

E. E. YAXLEY.  
SUPPORT FOR CROSS ARMS.  
APPLICATION FILED JUNE 4, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

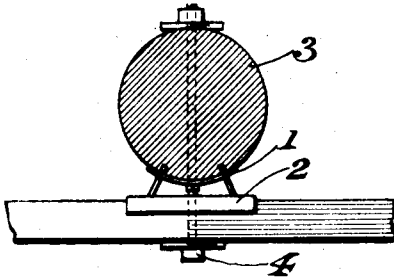


Fig. 4.

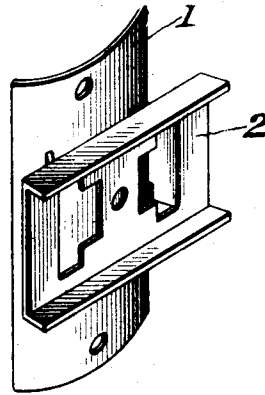


Fig. 2.

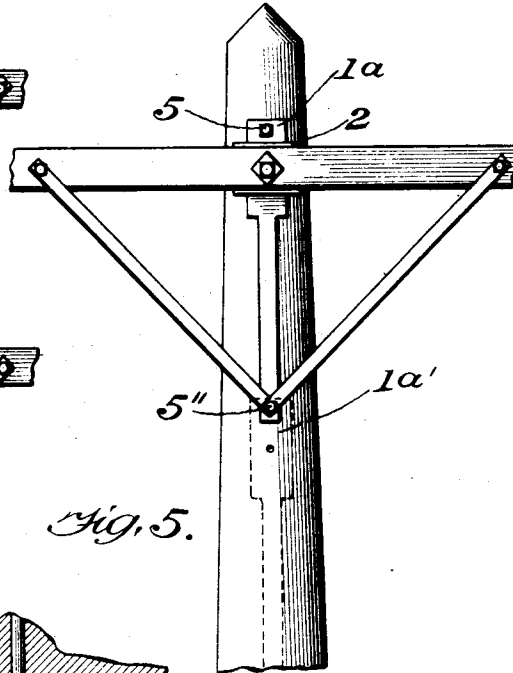
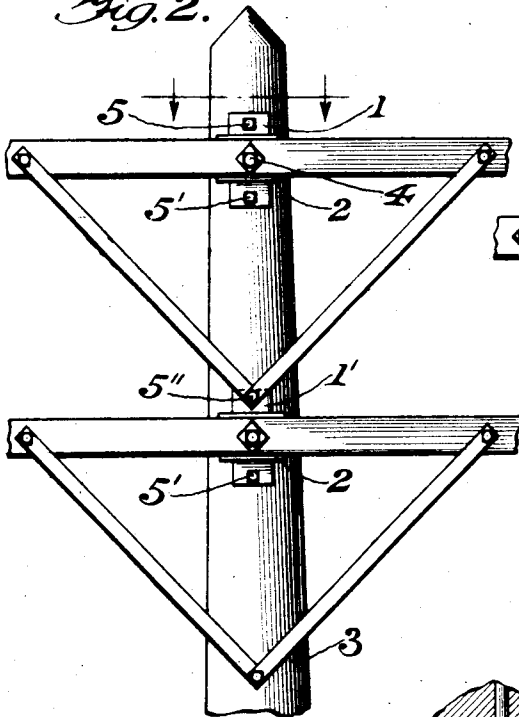
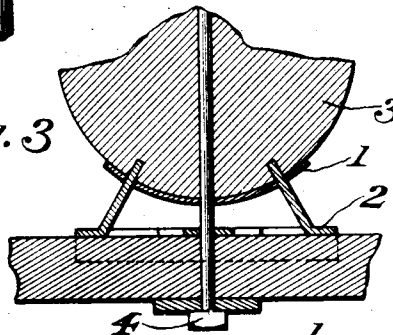


Fig. 5.

Fig. 3.



