Dec. 11, 1923. 1,476,990

P. L. McKEE

REENFORCED RAFTER FOR GREENHOUSES

Filed Sept. 12, 1921

Fig. 1.

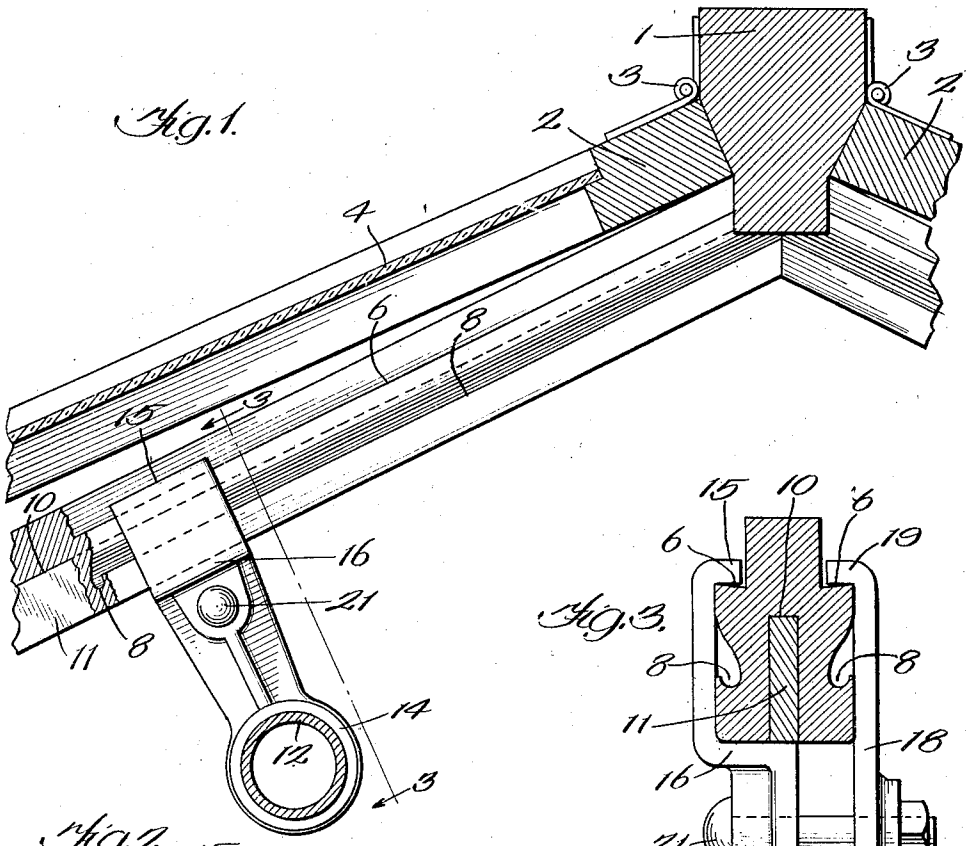


Fig. 2.

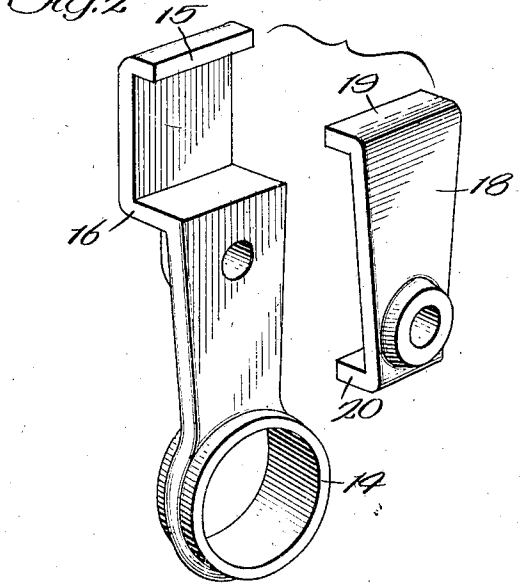
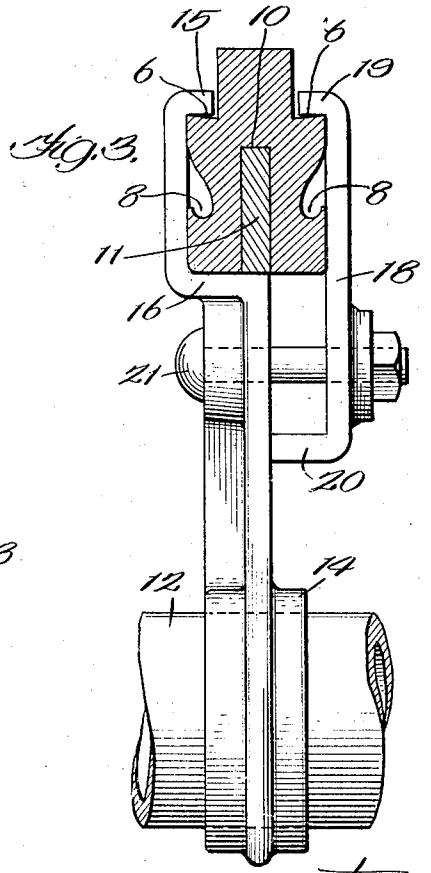


Fig. 3.



