Oct. 19, 1943. L. A. CHESHIER 2,332,059

PREFABRICATED BUILDING

Filed May 3, 1943

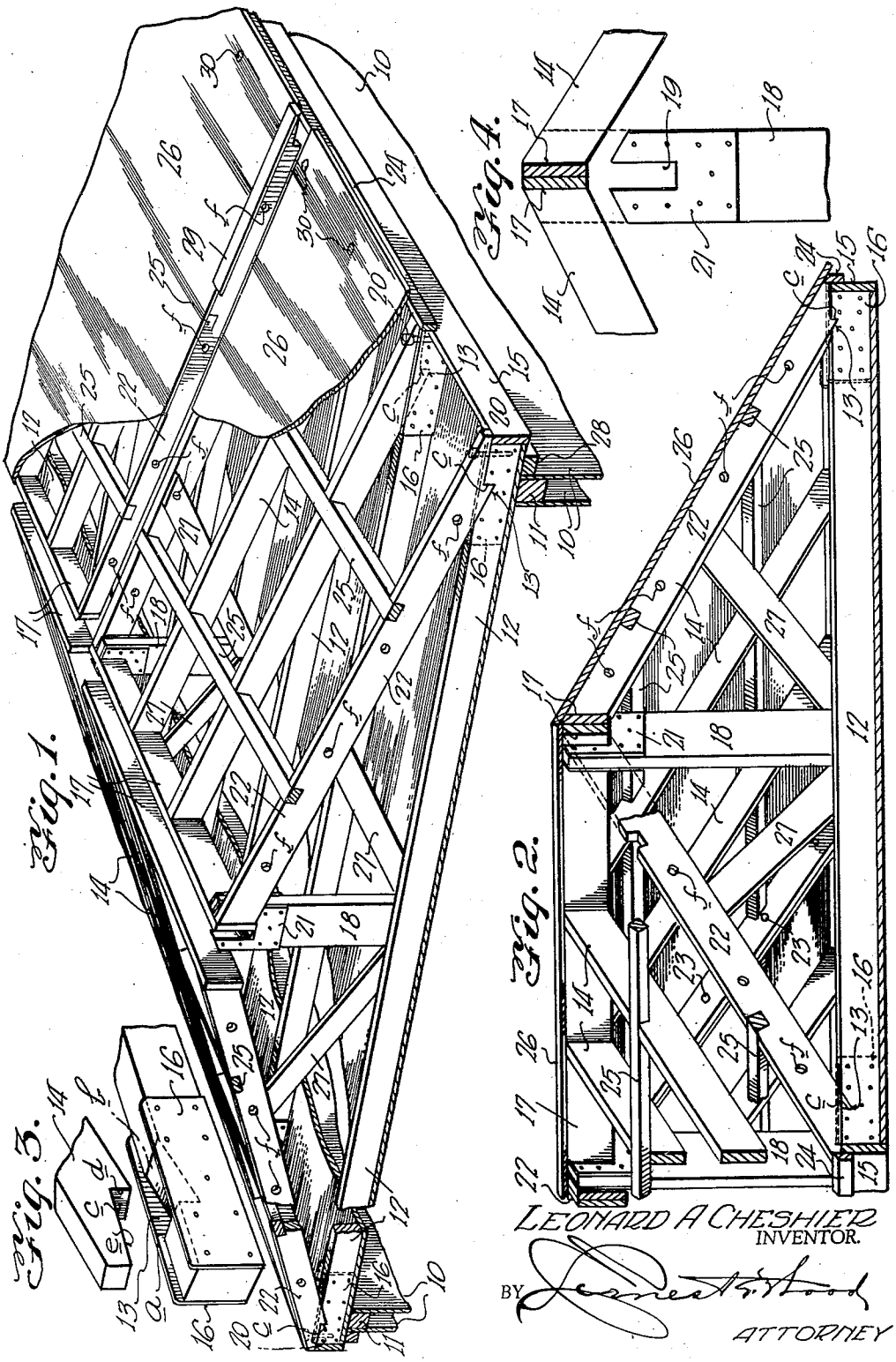


Fig. 1.

Fig. 3.

Fig. 4.

Fig. 2.

LEONARD A CHESHIER
INVENTOR.

BY

ATTORNEY

Patented Oct. 19, 1943

2,332,059

UNITED STATES PATENT OFFICE

2,332,059

PREFABRICATED BUILDING

Leonard A. Cheshier, Lancaster, Tex.

Application May 3, 1943, Serial No. 485,428

7 Claims. (Cl. 108—1)

This invention relates to prefabricated building construction and it has particular reference to a roof construction embracing the principles of prefabrication.