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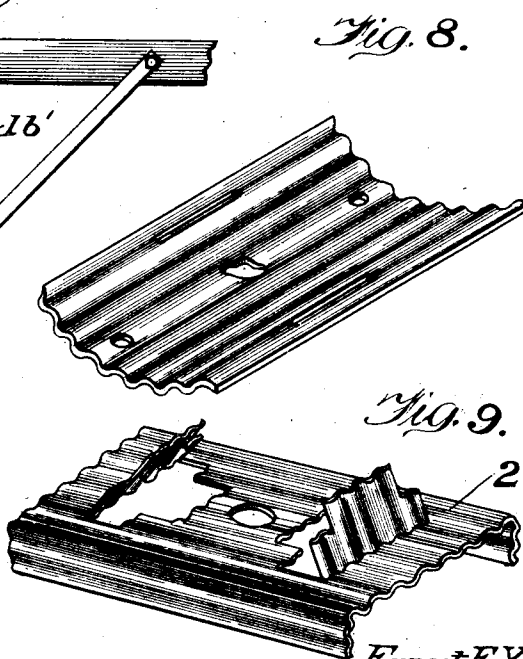
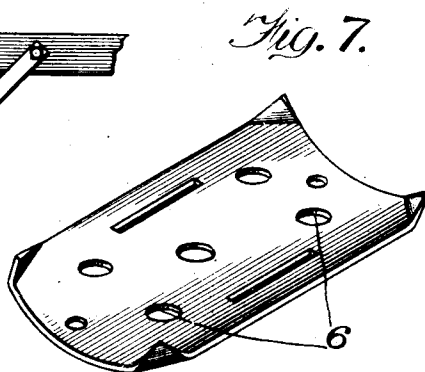
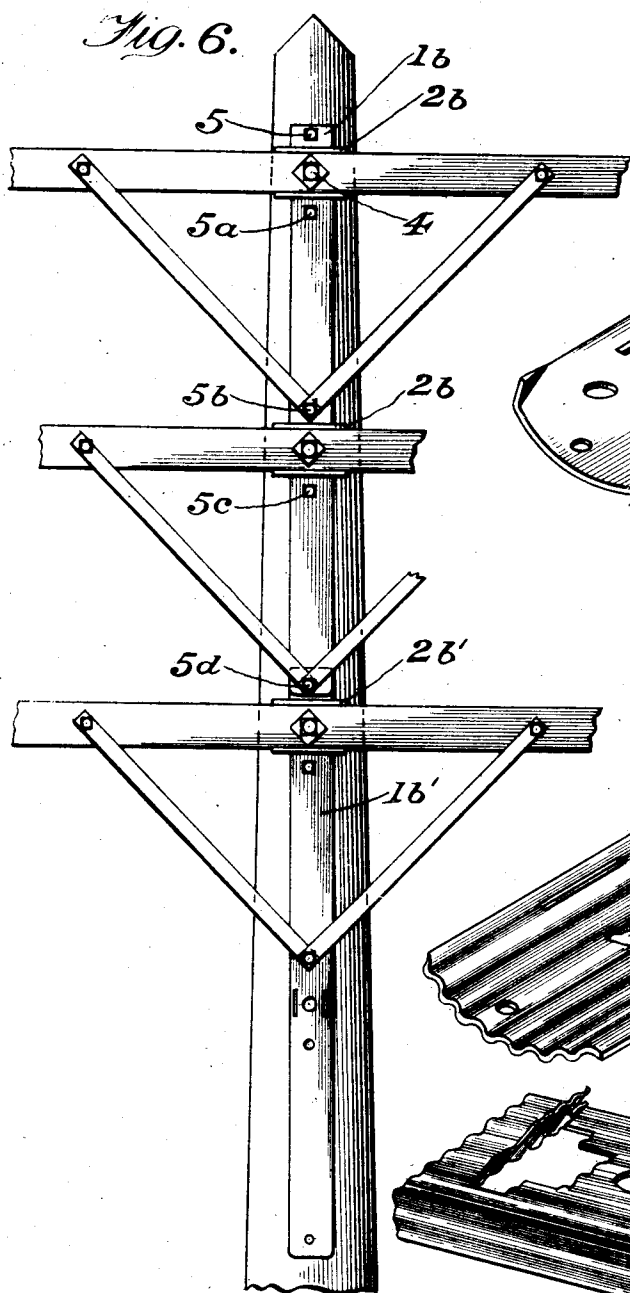
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No. 868,591.

PATENTED OCT. 15, 1907.

E. E. YAXLEY.  
SUPPORT FOR CROSS ARMS.  
APPLICATION FILED JUNE 4, 1906.

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

ERNEST E. YAXLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO STEEL GAIN MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## SUPPORT FOR CROSS-ARMS.

No. 868,591.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed June 4, 1906. Serial No. 320,171.

To all whom it may concern:

Be it known that I, ERNEST E. YAXLEY, a citizen of the United States of America, and resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Supports for Cross-Arms, of which the following is a specification.

My invention relates to facilities for the erection of poles for the maintenance of aerial wires, etc., in which cross arms are placed upon the poles, and my invention pertains particularly to means for fastening the cross arms to the pole, either before or after erection of the pole, and for sustaining the cross arms in proper position after erection.