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UNITED STATES PATENT OFFICE.

PHILIP L. McKEE, OF CHICAGO, ILLINOIS.

REENFORCED RAFTER FOR GREENHOUSES.

Application filed September 12, 1921. Serial No. 500,255.

To all whom it may concern:

Be it known that I, PHILIP L. McKEE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Reenforced Rafters for Greenhouses, of which the following is a specification.

My invention relates to rafters for greenhouses, and the object is to produce a rafter of extra rigidity without subjecting it to more rapid decay than an ordinary rafter. Another object is to provide a hanger for supporting pipes and other things from the rafter and at the same time reinforcing the rafter and pressing the sides of it against the inserted stiffening member.

I accomplish my objects by the construction shown in the accompanying drawings in which—

Figure 1 is an assembly view showing a rafter of my construction in position in the roof of a greenhouse.

Figure 2 is a perspective view of the two parts of the hanger which forms a clamp for pressing the sides of the rafter against the reinforcing insert, and

Figure 3 is a sectional view on the line 3—3, Figure 1.

Like numerals denote like parts throughout the several views.

In the form illustrated in the drawings the ridge pole 1 is at the top of the structure and forms a support for the sash frames 2 which are connected to it by means of hinges 3. The sash frames have panes of glass or "lights" 4 in the usual manner. Beneath the sash and running up to the ridge pole are the rafters which form the subject matter of this invention. These rafters, or as they are termed in the trade, "sash bars" have lateral shoulders 6 and drip cutters 8 in the usual manner. In my form of rafter, however, a channel or rabbet 10 is formed on the under side for receiving a reinforcing bar 11. The bar is flat and it and the channel are disposed vertically in the center of the rafter. The result is two-fold; first, as the bar is arranged "on edge" it gives a maximum stiffening effect in a vertical plane for a given weight of metal; second, by forming the channel on the under side of the rafter the body of the rafter forms a water shed for preventing moisture from getting into the channel and thereby causing decay. Whether the drip cutters 8 are formed in the side of the rafter or not, any water collecting on the rafter would tend to drop off the bottom or tend to travel along the under side of the rafter, but would have no tendency to rise into the channel to rot the wood or rust the insert. By preference the insert consists of a flat metal bar, usually iron or steel.

In practice the greatest stress upon a rafter is downward in a vertical plane. However, due to wind-pressure and other causes, there is occasionally a transverse strain and the channeling of the rafter would, if not counteracted, have a tendency to weaken the rafter as against transverse bending moments and tortional strains. I have counteracted this by clamping the sides of the rafter together at intervals, and the preferred form of clamp is illustrated in the drawings. As here shown, the clamp is in the form of a hanger for supporting pipes 12 or other equipment necessary for the greenhouse. The hanger has a boss 14 for receiving the pipe, a finger 15 for riding upon the shoulder 6 of the rafter, and a shoulder 16 for abutting the under side of the rafter. By preference the shoulder extends far enough under the bottom of the rafter to hold the bar 11 in the channel. A clip 18 has a finger 19 for riding upon the remaining shoulder 6 of the rafter, and a foot 20 adapted to abut the side of the hanger. Both the hanger and the clip are apertured to receive a bolt 21. It will be evident that by tightening the bolt the clip and hanger will be drawn firmly against the sides of the rafter, and as the wood is resilient to a limited degree, it will be pressed against the sides of the reinforcing bar. When a reasonable amount of pressure is exerted by the clamp upon the rafter the structure will be most rigid, for the rafter and insert will be prevented from "working" and the rafter and insert will act as a single unitary structure. The consequence is that when the clamp is in place the reenforced rafter will be stronger than an ordinary rafter, not only as against pressure in a vertical plane, but also as against pressure in a horizontal direction.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

In a greenhouse, the combination of a wooden rafter embodying a flat metallic

stiffening bar inserted from the under side, the bar being arranged on edge, and a pipe hanger suspended from the rafter, said hanger being in the form of a clamp engaging the sides of the rafter, and means for regulating the pressure of the hanger on the sides of the rafter, whereby the hanger serves the dual purpose of supporting piping and clamping the sides of the rafter against the reinforcing bar.

In witness whereof, I have hereunto subscribed my name.

PHILIP L. McKEE.