April 4, 1944. W. E. WILSON 2,345,694

PLYWOOD STRUCTURE

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Fig. 1

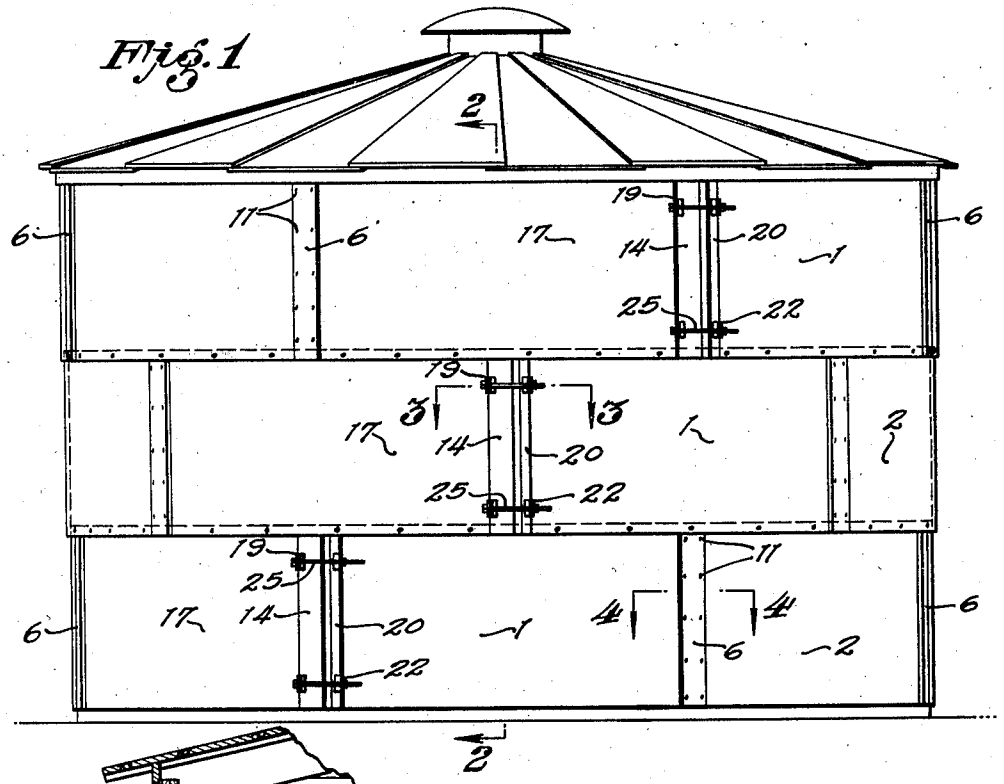


Fig. 2

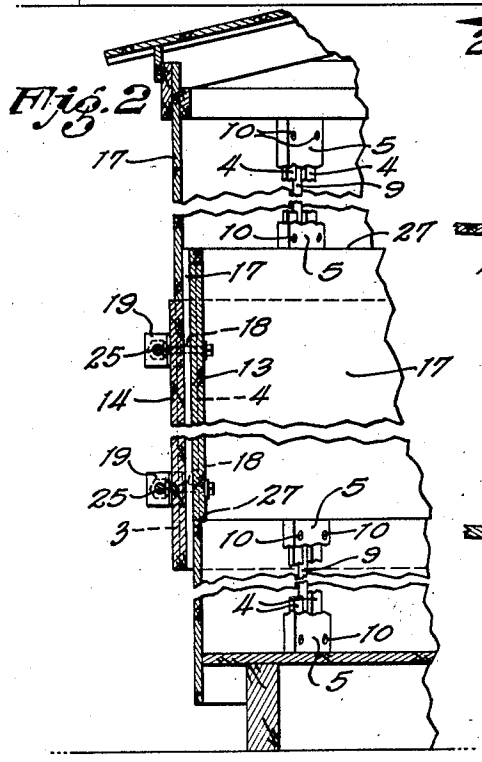


Fig. 3

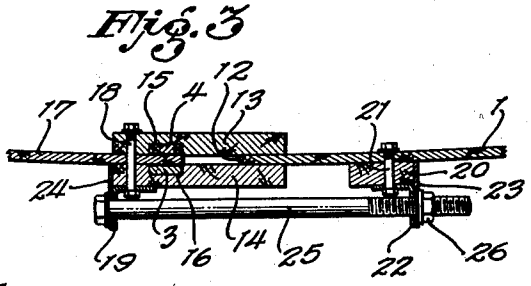
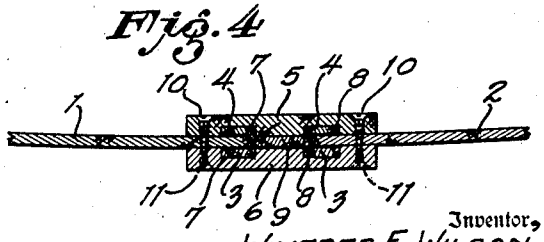