The usual manner of affixing the cross arm to the pole is by means of lag screws or through bolts, a notch or gain being cut in the wood pole to steady the cross arm, to afford a firm seat for it upon the pole, and to assist, by the engagement of the edges of the cross arm with the edges of the gain, in preserving the original position of the cross arm upon the pole. I provide means of formed sheet metal for affording a secure seat for the cross arm, both in affixing it to the pole and in maintaining it in its position afterward.

Nine figures accompany this specification, in which,—

Figure 1 is a view of my metal gain from above, with the pole in section; Fig. 2 is an elevation of the upper part of a pole with two of my metal gains in place to support the cross arms; Fig. 3 is a section of Fig. 2 on a horizontal line passing through one of the through bolts; Fig. 4 is a perspective view of my metal gain; Fig. 5 shows a modification of the gain shown in Fig. 4, in which the pole plate of the gain is lengthened; Fig. 6 shows a modification of the gain shown in Fig. 4, in which the pole plate is multiplied, being long enough for the accommodation of two cross-arm plates, thus making a multiple gain, this being the preferred form of my invention; Fig. 7 shows a modification of Fig. 4, in which the pole plate has the corners formed for teeth to secure more firmly the position of the pole plate upon the pole; Fig. 8 shows a modification of the pole plate of any of the preceding figures, by which ventilation of the surface of the wood beneath the pole plate is provided for by the corrugation of the metal of the pole plate; Fig. 9 shows a modification of the cross-arm plate of any of Figs. 1 to 6, in which ventilation of the surface of the wood beneath the cross-arm plate is provided for by the corrugation of the metal of the pole plate.

My improved metal gain consists fundamentally of two parts, a pole plate, as 1, and a cross-arm plate, as 2.

Observing first that form shown in Figs. 1, 2, 3 and 4, it will be noted that the pole plate 1 is curved to fit the pole, or approximately so; that the cross-arm plate 2 is

bent in channel form to fit the cross arm; that the cross-arm plate has formed wings struck from its central portion; that the pole plate has slots corresponding in position and number to the wings of the cross-arm plate; that when the metal gain is assembled, the cross-arm plate occupies a position in which its channel is transverse to the axis of the curve of the pole plate and that the wings of the cross-arm plate pass through the slots of the pole plate; that when the metal gain is placed in position on the pole, as the pole 3, the wings passing through the pole plate penetrate the pole, as clearly shown in Fig. 3; that the cross arm, pole and metal gain are all held together rigidly by the through bolt 4, as clearly shown in Fig. 1, large washers being placed under the head and nut of that through bolt to protect the wood from the exaggerated cutting effect of the small bolt head and nut which might result ultimately with the loosening of the anchorage of the cross arm. It may be explained also that the pole plate is drawn to fit the pole surface closely by the tightening of the through bolt 4, through the engagement of the shoulders of the wings of the cross-arm plate, the shoulders being shown clearly in Fig. 9. If the radius of curvature of the pole plate is greater than the radius of the pole, then the central line of the pole plate will engage the pole and the two wings, engaging the pole plate at their shoulders, will bend the edges inward until the pole plate fits the curvature of the pole; if the radius of curvature of the pole plate be less than the radius of the pole, then the edges of the pole plate will engage the surface of the pole, and the wings of the cross-arm plate will press the central portion of the pole plate down into engagement with the surface of the pole.

The general type of metal gain construction covered in the foregoing paragraph is specifically improved by extending the pole plate in the direction of the axis of its curvature so that its grip upon the curved surface of the pole may be a longer one, thus giving a greater leverage for resistance to any strain which may result from a weight upon the outer end of the sustained cross arm and which would tend to twist the cross arm and its gain in its seat upon the pole.

The construction is further improved by providing in the extended ends of the pole plate holes for the passage of lag screws, as 5, 5', 5'', 5''', in Fig. 2.

As a further part of my invention, and as additional means for fastening the cross arms to the pole, I provide cross arm braces of proper length to attach to the cross arm in the usual manner and to attach to the pole by clamping under the head of the upper lag screw, as 5'', of the upper extended end of the pole plate 1' of the next lower metal gain; this affords a

convenience and an economy in the installation of gains, cross arms and braces when a plurality of such gains are to be installed upon one pole.

A modification of the simple form of metal gain just described is shown in Fig. 5, where the pole plate is extended downwardly until the lower lag-bolt hole of the top pole plate 1<sup>a</sup> registers with the upper lag-bolt hole of the next pole plate 1<sup>a'</sup>, the lag bolt 5<sup>a</sup> of Fig. 5 thus passing through both of the pole plates and the cross arm braces of the upper arm; thus the entire hardware structure of the upper cross arm becomes unitary, and connected as well to that of the succeeding cross arm. This construction gives a leverage of the pole piece upon the pole as long as the distance between cross arms, and renders the gain very rigid in its seat upon the curved surface of the pole.