The principal object of the invention is to provide a roof section including a predetermined number of rafters, shaped at their upper ends to support one part of a two piece ridge pole and at their lower ends to cooperatively interlock with specially formed outer ends of complementary ceiling joists, the combination when assembled, affording a roof for a prefabricated building which is not only secure against all types of stresses to which such a roof is ordinarily subjected but likewise capable of being dismantled and re-erected in a comparatively short period of time.

Another object of the invention is to provide a novel form of interlocking joint adapted to sustain the rafter sections in relation to the joists, the said joint consisting of a cut-away portion of the foot ends of the rafters, receivable in corresponding recesses adjacent reinforced ends of ceiling joists, the peculiar relationship thus provided serving to prevent spreading of the opposed roof sections, while the reinforcing at the ends of the joists prevents lateral displacement of the rafters as well as serving to guide the ends of the latter into the joist recesses in the course of superimposing the roof sections on the ceiling joists.

Another object of the invention is to provide a king-post, one end of which is bifurcated to receive both of the parallel rails forming the aforesaid two piece ridge pole, to thereby support the same as well as to hold opposed roof sections against relative displacement along the ridge of the roof composed of assembled sections.

Broadly, the invention seeks to provide a roof which includes the rafters, ridge poles, king-posts and ceiling joists, constructed and arranged for ready assembly with but a minimum of man hours of labor and at a material saving in material costs, the said roof being especially adaptable for prefabricated buildings such as soldiers' barracks, mess halls and like structures required to be speedily erected, but also for more permanent structures such as tourists' cabins, garages and the like.

With the foregoing objects as paramount, the invention has particular reference to certain features of accomplishment, to become manifest as the description proceeds, taken in connection with the accompanying drawing, wherein:

Figure 1 is a perspective view of a roof constructed according to the present invention in which the sections are purposely spaced apart for clarity.

Figure 2 is another perspective but fragmentary view of the roof with the sections juxtapositioned.

Figure 3 is a fragmentary view showing the correspondingly shaped ends of a rafter and joist, illustrating the manner in which the interlocking joint is formed, and

Figure 4 is a fragmentary detail view of the king-post and its relationship with the two piece ridge pole.

Continuing with a more detailed description of the drawing, reference is primarily made to Figure 1 wherein 10 denotes prefabricated wall sections which are but fragmentarily shown inasmuch as the present invention relates only to the roof assembly. The wall plate 11 is supported upon studs, not shown, and upon this plate, in turn, is supported the ceiling joists 12, adjacent their ends, the latter forming a part of the present invention.

Adjacent each end of the joist 12 there is provided a notch 13 which is produced by making a transverse cut *a* partially through the timber (Fig. 3) and an oblique cut *b* downward toward the base of the cut *a*. Thus is provided a stop or abutment for a shoulder *c* on the lower end of a rafter 14. This shoulder *c* is produced by making a cut *d* (Fig. 3) in one edge of the rafter, the angle of which in relation to the axis of the rafter must be determined by the pitch of the roof but, of course, must be parallel with respect to the cut *a* in the joist 12 with which it corresponds in assembly. A second cut *e* is made, originating in the end of the rafter and terminating at the base of the cut *d*. This cut also must coincide with relative angular requirements between the rafter and joist and when these parts are assembled, the end portion of the rafter, unaffected by the cuts will conformably lie in the cut *b* of the joist; the shoulder *c* of the rafter will bear against the abutment *a* of the joist and the end of the rafter will repose flush on the end of the joist but will project slightly beyond, a distance equal to the thickness of a plate 15, which is nailed to the ends of the ceiling joists 12.

Since the joists 12 are prefabricated, provision must be made to insure against damage to the joint sections thereof. Accordingly, the invention provides a plate 16, of plywood or like material, one being nailed or otherwise affixed to either side of the joist to embrace the recesses

13 therein. The upper edges of these plates extend slightly above the edge of the joist and in so doing, provide a channel to receive the ends of corresponding rafters 14, guiding the shoulders c thereof into their respective recesses 13 for interlocking relationship.

Referring now to the ridge pole and its supporting means, it will be observed that in prefabricating the roof sections, consisting of say, four rafters, a strip 17 is affixed across the ends of the rafters, serving to hold the latter in secure relationship and eventually serving as a complementary part of a two piece ridge pole. When the roof sections are assembled, the strips will lie in parallel and contiguous relationship, as shown particularly in Figure 4. The supporting means for the ridge pole consists of an upright king-post 18, having its upper end slotted at 19 to receive the contiguous strips 17 comprising the ridge pole. Being thus snugly received, the ridge pole is held securely against relative movement or displacement in any direction except upward and this is precluded by the weight of the roof and the securing means which consists of nails at the proper places or even bolts, such as those designated at 20, which are not deemed necessary but may be employed if desired.

Affixed to each side of the king-posts 18, at their bifurcated ends is a plate 21 of plywood or other reinforcing material. These plates protect the king-posts against splitting under any lateral strain which may be imposed thereon and which plates, of course, are affixed during prefabrication of the king-posts.

