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3,381,428

EXPOSED LOCK LOG JOINING SYSTEM

Filed Aug. 22, 1967

2 Sheets-Sheet 1

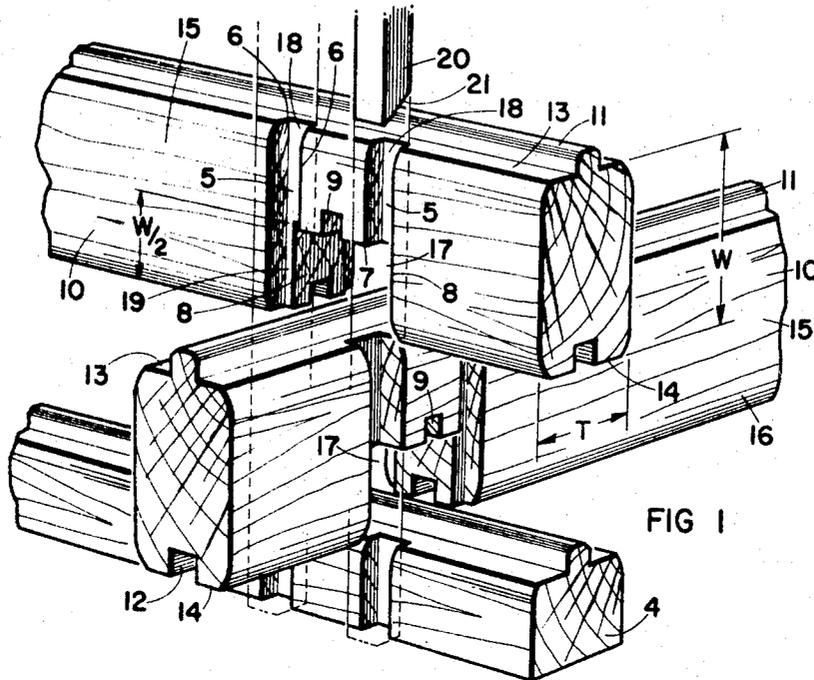


FIG 1

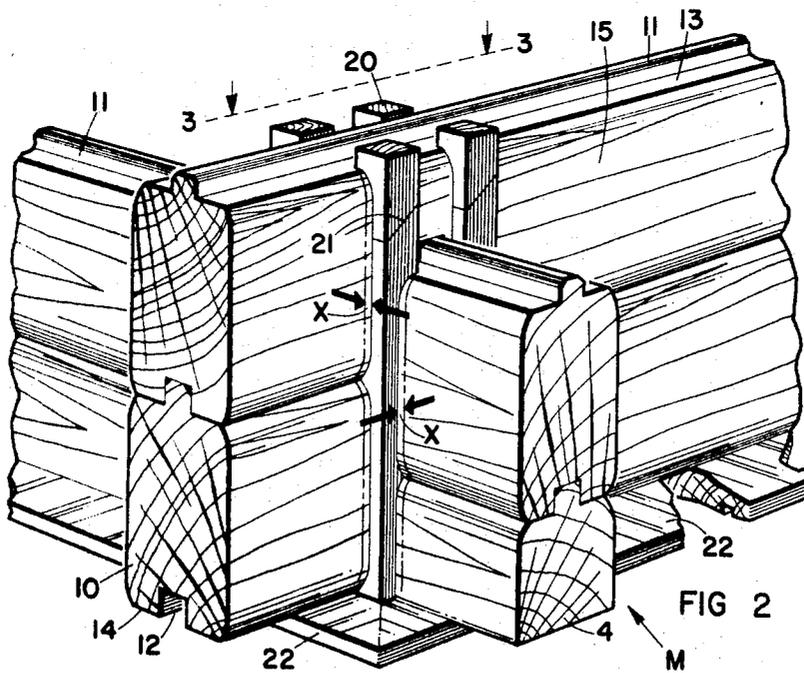


FIG 2

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2 Sheets-Sheet 2

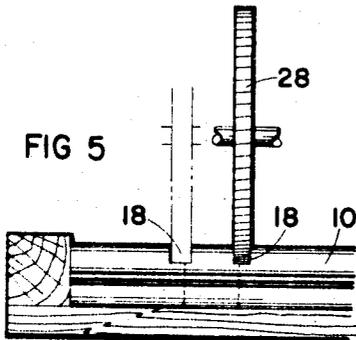
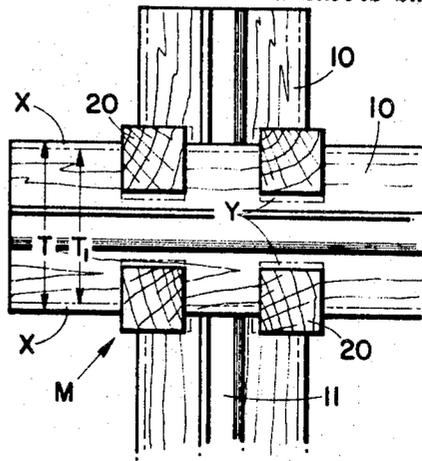
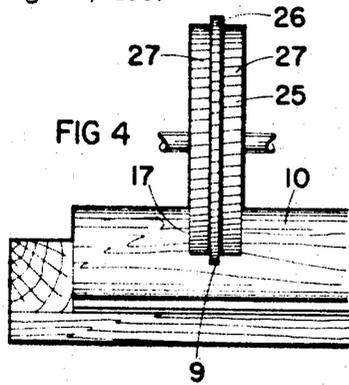
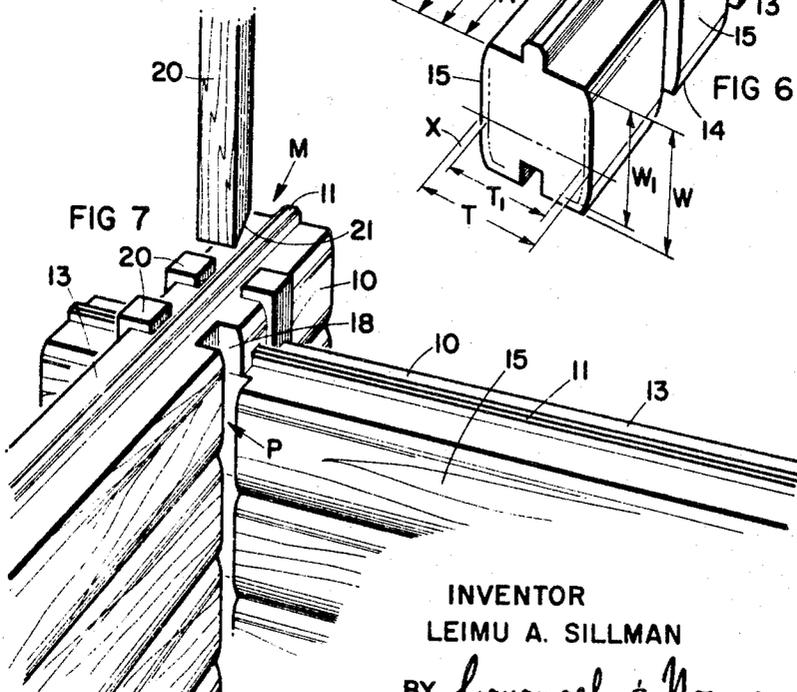
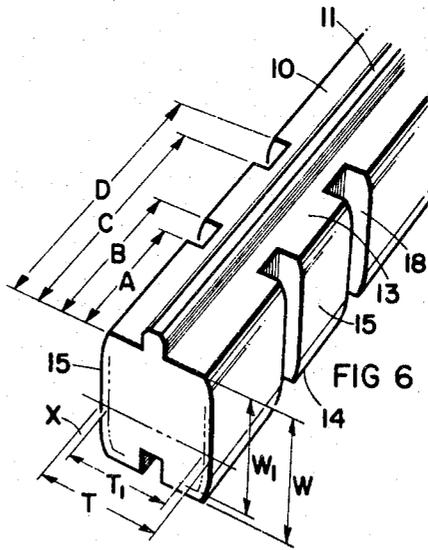


FIG 3



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EXPOSED LOCK LOG JOINING SYSTEM

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 Continuation-in-part of application Ser. No. 486,366, Sept. 10, 1965. This application Aug. 22, 1967, Ser. No. 662,553

4 Claims. (Cl. 52—233)

ABSTRACT OF THE DISCLOSURE

This specification discloses a joint between notched planks assembled in right angular relation with each plank having a recess extending thereinto from an edge thereof a distance equal to one half the width of the plank with the recess receiving the corresponding portion of a plank normal thereto which is left when a similar recess is formed therein with the side face of each plank having a pair of channels extending vertically thereacross with each channel overlapping a side of the respective recess and a vertical locking member in each set of aligned channels.