In Fig. 6 is shown the preferred form of my invention, viz: a multiple pole plate. In this figure, the pole plate 1<sup>b</sup> is perforated for four lag bolts, 5, 5<sup>a</sup>, 5<sup>b</sup>, 5<sup>c</sup>, although 5<sup>a</sup> and 5<sup>c</sup> may be omitted safely; 1<sup>b</sup> is perforated also with two holes for through bolts for the two cross arms, and with two pairs of slots for the wings of the cross-arm plates 2<sup>b</sup> and 2<sup>b'</sup>; the construction here typified may extend to any desired number of cross arms, and a plurality of such multiple-gain pole plates may be installed upon the same pole by registering the upper lag-bolt hole of one with the lower lag-bolt hole of the preceding, as at the lag bolt 5<sup>d</sup>. In this type of construction, a plurality of cross arms are mounted upon the unitary metal construction built upon the pole, and the maximum rigidity is obtained.

Fig. 7 shows a modification of any of the forms of pole plates shown, the corners being formed toward the surface of the pole in such manner that they will enter the wood of the pole as teeth and give an additional grip upon the pole for rigidity; this feature is most valuable in the single-gain form as shown in Fig. 4, but is applicable also to the other forms.

A further improvement is shown in Fig. 7, in that a ventilation of the surface of the wood beneath the pole plate is provided for by the construction of ventilating openings, such as shown at 6, permitting access of air to the surface of the pole and reducing the area covered closely by the pole plate; this feature will tend to lengthen the life of the pole by delaying the rotting action of the elements.

In further and more elaborate provision for the ventilating of the surface of the pole beneath the pole plate and for the ventilating of the surface of the cross arm beneath the cross-arm plate, corrugated metal may be employed as shown in Fig. 8 for the pole plate and in Fig. 9 for the cross-arm plate, this modification being feasible for either single-gain or multiple-gain construction.

I do not wish to limit myself in all respects to the exact details herein shown and described, as I am aware that many modifications and combinations of

the improvements herein covered specifically are possible without departing from the spirit or scope of my invention.

Having thus described my invention, what I claim and desire to secure by United States Letters Patent is:

1. In a support for cross-arms the combination of a cross arm member, a pole member, extended portions on said pole member with means for attaching the same to the pole, and throughbolts for clamping together said members and the cross-arm and pole, substantially as described.

2. In a support for cross-arms, the combination of a plurality of cross-arm plates, a common pole plate adapted to engage and receive all of said cross-arm plates, and means for holding said cross-arm plates in transverse alignment to said pole plate when assembled, substantially as described.

3. In a support for cross-arms, the combination of a plurality of cross-arm plates, a common pole plate adapted to cooperate with all of said cross arm plates, means for securing said pole plate to the pole, and means for holding said cross-arm plates in transverse alignment to said pole plate when assembled, substantially as described.

4. In a support for cross-arms, a cross-arm plate, a pole plate, a pair of braces, said pole plate having an extended portion with a hole adapted to register upon the surface of the pole with the holes in the pole ends of said pair of braces when assembled, and means passing through said holes for securing the pole plate to the pole and the braces to the pole plate, substantially as described.

5. In a support for cross arms, a plurality of cross-arm plates, a pole plate adapted to cooperate with said cross-arm plates, and a plurality of pairs of cross-arm braces said pole plate having holes adapted to receive lag screws, some of the holes in said pole plate being adapted to register with the holes in the pole ends of the pairs of braces when assembled, substantially as described.

6. In a support for cross arms, a cross-arm plate, a pole plate, means for permitting access of air to the surface of the pole nominally covered by said pole plate, and means for securing said pole plate to the pole, substantially as described.

7. In a support for cross-arms, the combination of a cross-arm plate, a pole plate, and a through bolt adapted to hold said plate against the pole, said pole plate having a curved surface adapting it to maintain its position upon the pole, and having holes with lag screws fitted thereto adapted to sustain it in its position upon the pole when the through bolt is removed, substantially as described.

8. In a support for cross arms, the combination of a cross-arm plate, a pole plate, a throughbolt adapted to hold said pole plate against the pole, lag screws for maintaining said pole plate in its original position upon the pole, and means for permitting access of air to the surface of the pole nominally covered by the pole plate, substantially as described.

9. In a support for cross arms, a cross arm plate, a pole plate means for securing the pole plate to the pole and separate means for clamping together the cross arm plate, the pole plate and the pole.

Signed by me at Chicago, county of Cook, State of Illinois, in the presence of two witnesses.

ERNEST E. YAXLEY.

Witnesses:

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EVA A. GARLOCK.