In constructing the roof sections, a designated number of rafters are cut as described. These may consist of three two by fours and one one by four, the latter taking an outside position in the assembly as designated at 22 in Figures 1 and 2. The purpose of so disposing the one by four is to provide for juxtapositioning of this member with a two by four rafter of an adjacent roof section, as shown, both of these members being apertured at *f* to receive bolts 23 (Fig. 2) which hold these rafters and consequently the roof sections securely together.

In addition to the ridge strips 17 at one end of the roof section and the molding 24 at the other, purlins 25 are mounted transversely across the rafters of each roof section to aid in maintaining spaced relationship thereof as well as affording added support for the roofing material 26, preferably plywood, as a covering for the roof sections.

In erecting a roof, prefabricated as described, the wall sections 10, having been set up, the tie beams or ceiling joists 12 are mounted at relatively spaced positions across the building from one wall plate 11 to the other, the spacing thereof being determined, of course, by the relative spacing of the rafters 14. After thus mounting the tie beams, the king posts 18 are erected.

It is now possible with little effort to mount the roof sections progressively by sliding the lower ends of the rafters 14 toward the recessed ends of corresponding tie beams 12 until the shoulders *c* of the rafters abut the stops *a* in the recesses 13, after which the ridge strips 17 are dropped into the slot 19 of the king-posts 18. The roof sections are then secured as by nailing, bolting or both, as desired.

When the roof sections are all assembled, struts 27 are mounted to extend from the base of the king-posts to an intermediate point on adjacent rafters, as shown. The molding 24 and plates 15 are affixed as well as the ceiling plates 28 (Fig. 1), the latter serving to maintain strict alignment of the walls in relation to the roof structure.

After the roof has been erected or during its erection, strips 29 are secured over the joints between the roof sections and such openings 30, made in the roof for the insertion of bolts 20, if such are used, are caulked with a suitable self-hardening plastic cement.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. A roof section including a series of relatively parallel rafters, one end of each being cut away to define a shoulder whose face is at an angle in relation to the longitudinal axis of the rafter, a ridge piece connected to and extending across the opposite ends of said rafters, a tie beam complementary to each of said rafters having a recess providing an abutment whose face is parallel with that of said rafter shoulder and against which the latter rests, a king-post having a bifurcated upper end to jointly receive said ridge piece and a parallel companion ridge piece of an identical abutting roof section, and means on each side of the recessed ends of said tie beam affording a guide for the ends of said rafters during erection of said roof section and to reinforce said tie beam ends.

2. A roof section including an assembly of rafters, a ridge piece section joining said rafter assembly at one end, a tie beam complementary to each rafter having a notch at each end defining a stop perpendicular to the edge thereof, means on the end of each rafter, defining a shoulder whose face is in the same plane as that of said stop and against which said shoulder rests, means on said tie beam and opposing said recesses for guiding said shoulders into said recesses, and a king-post rising from selected ones of said tie beams and having bifurcated upper ends to jointly receive said ridge piece and a relatively parallel, companion ridge piece of an opposing roof section.

3. In a roof, a plurality of sections, each comprising a rafter assembly, the lower ends of each being cut away to define shoulders whose faces are at an angle in relation to the longitudinal axis of said rafters, a tie beam common to each rafter, having a recess defining a stop against which the shoulder of a respective rafter abuts, a ridge piece of a length substantially equal to the width of said roof section and joining the ends of said rafters and a king-post rising from selected ones of said tie beams and bifurcated at its upper end to receive the parallel ridge pieces of opposing roof sections of said roof.

4. In a roof, a plurality of roof sections, each comprising a series of relatively spaced rafters, each rafter having one end shaped to define a shoulder, a tie beam complementary to each rafter and having a notched recess defining an abutment shaped to correspondingly receive the shoulder of a rafter, plates disposed on each side of said recess defining a guiding channel for a rafter, a ridge pole section extending across the opposite ends of said rafters and a king-post rising from selected ones of said tie beams having

a vertical slot in its upper end to receive said ridge pole section.

5. A roof assembly including sections containing relatively spaced rafters whose lower ends are shaped to define shoulders, tie beams recessed at their outer ends to form abutments for said shoulders, ridge pole sections extending across the opposite ends of said rafters and bifurcated means jointly receiving said ridge pole sections and those of opposed roof sections in parallel relationship.

6. A roof assembly as set forth in claim 5 in which the recessed ends of the tie beams are reinforced on each side, said reinforcing providing also a guide to direct the rafter shoulders into the recesses during erection of said roof assembly.

7. A roof assembly as set forth in claim 5 in which each rafter section is provided with a ridge pole section whereby the ridge pole section of one rafter section will be held by the king-post against and in parallel relationship, with the ridge pole section of an opposing rafter section.

LEONARD A. CHESHIER.