Fig. 4



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PLYWOOD STRUCTURE

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Fig. 5

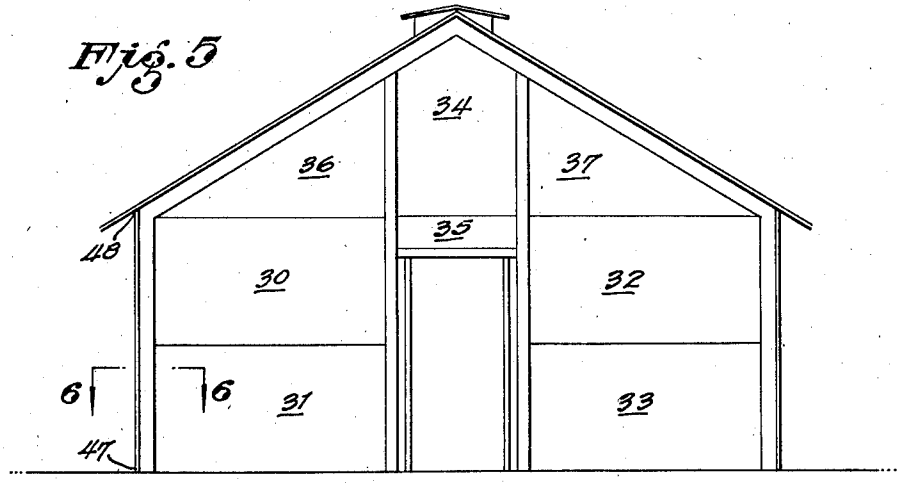
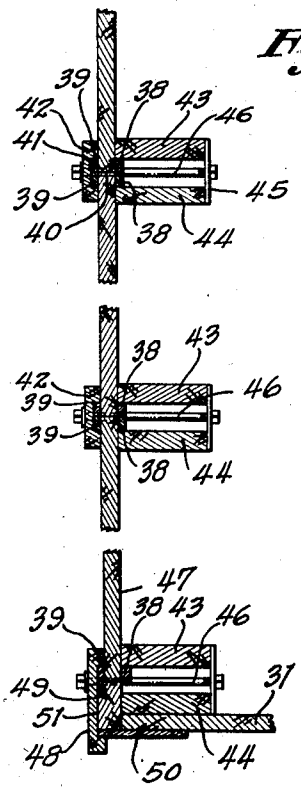


Fig. 6



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PLYWOOD STRUCTURE

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Application July 13, 1942, Serial No. 450,696

2 Claims. (Cl. 20—92)

This invention relates to plywood structures, and specifically to means whereby such a structure may be readily erected or dismantled within a minimum of time.

The invention has for an object a wooden structure utilizing panels tied together in a novel manner.

The invention contemplates the use of wooden panels held together by timber ties with a minium use of metal parts.

An object of the invention is to so relate the panels, ties, and metal parts that no shear is imposed on the metal parts after erection of the wooden structure.

Another object of the invention is the provision of a novel form of adjustable joint for holding plywood panels in juxta-position.

Other objects include a plywood structure incorporating panels, which panels may be held in working relationship in such a manner as to be water-tight.

It has been found by actual experience that a type of barracks 96 feet in length may be readily erected by six men in one working day, utilizing the structure to be described.

The invention is simple of construction, inexpensive in cost of manufacture, and gives superior results in practice.

With the above mentioned and other objects in view, the invention consists in the novel and useful provision, formation, construction, association, and relative arrangement of parts, members and features, all as shown in certain embodiments in the accompanying drawings, described generally, and more particularly pointed out in the claims.

