings, easy to disassemble and reassemble.

According to the present invention, advantage is taken of the joints afforded by wood spring-pressed into intimate contact with wood for the weather-tight problem solution as well as ease and reduced cost of manufacture. To expedite construction and dismantling as well as increasing weather resistance, a spring metal cover for the spline is used. When these elements are assembled in the joined pieces of kerfed surfacing material at a depth dictated by measurements established for proper construction in the locale, a weather resistive joint is achieved which gives an outstanding structural result.

Figure 1 illustrates a section of a wall using the elements of this invention assembled in a preferred form. The wooden surfacing members 10, shown in section in Figure 3, are notched or kerfed on the sides as at 12. As indicated in Figures 1, 2, 4, 5 and 7, the preferred embodiment also shows like notches 14 in the ends which abut corner posts such as 16. The wooden members 10 are rounded on the exposed surface 18 and flattened on the back 20 for ease in fastening to a frame work such as supplied by the studs 22. A sill 24 and a cap 26 are included here to delimit a wall area as periphery bounding members and to show the facility of the disclosed spline structure in completing a building surface, or as used in prefabricated portions of a building for later assembly, if desired. The detail under the cap 26 is illustrated in Figure 2 and will be applicable to the sill 24 details as understood by those versed in the art.

Figures 2, 3 and 4 show the details of the cap 26 and the corner post 16. Both these elements are shown to have a depth sufficient to include the studs 22 and the wooden surfacing members 20. The slots 30 and 32 in each of these members respectively are aligned to receive the wood spline 34 and the spring metal covering 36 of the splined joint spacer. As all the wood splines are uniform in manufactured section and the metal covers also, the same numbers are used for the elements in all views.

An alternate corner post assembly is shown in Figures 5 and 7 using short filler members 40 between the face members 10. In this assembly, detailed in Figure 7 as a sectional view, the short filler member 40 fills the distance between the splines 34 and spring metal covers 36 fitting into the corner post kerf and the end kerf in the face member 10. In this instance it may be desired to omit a short metal cover suggested to be used with the spacer and use a full length metal cover long enough to fit the corner post from top to bottom. In either

case such a cover is noted as number 42 in Figure 7 and, because of its thinness and flexibility will co-operate with spacers 34 and covers 36. Such an alternate structure permits a closely abutting corner joint retaining all the structural advantages of that shown in Figures 1 and 4, described above.

Referring now to Figures 3 and 6, the surfacing members 10 and the connecting spacers or spline combinations of wood 34 and metal 36 will be described. The wood splines 34 and the metal covers 36 fit into the slots 12. As will be understood later, the spacing for this assembly is controlled to allow for expansion and contraction yet maintain a proper joint. By cambering the metal cover 36 and controlling the width and depth of the slots in the receiving members, and the thickness and width of the spline, tight joints for assembly and ultimate satisfaction are assured.

The metal cover 36 is shown in detail in Figure 6. A satisfactory metal for this purpose is Phosphor-bronze spring material of .0126 inch thickness (28 gauge Browne & Sharp). By bending the upper edge once and double bending the lower edge a two-fold result is achieved. An immediate indication of the preferred assembly is transmitted to the erecting workmen. Secondly the upper single bend acts as metal flashing in shedding water from the top of the metal cover while the double bend at the bottom assists in properly spacing the connecting wooden members as well as acting as a water seal in the lower portion of the joint.

The ease of assembly and disassembly will be immediately recognized by those versed in the art. However to emphasize the patentable distinction of the disclosed combination and sub-combination over existing structures of this type the assembly of a typical wall section will be described.

Framing as represented by the sill 24, studs 22 and corner post 16 is erected. The sill and corner posts are notched, slotted or kerfed as indicated on the inner peripheral face to receive the metal covers and wooden spline spacers. This combination of weather shedding spacing elements is set in the sill and corner post ready to receive the members 10. By marking the studs as at A, B, etc. (Figure 3), positioning lines indicating the proper spacing of the spacer elements and the associated members for the best joint structure are made available to the erectors. A line scribed to run the length of the corner post assists in forming the vertical joint in the same way.

It will be evident that by repeating the procedure the wall, including openings handled as above as for the corner posts, can be erected to desired height. A cap 26, similar to the sill, is placed to terminate the construction and prepare the assembly for additional height of wall or roof construction.

By carefully spacing the surface members as outlined, and using standard dimensions for the member widths and groove depths, splines and covers can be made standard as well. As indicated above, the splines will be thinner than the grooves on the groove entering edges and narrower than the space between the members plus the depths of the groove bottoms to permit proper insertion of the cover. In turn, the cover is wide enough to extend into the grooves and engage the groove bottom.

Additionally, the cover is cambered or bowed, and also bent on the edges as shown to extend beyond the plane of the spline, fill the groove space allowed by the narrower and thinner spline and urge the spline into secure position. In this way, the cover and spline cooperate with each other as a joint closure between the grooved-spaced surface members.

The resulting structure presents a wall face of sealed joints where weather is refused, yet the flexibility of the joint is maintained. By absorbing the effects of weather expansion and contraction in joints retaining their original dimensions and flexibility the relatively fixed members remain undisturbed. The metal covers fitting into the slots of the connected members together with the wooden splines preserves the spline and the joint, and makes maintenance easy by exposing the weathering surfaces of the connected members. Erection is simplified and controlled by the manufacturer to give the best results in the locale of erection. Usual leakage due to expansion and contracting is thus reduced to a minimum because of the flexible joint design and the erection control.

In illustrating a preferred embodiment of the invention a horizontal assembly of members is shown. The possibility of vertical or angular erection using the connecting joint principles as outlined here seems self evident. Also, abutting members are as readily connected by the joint disclosed here as are adjacently extended members. Further structural changes will be evident to those versed in the art such as modification of the end of the member joints with the corner posts by further simplification as indicated. Additionally, changes in the sectional bending of the spring metal spline cover may be introduced to fit special conditions. It is therefore, the intent of this invention to be limited in scope only by the limits of the attached claim as it is construed in the spirit of this disclosure.

What is claimed is:

In a weather exposed building wall constructed of fixed wooden surfacing members spaced apart in parallel arrangement with the spaces between closed by partially exposed splines which extend into grooves formed in adjacent edges of the surfacing members, the improvement in such wall comprising each of the splines being thinner than the width of the groove entered at the engaging portion and narrower than the sum of the groove depths and space between said members, and a bowed resilient cover covering each spline and wider than the spline and having bent edges extending into spaces between the bottoms of the adjacent grooves in the general plane of the spline and the edges of the spline, and into contact with the bottoms of the adjacent grooves, and resiliently urging the spline against the rear walls of the grooves.

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