This application is a continuation-in-part of the pending application of Leimu Arno Sillman, Ser. No. 486,366, filed Sept. 10, 1965, and now abandoned, entitled Notched Locking Plank.

The present invention relates to the joint between planks meeting at a right angle and is concerned primarily with partially exposed locking strips that secure such a joint.

At the present time there is a popular trend in home construction to erect buildings of the cottage type which offer the appearance of log cabins. To achieve this characteristic appearance wooden planks that are shaped to simulate logs are employed. Such planks have a grain which extends longitudinally thereof, and this grain, together with the tendency to shrink, are inherent factors of the present invention.

The planks in each wall must, of necessity, be in abutting relation. In most structures tongue and groove joints are included at the abutting edges of adjacent planks. Where two walls meet at a corner in right angular relation a joint is established. Such a joint is characterized by a notch or recess that is formed in each plank with the notch having a width equal to substantially the thickness of a plank and a depth equal to substantially one half the width of a plank. Thus each notch in a plank of one wall receives the material left in the plank of the other wall after a corresponding notch is formed therein.

There are certain factors which enter into the construction of a building including corner joints of this type. In the first place the joints should be weatherproof to a high degree. Secondly the building should be easily erected. And, finally, the ultimate structure should offer a finished appearance after a long period of service usage and be free of gaps or cracks which not only would mar the appearance but also impair the weatherproof seal at the joints.

With these factors in mind, the present invention has in view, as an important object, the provision of a notched plank joint of the character indicated in which each plank is formed on each face with a pair of spaced transverse vertical channels at the side edges of the notch therein, and with each channel overlapping the respective notch edge. Each of these channels has a depth equal to substantially one half its width and all of the channels are of the same dimensions. Thus when the planks are assembled at a joint the channels cooperate to define four vertical passages, one at each corner of the joint, and each passage is of a substantially square horizontal cross section with the outer corner omitted.

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A further object is to provide, in a joint of the character noted, a locking strip in each passage. Each locking strip is of a square horizontal cross section and dimensioned to be nicely fitted in its respective passage. The fit is not a pressed or driven fit but rather a snug fit that may be readily achieved. When these locking strips are assembled in the passages each presents an exposed corner where the outer corner of the passage is omitted.

All woods exhibit a tendency to shrink and this tendency is emphasized with the passing of time. However, while the tendency to shrink is pronounced transversely or across the grain it is negligible longitudinally of the grain. Thus, in a joint of this invention shrinkage will not mar the appearance because it is accommodated by the exposed corners of the locking strips. Moreover, the weatherproof seal of the joint is not impaired because any gaps or spaces created by the shrinkage will be localized back of the strips where they are completely enclosed. Where two planks meet in normal relation one half of the extent of the locking strip thereat will be gripped by the longitudinally extending grain of one plank and the other half by the longitudinally extending grain of the other plank. Thus the locking strips are securely held in position.

The first phase of assembling the joint of this invention may be easily carried out because a high tolerance is acceptable in the notches. The joint may be easily built up to a desired height, say four or five planks, whereupon the locking strips are inserted in the passages formed by the aligned channels. While these channels require a smaller tolerance, the required length of locking strips may be readily inserted thereinto.

In prior art structures somewhat similar to those provided by this invention vertical locking strips have been included. However, in these prior art constructions the locking strip is driven in to establish a pressed or driven fit. In some instances the planks are nailed to the strips. In either case the planks are bonded to the strips and when the planks shrink any movement thereof relative to the strips is inhibited. Thus cracks are created between adjacent planks that have shrunk. This is in contrast to the present invention which provides a nice fit which permits of such movement generated by shrinkage. As the planks rest one on the other the weight of the structure prevents the formation of cracks.

Another object is to provide, in a notched joint of the type noted for planks assembled by tongue and groove joints, a notch in each plank which enters from the groove side and which notch has a base or bottom formed with a recess that accommodates the tongue on an adjacent plank. This preserves the continuity of the tongue and groove joint between the planks.

