June 2, 1959 K. C. JENNE 2,888,722

WASHER GAIN FOR TIMBER STRUCTURES FORMED OF ROUND WOOD POLES

Filed Dec. 20, 1956

Fig. 1.

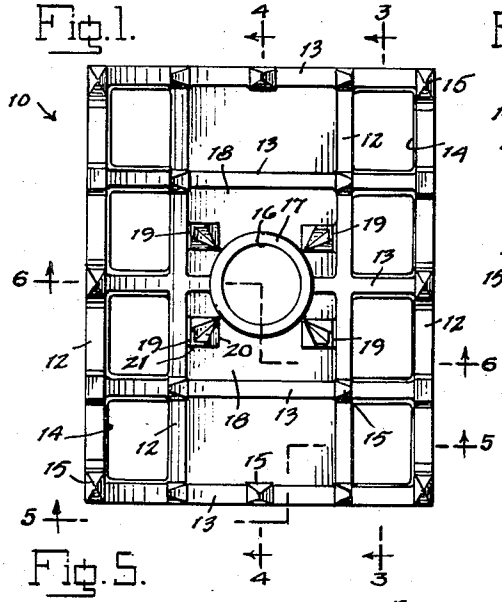


Fig. 2.

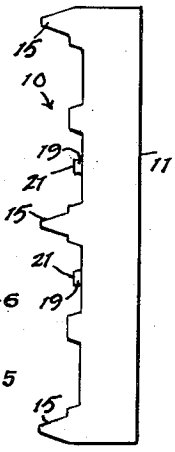


Fig. 3.

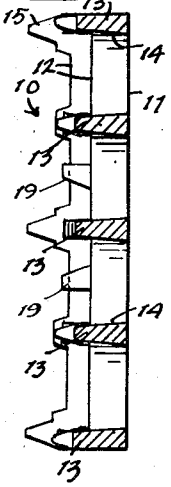


Fig. 4.

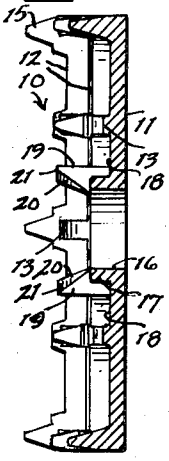


Fig. 5.

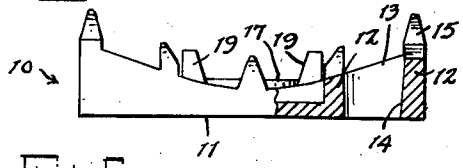


Fig. 6.

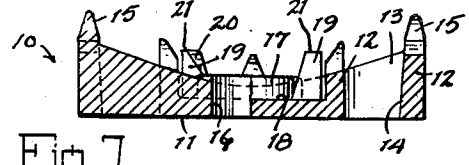


Fig. 7.

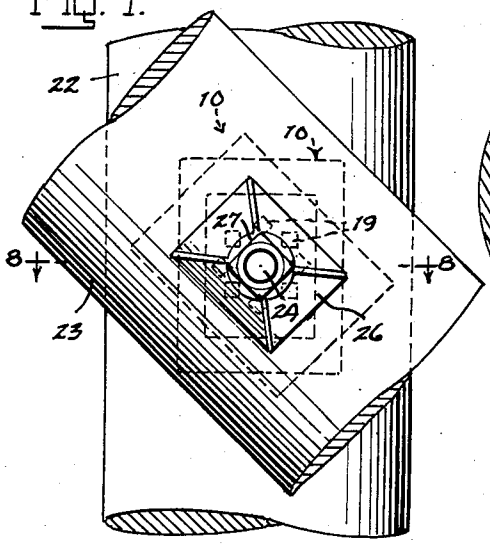
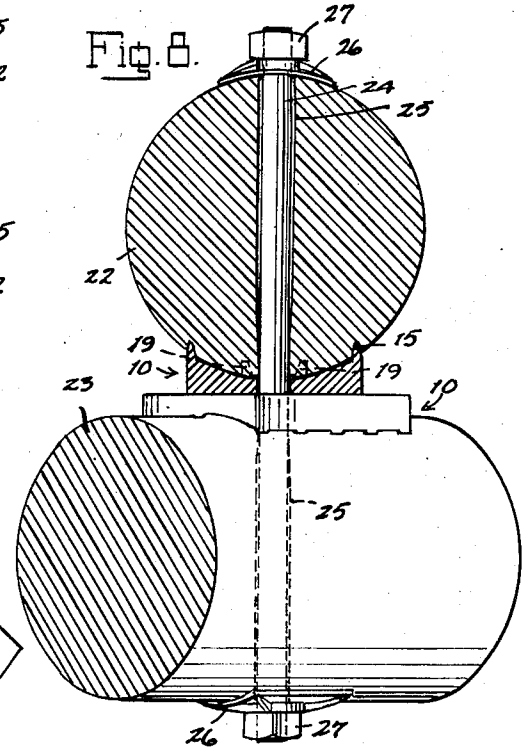


