

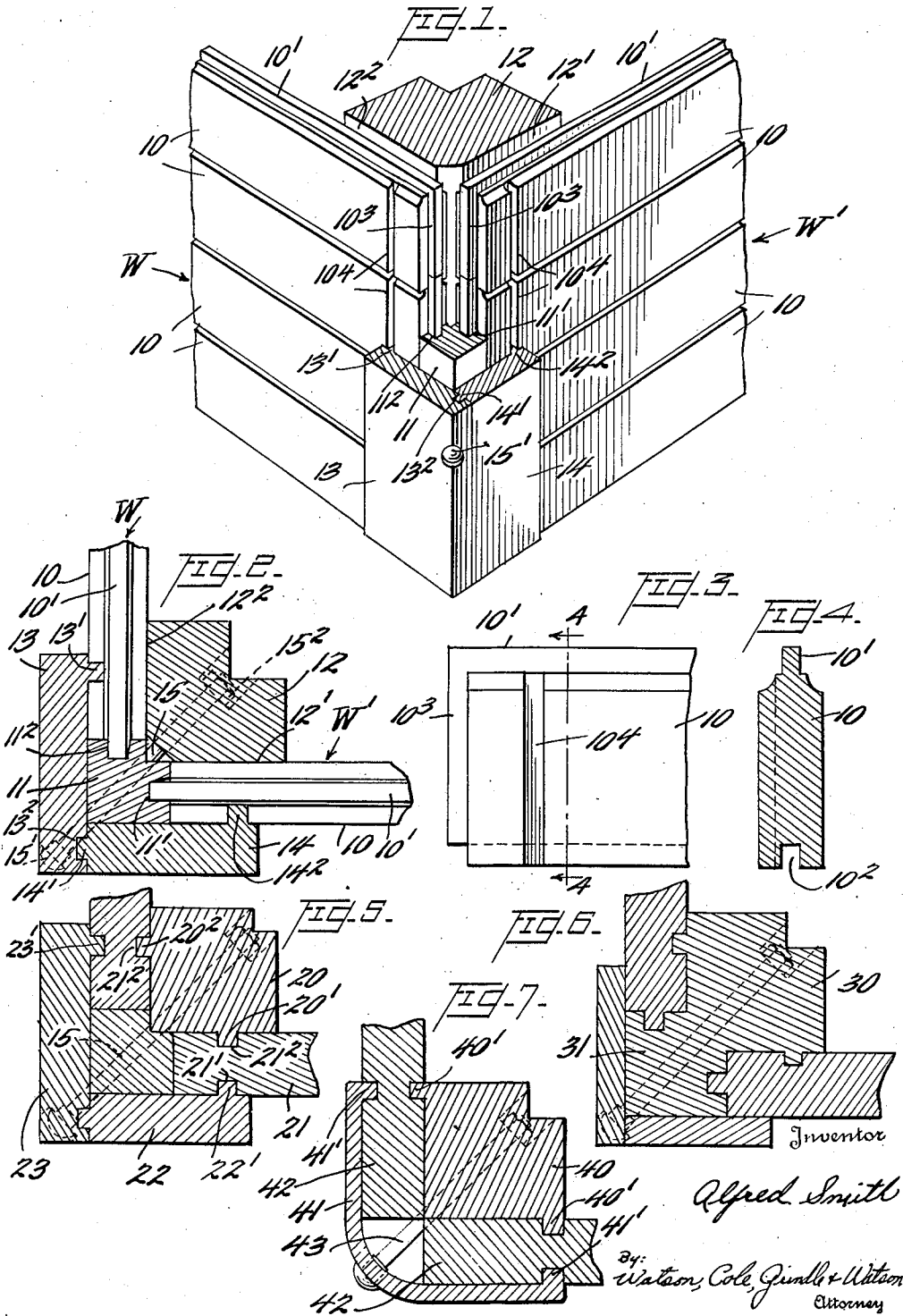
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BUILDING STRUCTURE

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BUILDING STRUCTURE

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To supply the demand, which always exists in varying degree, for building structures which may be quickly erected in the field by assembling together structural building elements or units originally fabricated at a distant factory, or factories, numerous ingenious suggestions have heretofore been made, all with the end in view of reducing the cost, facilitating erection, or rendering the building so erected more satisfactory insofar as strength and resistance to weathering conditions are concerned.

It is the purpose of the present invention to provide a further improvement in building structures of this general type, particularly an improved corner construction for building structures of the type which may be readily erected in the field from prefabricated wood building elements, whereby the cost of erection is lowered and a more rugged, simpler, more weather-resisting and less costly corner construction is realized. Furthermore, in the design of the improved corner construction a major objective has been to provide a structure of such nature that field assembly may not only be quickly effected, by relatively unskilled labor but which may also be readily dismantled and removed to another site for subsequent erection. A building embodying the novel corner construction, in which no nails, screws, or other similar securing elements are used, may be very quickly taken apart, element by element, without injury to any such element, transported to a distant point, and again erected as easily and as accurately as it was in the first instance, an advantage of very considerable importance in many instances.