Another object is to provide, in a building structure of the kind aforesaid, walls comprising planks assembled by tongue and groove joints with each groove being on the lower edge of a plank and the tongue on the upper edge. With this arrangement the groove opens downwardly and it is impossible for moisture to collect therein. Any such collection of water would jeopardize the integrity of the structure under freezing temperatures.

Various other more detailed objects and advantages of the invention, such as arise in connection with carrying out the above noted ideas in a practical embodiment, will in part become apparent, and in part be hereinafter stated, as the description of the invention proceeds.

For a full and more complete understanding of the invention reference may be had to the following description and accompanying drawing, wherein:

FIGURE 1 is an exploded perspective view of a series of notched planks according to the invention set up ready for assembly into a right angle joint,

FIGURE 2 is a perspective illustration of a group of

notched planks as shown in FIGURE 1 when fastened tightly in position in a right angle corner,

FIGURE 3 is a horizontal section taken about on the plane represented by the line 3—3 of FIGURE 2,

FIGURE 4 is an elevation depicting a cutting tool forming a notch and recess with a single operation,

FIGURE 5 is an elevation showing how the channels are formed by the rotary cutting tool,

FIGURE 6 is a perspective of one plank with dimensional changes due to shrinkage depicted somewhat diagrammatically; and

FIGURE 7 is a perspective looking at an inside corner of the joint.

Referring now to the drawings, a corner portion of a building is identified in its entirety by the reference character M. It comprises a plurality of wooden planks 10 which meet at right angles in the manner illustrated in FIGURES 1, 2, 3 and 7. The planks 10 being of wood, have a grain which extends longitudinally thereof.

To establish a tongue and groove joint between the planks 10 in each wall each plank 10 is formed at the top with a longitudinally extending tongue 11 and at the bottom with a similarly extending groove 12. As shown in FIGURE 7 each wall that meets at the corner M includes a substantial number of the planks 10. Thus the weight of the planks under gravity action insures that the tongue 11 of one plank remains interfitted with the groove 12 of the plank thereabove.

Each plank 10 has a top edge 13, a bottom edge 14, and side faces 15 which are rounded, as indicated at 16, where they meet the top and bottom edges. These rounded portions impart to the planks the simulated appearance of logs.

At a zone spaced from its free end, each plank is formed with a notch 17 that extends into the plank from the bottom edge. The notch 17 is defined by side edges 8 and a base or bottom edge 7 which is formed with a recess 9. The width of a plank 10 between the edges 13 and 14 is represented by W and the thickness between the faces 15 represented by T. Each notch 17 has a breadth equal to T and a depth equal to one half W.

Formed in each face 15 are a pair of channels 18. Each channel 18 is defined by side edges 6 and a back or bottom 5. In the preferred form of the invention the bottom 5 has twice the extent of a side edge 6. The relation of the channels 18 to the side edges 8 of the notch 17 is of importance. The bottom 5 of each channel 18 overlies and embraces a side edge 8 of the notch. Thus when the planks 10 are assembled in normal relation at the corner M, a channel 18 of a plank 10 in one wall cooperates with the channel 18 in a plank of the other wall to define a passage P of substantially square cross section. Due to the fact that the bottom 5 of each channel 18 overlies a side edge 8 of a notch 17 the square cross section of each passage P will have an outer corner omitted. This being depicted in FIGURE 3.

It is notable that the bottom 5 of each channel 18 has a full extent in the upper half of a plank but in the lower half is present as a narrow shelf or ledge 19 (FIGURE 1).

When the planks are assembled in the manner illustrated in FIGURE 7 there are four passages P, one at each corner. Received in each passage P is a locking strip 20 of wood. This strip 20 has a horizontal cross section accurately the same as that of the passage P in which it is received. It is positioned with what is called a nice fit. That is it is not driven or forced in so as to create a pressed fit which would generate a bond with the planks 10. Such a bond is undesirable. This nice fit is sufficiently snug to provide a weatherproof seal which is maintained during the service life of the building as will be hereinafter explained.

Each strip 20 is preferably sectional with the sections thereof meeting in abutting mitred relation as indicated at 21. This sectional construction is of importance be-

cause it makes it entirely practical to build up a height of four or five planks in each wall whereupon sections of the strip 20 are inserted in the passages P.

As shown in FIGURE 2 the lowermost level of the corner point M will require a special plank 4 in one wall. Also a drip board 22 may be positioned beneath the structure.