Fig. 8.



INVENTOR.

KENNETH C. JENNE

BY

ATTORNEY.

United States Patent Office 2,888,722 Patented June 2, 1959

2,888,722

WASHER GAIN FOR TIMBER STRUCTURES FORMED OF ROUND WOOD POLES

Kenneth C. Jenne, Lake Worth, Fla., assignor to Malleable Iron Fittings Company, Branford, Conn., a corporation of Connecticut

Application December 20, 1956, Serial No. 629,705

3 Claims. (Cl. 20—92)

The present invention relates to an improved washer gain for timber structures formed of wood poles in their natural grown state, particularly of the type as disclosed in my United States patent for Washer Gain for Timber Structures Formed of Round Wood Poles, No. 2,762,091 granted September 11, 1956.

The improvement consists in the provision of novel means for cooperating with the through bolt by which the washer gain is attached to a pole, and whereby the fibers of the wood of the pole over a relatively large projected area surrounding the through bolt receiving hole through the pole are forced inward toward the surface of the through bolt, thus compressing the fibers against the bolt and creating a better connection between the washer gain and the pole and eliminating to a large extent the tendency of the bolt to split the pole through load forces applied to the washer gain parallel to the grain of the pole.

Other objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein a satisfactory embodiment of the invention is shown. However, it will be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawing:

Fig. 1 is a rear elevation showing the inner or pole engaging side of a washer gain, according to the invention;

Fig. 2 is a side elevation;

Fig. 3 is a vertical sectional view taken along the line 3—3 of Fig. 1;

Fig. 4 is a vertical sectional view taken along the line 4—4 of Fig. 1;

Fig. 5 is a view partially in end elevation and partially in transverse section, taken along the line 5—5 of Fig. 1;

Fig. 6 is a transverse sectional view taken along the line 6—6 of Fig. 1;

Fig. 7 is a front elevation of a connected pole structure wherein an angular pole is crossed with and connected to a vertical pole; and

Fig. 8 is a view partially in top plan and partially in horizontal section, taken along the line 8—8 of Fig. 7, and showing the cooperative use of a pair of similar gains disposed in interengaged relation between the two poles.

Referring to the drawings, the washer gain illustrated therein and indicated generally as 10 is of rectangular shape and is dimensioned so as to accommodate a range of pole diameters, that is, assuming that the washer gain is four inches by five inches it will accommodate a range of pole diameters of approximately six to ten inches, it being understood that the invention contemplates both smaller and larger washer gains to accommodate smaller and larger diameter ranges.

The outer surface 11 of the gain is flat while its inner face is concavely formed to substantially embrace the convex curved surface of a pole. The inner face is provided with a grid-like formation consisting of longitudinal ribs 12 and transverse ribs 13, the projected surfaces of these ribs adapted to provide for firm engagement of the gain with the wood pole, being slightly embedded therein upon tightening of the gain to the pole by means of the through bolt, as will hereinafter more fully appear.

For the sake of obtaining lightness at areas of the pole where its strength will not be impaired, openings 14 are provided through the gain within the grid formation of the ribs adjacent each side wall, the intermediate portion of the gain being solid. Suitably placed spurs 15 project from the rearward surface and are adapted to embed into the wood of the pole to anchor the gain upon the pole and resist displacement through shear loads imposed upon the gain.