In the drawings:

Figure 1 is an elevation of a plywood structure incorporating the invention,

Figure 2 is an enlarged fragmentary section on the line 2—2 of Figure 1,

Figure 3 is an enlarged sectional detail on the line 3—3 of Figure 1,

Figure 4 is an enlarged sectional detail on the line 4—4 of Figure 1,

Figure 5 is a front elevation of a structure incorporating the invention, and,

Figure 6 is a sectional view on the line 6—6 of Figure 5, and on an enlarged scale.

Referring now to the drawings, and specifically to Figures 1 to 4, inclusive, Figure 1 depicts a structure which may be called a plywood tank or bin. Such a structure is useful for the holding of grain as the structure may incorporate a hopper (not shown in the drawings), and a suitable door for permitting access therein. In the construction of such a bin or tank, the side wall, considering it as an entirety, is usually circular. I have found that plywood panels properly bent, provide suitable structural members of sufficient strength and compare very favorably to metal structures. Furthermore, plywood is cheaper than metal and quite durable.

In the use of plywood panels, some means must be resorted to for securing the panels in working relationship. The present invention is directed to a simple means which permits any plywood structure to be erected within a minimum of time. Specifically, I incorporate with plywood panels, suitable ties for locking the panels together. By way of example, reference is had to Figure 4, wherein two panels 1 and 2 are held in defined relationship. Each panel adjacent its ends is provided with ribs 3 and 4. These ribs extend the width of the panel and are secured on opposite surfaces of a panel in any suitable manner and preferably through the medium of waterproof glue. When it is desired to hold two panels, such as shown in Figure 4 in working relationship, locking pieces 5 and 6 cooperate with the panels and engage the ribs. The locking pieces are identical in construction, and each locking piece may be formed of wood and provided with longitudinally extending grooves 7 and 8 adapted to receive the ribs 4 of each panel. The longitudinal edges of each plywood panel may be maintained separated by a spacer piece 9, which may be glued to one or the other of the locking pieces and specifically to that portion of a locking piece lying between the grooves 7 and 8. To maintain the locking pieces in working relationship, between the two plywood panels, screws are passed through said locking pieces and the panels, as indicated at 10 and 11. Preferably the screws are staggered in position throughout the length of the locking pieces.

If we start from the foundation of the tank or bin, in Figure 1, the bottom edges of the base panels overlap the foundation floor and each set of panels are secured in working relationship by locking pieces which rest on the floor and support the panels (see Figure 2). It may be that for a given sized panel, the number of panels used is such as to not bring the last two panels into abutting relationship, with the result that said panels cannot be locked together with a locking piece of the type shown in Figure 4. To compensate for any discrepancy as to measurement of panels when fixed size panels are utilized in the structure, means of the character shown in Figure 3

is used. If panel 1 is considered as the commencing panel, the end 12 is not provided with ribs on opposite surfaces. This end is interposed between two lengthwise extending wood pieces 13 and 14, which pieces are grooved lengthwise, as shown at 15 and 16, so as to confine in said grooves the ribs 3 and 4 of the last panel 17. A bolt 18 is passed through members 13 and 14 and the panel 17 and one leg of a right angled bracket 19. A vertical strip 20 is secured to one surface of panel 1 by gluing or otherwise, and passed through the panel and the strip 20 is a bolt 21, which secures one leg of a right angled bracket 22. A plate 23 cooperates with one leg of the bracket 22 and bears against a side of the strip 20. This construction is followed for the bracket 19 which has a plate 24 bearing against one leg of the bracket and an edge of the member 14. An elongated bolt 25 is passed through openings in the outwardly extended legs of the brackets 19 and 22, as well as through the plates 23 and 24. This bolt carries a nut 26. Thus, upon tightening the nut on the threads of the bolt 25, the panel 1 is moved inwardly between the members 13 and 14 to place all of the panels under tension. It is to be observed, however, that the locking pieces 5 and 6 draw the panels without impressing any shear upon the screws 10 and 11. Consequently, there is no danger of the screws cutting into the plywood.

Having erected the base panels, the next set of panels are ready for erection, and these may be erected on the ground and then placed over the base panels, or erected directly over the base panels. Preferably the locking pieces of the second set of panels are arranged in staggered relationship to the locking pieces of the base panels, as see Figure 1.

For convenience, the associated annular series of connected panels of the base is termed a "ring" and the panels mounted thereabove constitute a second ring of slightly greater diameter than the first ring. Each ascending ring is slightly greater in diameter than the ring upon which it rests, as shown in Figure 2. After a given number of rings, any type of roof may be secured to the last or uppermost ring. In the present instance, overlapping plywood sectors are used. The type of roof does not enter into the invention.