By way of example several embodiments of the invention will be disclosed, these embodiments being illustrated in the accompanying drawing, in which

Figure 1 is a perspective view of portion of the corner of a building structure embodying one form of the novel corner construction, portions of certain of the component elements of the structure being broken away in order that the details of interior elements may be more clearly perceived;

Figure 2 is a horizontal section through the corner construction of Figure 1;

Figure 3 is a side view of the end portion of one of the siding members or beams utilized in building up the corner construction of Figures 1 and 2;

Figure 4 is a section on line 4—4 of Figure 3; and

Figures 5, 6 and 7 are, respectively, generally

similar to the horizontal section, Figure 2, but taken through slightly modified embodiments of the invention.

In accordance with the invention the two angularly disposed side walls of a building are rigidly and firmly secured together, at the corner of the building, by means which operates in accordance with the principle of operation of a clamp, the usual nails, screws, or other similar securing devices being wholly dispensed with. The elements of the clamp may be variously constructed, but generally include an inner clamping means, for instance, a vertical wooden element, having surfaces for engaging the inner surfaces of the walls of the building, an outer clamping means having surfaces for engaging the outer surfaces of the angularly disposed walls, and a series of horizontally extending securing devices or attachment bolts extending through registering or aligned apertures in the inner and outer clamping means, and between the ends of the adjacent walls, by means of which the inner and outer clamping means may be drawn towards each other to exert the desired clamping action upon the ends of the individual beams or siding elements which together comprise the walls.

In addition to the inner and outer clamping means just referred to, and the clamping bolts or equivalent devices, I preferably employ an intermediate member which I designate a beam aligning or locating member, which facilitates the construction of the corner. This member, which is vertically disposed and positioned intermediate the inner and outer clamping means and is likewise penetrated by the securing bolts, is provided with surfaces against which the ends of the several beams which together comprise the side walls are caused to contact as the walls are erected, and advantageously is provided with grooves into which tongues formed on the end of the beam members are received, the several beams thus being definitely brought into the desired relationship with each other as the side walls of the structure are built up, to facilitate the clamping operation which is to be subsequently performed. Either the inner clamping means or the outer clamping means, is provided with a portion, either a projection or a recess, to interlock with the end of each siding member or wall beam with which it comes in contact, so that no one of these beams may be withdrawn from between the clamping members, by any ordinary pull or tensional force subsequently exerted, both inner and outer clamping means preferably having such interlocking engagement

with each beam of each wall, with the result that the angularly displaced walls are positively tied together and the resulting structure has the ability to withstand any and all destructive forces which ordinarily are exerted upon a building structure.

The several members of the corner construction are so assembled, however, that the structure may be readily dismantled by merely loosening and removing the several attachment bolts, a feature of great advantage.

In the form of the invention shown in Figures 1 and 2 the walls W and W' are disposed at an angle of 90° to each other but obviously the invention may be employed where the walls meet at angles which vary widely from the right angle. Each wall comprises a plurality of superposed siding members or beams, indicated at 10, these beams being preferably of the type shown in Figures 3 and 4, having upwardly projecting tongues 10¹ and grooves or recesses 10² formed in their lower edges, to provide a tight, weather-resisting and rigid construction, the tongue of each beam entering the longitudinal groove or recess in the beam just above it. Likewise at least one end of each beam is provided with a projecting tongue 10³ and a transverse groove 10⁴ in its outer face. The intermediate beam locating member, in the form of corner construction shown in Figures 1 and 2, is indicated by the numeral 11 and is seen to comprise a vertically extending element of approximately rectangular cross section, provided with grooves 11¹ and 11² for the reception of the axially projecting tongues 10³ of the several beams of the intersecting walls W and W'. Naturally, when the tongues 10³ of all of the beams of one wall section are definitely positioned within the receiving groove 11¹ (or 11²) of the beam locating member 11, the several beams are then quite definitely located with respect to each other and the several vertically extending grooves 10⁴ formed in the outer surfaces of the several beams of such wall are in vertical alignment with each other so as to form one elongated vertically extending groove.

The inner clamping means preferably comprises a single structural element 12, which may be approximately rectangular in cross section, so as to have faces 12¹ and 12², respectively, disposed at a right angle to each other, these faces being adapted to engage the inner faces or surfaces of the several beams 10 which together form the walls W and W', as indicated in Figure 2.

The outer clamping means comprises, in this form of the invention, two elongated members indicated at 13 and 14, respectively, the member 13 being provided with a lateral tongue 13¹ to enter the continuous slot formed by the aligned grooves 10⁴ of the several beams of the wall W, and being also provided with a recess 13² to receive with a close fit a tongue 14¹ of the second member 14. Member 14 likewise is provided with an elongated rib or tongue 14² to enter the continuous slot formed by the aligned grooves 10⁴ of the several beams 10 which together comprise the wall W', the members 13 and 14 extending from the bottom of the wall to its top, so that the locking tongues 13¹ and 14² positively interlock with the end of each and every one of the beams which together comprise the angularly disposed walls.