The grain of the wood is illustrated in FIGURES 1 and 2 as extending longitudinally of the planks 10. It will also extend longitudinally or vertically of the strips 20. As pointed out above wood will exhibit a tendency to shrink with the passing of time. Such shrinkage is pronounced and noticeable transversely or across the grain but is only slightly evidenced longitudinally of the grain and for all effective purposes may be considered as negligible.

Referring now to FIGURE 6 the original thickness of the plank 10 is represented by T. After passage of time this thickness will be reduced as indicated at T₁. The reduction in the thickness of a plank is designated X. As shown in FIGURE 2 these reductions will be accommodated by the exposed corners of the strips 20 and will not mar the finished appearance of the joint.

The plank does not have a thickness across the bottoms of two opposed channels 18 as great as at T. Hence the reduction due to shrinkage in these areas will not be as great as X. However they will occur and are represented at Y in FIGURE 3. It will be noted that any cracks or gaps formed by shrinkage in these areas will be localized back of the locking strips and hence completely enclosed and cannot impair the weatherproof seal.

The distance across a channel 18 is in the direction of the longitudinal grain. The four dimensions which determine the breadth of the two channels 18 on one face are represented at A, B, C and D in FIGURE 6. When shrinkage occurs these dimensions remain substantially unimpaired because longitudinal shrinkage is negligible. Thus the relation of the outer faces 15 of the plank 10 with respect to the locking strips 20 remains undisturbed.

The original width of a plank 10 is represented by W. As shown in FIGURE 6, this width W will be reduced to W₁. As the grain is longitudinal of the strips 20 they will maintain their original extent and positions. Thus as the planks 10 shrink in width they will move on the strips 20 and prevent the formation of any cracks or crevices between adjacent planks. It is to be remembered that the strips 20 are received in their respective passages with a nice fit which does not impede such movement. Any shrinkage of the strips 20 transversely of the grain, would, if anything, facilitate such movement.

FIGURE 4 illustrates how it is entirely practical to form a notch 17 and recess 9 with a single operation of a rotary cutter. Thus the cutter 25 has a central series of cutting elements 26 of maximum diameter which form the recess 9. Two series of cutters 27, one on each side of the cutters 26 form the lock or base of the notch 17 on each side of the recess 9.

It is important that all of the channels 18 be of exactly the same size and shape. Thus a single rotary cutter 28 is employed to form the channels 18 as illustrated in FIGURE 5.

While a preferred specific embodiment of the invention is hereinbefore set forth it is to be clearly understood that the invention is not to be limited to the exact constructions, mechanisms, and designs illustrated and described because various modifications of these details may be provided in putting the invention into practise within the purview of the appended claims.

What is claimed is:

1. In a building structure including a pair of walls in right angular relation with each wall having a plurality of wooden planks with the grain extending longitudinally thereof, a notched joint comprising a pair of planks in right angular relation each having a width W determined

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by top and bottom edges and a thickness T determined by side faces; each of said planks having a notch entering therein to form an edge, said notches having a width equal to the thickness T and a depth equal to one half the width W, each of said notches presenting side edges and a bottom edge; a pair of channels formed in each face of each plank, each channel being of rectangular horizontal cross section and extending across the respective plank face between said top and bottom edges in positions in which each channel overlies and embraces a notch side edge; said channels defining vertical passages of rectangular cross section with an outer corner omitted when said planks are assembled; and a vertical wooden locking strip of substantially the same horizontal cross section as said channels received in each of said channels with a nice fit and an outer corner exposed where the outer corner of the passage cross section is omitted; said locking strips securing said planks in assembled relation with a weatherproof seal with said exposed corners of the locking strips accommodating shrinkage of said planks and the nice fit of said strips in said passages accommodating relative movement of the planks in each wall due to shrinkage.

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2. The notched joint of claim 1 in which said passages and locking strip are of square horizontal cross section.

3. The notched joint of claim 1 in which the lower edge of each plank is formed with a groove and the upper edge with a tongue, the bottom edge of each notch having a central recess that receives the tongue on a next adjacent plank.

4. The locking strip of claim 1 in which each locking strip comprises a plurality of sections with adjacent section ends meeting in abutting mitred relation.

References Cited

UNITED STATES PATENTS

1,300,671	4/1919	Still	287—20.92
2,097,172	10/1937	Yurkovitch	287—20.92
3,189,950	6/1965	Johnson	52—233

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