Centrally of the gain there is provided a bolt receiving hole 16 having its axis normal to the flat outer surface 11, its inner end being carried through a circular rib 17 projected from the inner surface of the gain and having its circular inner surface disposed in a flat plane so that when the gain is engaged with a pole, as seen in Figs. 7 and 8, the circular rib will be forced into the wood of the pole in surrounding relation to the outer end of the through bolt hole, but will not be wedged into the hole. The central transverse rib 13 is joined to transversely opposite sides of the circular rib 17, while the longitudinal ribs 12 and the two transverse ribs at each side of the central transverse rib are spaced from the circular rib 17, thus providing recessed portions 18—18 in surrounding relation to the circular rib 17 at each side of the central rib 13.

Within these recessed portions there are provided a series, preferably four in number, of wedging spike members 19 disposed adjacent the outer edge of the rib 17 and arranged in substantially radial relation to the hole 16. The inner surface of each of the members 19 is provided with an outwardly inclined wedging groove 20 which terminates at its outer end in an angular wedging edge 21, the groove being tapered toward its inner end which extends to a point in close proximity to the outer edge of the rib 17. These wedging spike members are adapted to be forced into the wood of the pole through tightening of the through bolt, and through their wedge shape they compress the fibers of the wood inwardly toward the surface of the through bolt. The outer sides of the wedging spike members extend substantially vertically from the inner surface of the gain, so that driving of the spikes into the wood is faciltated, and the fibers of the wood are not pressed outwardly to any appreciable extent, such wedging action of the spikes being thus concentrated upon the inclined surfaces 20 which thus press the fibers inwardly. In addition to the pressing of the fibers inwardly, the wedging spikes provide anchoring means over a relatively large projected area at each side of the vertical plane passing through the axis of the bolt to resist splitting of the pole.

As shown in Figs. 7 and 8, a vertical pole 22 has an inclined pole 23 connected thereto, a washer gain 10 being secured to each of the poles and the poles being connected together by a through bolt 24 extending through holes 25 in the respective poles. The through bolt may be headed at one end, or, as shown in the illustration, the ends of the through bolt may be threaded and engaged by two curved washers 26 retained thereon by nuts 27. The flat faces 11 of the gains are in sliding frictional engagement with each other and permit the poles to be disposed at any desired angle with respect to each other.

While the washer gain is illustrated as provided with a flat bearing face, and is shown in Figs. 7 and 8 in its

relationship with a similar gain for supporting an angularly disposed pole upon a vertical pole, it is pointed out that the gain may, if desired, be provided with suitable means for the attachment or supporting of other types and arrangements of loads upon the gain, as, for example, it may be provided with an angle fitting or with side arms as shown in Figs. 15 and 19 of Patent No. 2,762,091.

What is claimed is:

1. A washer gain for disposition between a wood pole and a load supported by said pole, comprising a body having a forward side, and a rearward side including a pole conforming and engaging rearward surface, said body having a bolt receiving passage extending between said forward side and said rearward surface, an annulus upon said rearward surface having an inner periphery defining the rearward end of said passage, an outer periphery in outwardly spaced concentric relation to said passage, and a substantially flat pole abutting surface between said inner and outer peripheries, and a plurality of wedging spike members projecting rearwardly from said rearward surface and disposed in equally spaced radial relation about said annulus having inclined wedging surfaces at their sides toward said passage diverging

outwardly from said rearward surface with their convergent ends continguously adjacent the outer periphery of said annulus and adapted to be embedded in the wood of a pole engaged by said washer gain in outwardly spaced relation to the bolt receiving hole through said pole to compress the fibers of the wood inwardly about said hole at the end of said hole contiguous to said washer gain whereby said end of said hole is contracted about said bolt.

2. A washer gain according to claim 1, wherein the sides of said wedging spike members away from said passage are substantially perpendicular to said rearward surface.

3. A washer gain according to claim 2, wherein said inclined wedging surfaces are grooved and at their outer ends form wedging edges with the perpendicular sides of said spike members away from said passage.

References Cited in the file of this patent

UNITED STATES PATENTS

2,762,091 Jenne ..... Sept. 11, 1956

FOREIGN PATENTS

38,489 Norway ..... Dec. 3, 1923