One of the clamping bolts is indicated at 15 in the drawings and is seen to extend through aligned apertures formed in the inner and outer clamping means, and in the intermediate beam

locating member 11, the head 15¹ of the bolt being located in a countersunk recess in the outer clamping member and the securing nut 15² by means of which clamping force may be applied being located within a recess formed in the inner clamping means. There will naturally be employed several of these securing bolts in any given corner construction, arranged at suitable intervals one above the other. They may not be loosened from without the building, but may be readily loosened from within.

In the erection of the corner construction the inner and outer clamping means and the intermediate beam locating member 11 are first vertically positioned, the lower ends of these parts resting upon the foundation. Only the beam locating member, however, needs to be precisely located, the inner and outer clamping means being only approximately positioned, relatively wide spaces being left between these means in order that the ends of successive beams may be freely inserted between them. By reason of the fact that the outer clamping means includes the locking tongues 13¹ and 14² the distance between mutually facing surfaces of the inner and outer clamping means, during the assembly period, should be greater than the width of a beam plus the height of the locking rib, an even greater space being preferred in order that the beam end may be introduced between the clamping means with facility and its end rib 10³ caused to enter one of the grooves 11¹ or 11² and the locking ribs 13¹ or 14² caused to enter the groove in the beam being applied. It will be observed that grooves 11¹ and 11² flare outwardly somewhat, permitting flange or rib 10³ of any wall beam to enter the groove while the beam itself is somewhat angularly disposed to its final position in order to avoid interference with rib 14² or 13¹, as the case may be. After the end of each beam 10 has been inserted the beam as an entirety is then moved into the true plane of the wall to be built and thereafter driven downwardly so that its lower edge interlocks with the upper edge of the beam just below. After all of the beams of both walls have been assembled in this manner the bolts 15 are tightened and the clamping means drawn toward each other to tightly clamp between them all of the previously inserted beam ends, the resulting structure comprising a stiff, rigid and ornamental corner construction, which is entirely effective in excluding moisture and is altogether satisfactory in every way. If the building is to be dismantled the securing devices may be released, the inner and outer clamping means spread apart and the beams 10 successively removed. The entire assembly can then be transported and erected at another selected locality.

In the form of the invention of which a section is shown in Figure 5 the inner clamping means 20 is also provided with locking ribs, indicated at 20¹ and 20², and the beams 21 are not only exteriorly grooved, as at 21¹, to receive the locking ribs 22¹ and 23¹ projecting from members 22 and 23, but are provided with inner grooves 21² to receive the ribs 20¹ and 20². The ends of the several beams are, therefore, positively locked to the clamping means at two places, instead of one, increasing the holding strength of the corner construction.

In the form of the invention shown in Figure 6 the inner clamping means 30 and the intermediate beam locating member 31 form integral portions of a common vertically extending member, simplifying the construction. The outer clamping

means may be as before and the usual securing bolts are employed. In the form of the invention shown in Figure 7 the beam locating column is omitted and the corner construction comprises the inner clamping means 40, having flanges or ribs 40' and the outer clamping means 41 which may be of light metal, or of rigid and strong plastic material, having terminal vertically extending ribs 41'. The beams 42 are preferably provided with both inner and outer vertical grooves or recesses, for the reception of the ribs 40' and 41', so that, when the securing bolts 43 are tightened after assembly, the ends of the beams are tightly clamped between the inner and outer clamping means and are also securely locked against endwise movement. The one-piece outer corner member or clamping means 41 provides an effective seal against the entry of moisture into the corner construction, is attractive in appearance, and altogether suitable for the use intended.

In adapting the invention for use in the construction of buildings of other types the design and arrangement of its component elements may obviously be considerably modified and it is also clear that the improved corner construction may be employed at reentrant corners, as well as at projecting corners of buildings as shown, without departure from the invention.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a corner construction for a building structure the component parts of which are completely prefabricated and assembled without change at the place of erection, two walls disposed in intersecting vertical planes, respectively, each wall comprising a series of superposed beams, a verti-

cally disposed member having tongue and groove engagement with the ends of the beams comprising said walls, and a clamp for maintaining said walls in fixed relationship, said clamp including an inner clamping means, an outer clamping means, and a series of connecting bolts, the inner clamping means being vertically disposed and having surfaces engaging, respectively, the inner surfaces of said walls, the outer clamping means having surfaces which engage, respectively, the outer surfaces of said walls, and the connecting bolts passing through said vertically disposed member and both such means and maintaining said means in clamping engagement with said walls.

2. In a corner construction for a building structure the component parts of which are completely prefabricated and assembled without change at the place of erection, a vertically extending member having angularly disposed vertical surfaces, two vertical walls each comprising a series of superposed beams, the ends of the beams of each series abutting against one of the vertical surfaces of said member and likewise having tongue-and-groove relation with said member, and a clamp for positively locking the beam ends in such member engaging position, said clamp including inner and outer clamping means engaging, respectively, the inner and outer surfaces of the walls, and tension members connecting said means at a plurality of points.

3. The combination set forth in claim 2 in which said tension members comprise bolts which pass through apertures in said vertically extending member and intermediate the ends of the beams.

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