It is to be observed that when the second ring of panels is placed upon the first ring, that the inside locking pieces 5 and 13 rest upon the top edges 27 of the panels of the first ring. The inside locking pieces are spaced inwardly from the bottom edge of their respective panels and extend to the top edge, while the outside locking pieces are spaced from the top edge and extend to the bottom edge of the panels. Hence, in the mounting of the different rings, the lower edge of the second panel ring overlaps the top edge of the first panel ring, and the third ring of panels has its lower edge resting upon the top of the locking pieces 6 and 14. The ribs 3 and 4 are of a length corresponding to the length of each locking piece, for which reason said ribs do not extend on one side of each panel the entire breadth of said panel, but are spaced inwardly from one edge of a panel and then extend to the opposite edge thereof. After the rings have been assembled one upon the other to the desired height, the rings may be secured together by ordinary wood screws passed between the overlapped edges of each ring at spaced points around the ring.

In the form of the invention shown in Figure 5, I have contemplated a barracks construction utilizing panel walls. These panels are preferably formed of plywood, and the building is so designed as to use interchangeable panels in that certain of the horizontal panels are preferably of like dimension. In the showing of Figure 5, it will be observed that the horizontal panels at 30, 31, 32 and 33 are identical in size. This might be continued for the horizontal panels on the sides of the building. The vertical panels, such as shown at 34 and 35, are cut to size, as are likewise the panels at 36 and 37. The panels of the type shown at 30 to 33, inclusive, are held together by providing the panels adjacent their ends with ribs 38 and 39 secured on opposite surfaces of each panel. These ribs correspond to the ribs shown at 3 and 4 in Figure 4. The panels are brought into end-to-end abutting relationship, as best shown in Figure 6, at 40, with the ribs 39 received within the groove 41 of a locking piece 42. This locking piece is preferably formed of wood and is of extended length. At the inside surface of the panel are posts 43 and 44 placed on either side of the ribs 38. A strap or bar 45 extends between the posts and an elongated bolt 46 is passed through the bar, the panels, and the locking piece 42. The usual nut is carried by the bolt, and in this manner, the panels are held against the posts and likewise locked together by the locking piece. The posts are structural members for the building. For instance, the posts 43 and 44 extend from the foundation at 47 to the roof panel. This type of construction is followed throughout the building structure, with the result that the locking pieces hold the panels in juxta-position and against movement while the posts sustain the load and likewise secure the panels, all of said structure being locked tightly together through the medium of bolts of the type shown at 46. Thus, it is a simple matter to erect the building and likewise dismantle it, as it only requires removal of bolts 46.

In Figure 6, a detail is shown of a corner of the building, wherein panel 31 is held with relation to one of the side panels 47. In this instance, the locking piece 48 is of greater width than the locking pieces at 42. Posts are provided as before, with the panel 31 resting against the side of post 44. A filler strip 49 is placed between ends of the panels 31 and 47 with the post 44 resting thereagainst. A finish strip 50 overlies both panel 31 and an end of the filler strip 49. The locking piece 48 receives in the groove 51 thereof a portion of the finish strip 50, as well as the filler piece 49 and rib 39. Thus, when the structure is bolted by the bolt 46, the parts are held in working relationship.

The close engagement of the locking pieces with the panels assures that the joints are watertight.

Structures of the type depicted are of great utility during the present emergency, in that they allow any type of building to be readily erected. The parts thereof may be numbered and packed compactly and moved to any designated location, whereupon the parts may be erected by choosing panels of a fixed size, and with simple directions, unskilled labor may erect the structure.

I claim:

1. In construction of the character disclosed, two panels, one of said panels provided with transverse ribs on opposite surfaces and adjacent one edge thereof, a pair of locking pieces, both formed with channels for confining said ribs, the other panel being interpositioned be-

tween said locking pieces, and a tie bolt between the locking pieces and the first and second panels for adjusting the end to end relationship of the two panels and for securing said panels together.

2. In construction of the character disclosed, a pair of panels in contiguous end to end relationship, each panel provided on opposite surfaces with transverse ribs, a locking piece formed with a channel bridging said panels and confining two of said ribs in the channel, posts positioned on the opposite surface of said panels adjacent said ribs, a transverse piece between said posts, and a lock bolt extending between said transverse piece and the locking piece for securing all of said members in working relationship.

WINFRED E. WILSON.