J. M. HUMISTON.

SUPPORT FOR CROSS ARMS.

APPLICATION FILED JUNE 4, 1906.

900,545. Patented Oct. 6, 1908.

Fig. 1.

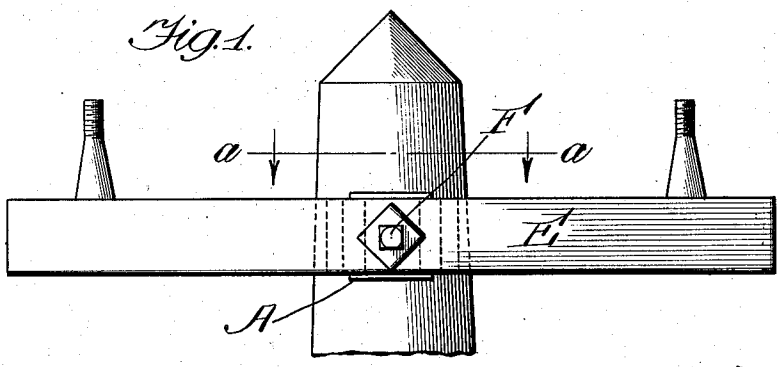


Fig. 2.

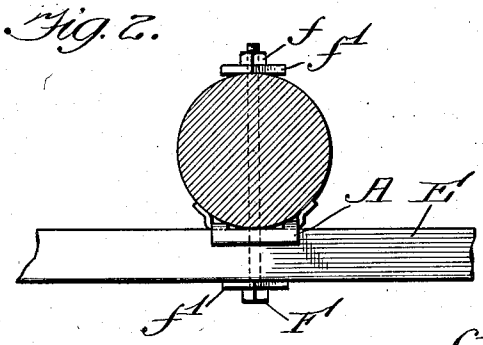


Fig. 3.

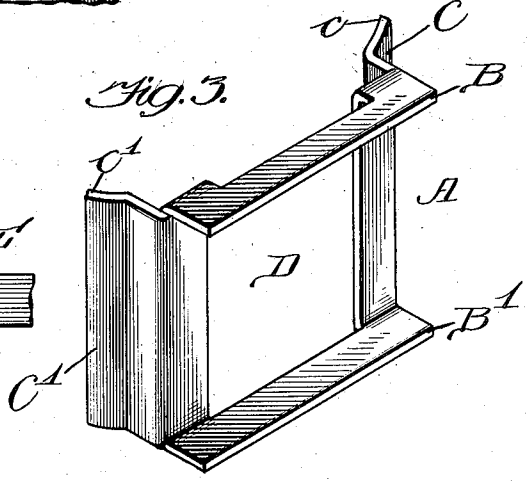


Fig. 4.

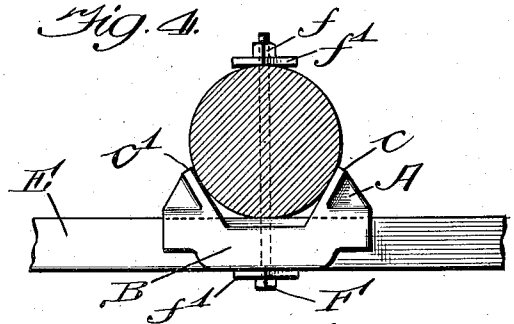


Fig. 5.

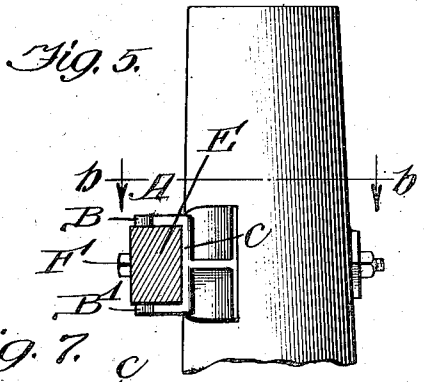


Fig. 6.

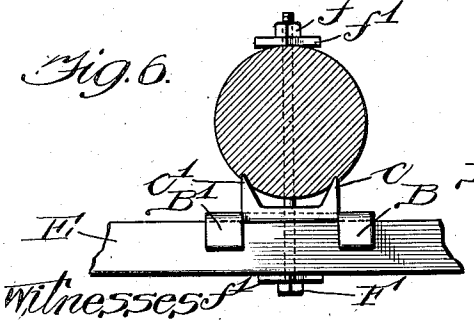
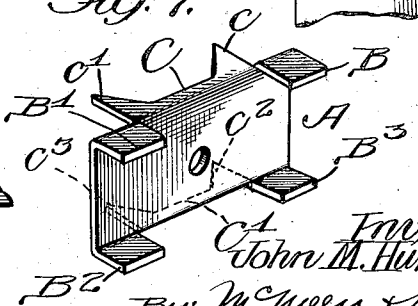


Fig. 7.



Witnesses:
Robert A. Weir
J. B. Weir

Inventor
John M. Humiston.
By: McQueen & Mullen
Attys.

UNITED STATES PATENT OFFICE.

JOHN M. HUMISTON, OF BERWYN, ILLINOIS, ASSIGNOR TO STEEL GAIN MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SUPPORT FOR CROSS-ARMS.

No. 900,545. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed June 4, 1906. Serial No. 320,192.

To all whom it may concern:

Be it known that I, JOHN M. HUMISTON, a citizen of the United States of America, and resident of Berwyn, 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 devices by means of which cross arms used for carrying electric wires, may be attached to their supporting poles. Prior to my invention thereof, it has been customary to attach such cross arms to their supporting poles by means of one or more lag screws passing through the arm into the pole, or by means of what is known as a through bolt passing entirely through the arm and pole, and tightened by means of a nut on its screw-threaded end. In either of these methods of attachment it has been necessary to form a suitable seat for the arm by cutting a notch, commonly known as a gain, in the pole. The cutting away of the material of the pole for this purpose was objectionable from several standpoints, among which may be mentioned the weakening of the pole, and added exposure to the rotting influences of the weather and the cost in labor of properly cutting the gain. Owing to the fact that it is a difficult matter to properly cut a gain on a pole that is standing, the practice has generally been adopted of cutting, before the pole is raised, as many gains in the pole as is thought will be needed in the future, even though a fewer number of cross arms than that number are to be immediately provided. As a result many gains are cut that are not used for a number of years if at all.

It is the object of my invention to provide a device which will form a proper seat for the arm, which will not weaken the pole or facilitate its rotting, and which will be easily applied to the pole when standing, and thus do away with the necessity of providing at the time of original construction, more gains than are to be immediately needed.

My invention is illustrated in the accompanying sheet of drawings, in which

Figure 1 shows the top of a pole to which a cross arm has been applied by means of my device; Fig. 2 shows a plan view of the same partly in section, the section being taken on the plane indicated by the line *a a* in Fig. 1; Fig. 3 is a perspective view of the device in its preferred form; Figs. 4 and 5 show two views of a cross arm attached to a pole by means of a modified form of my device, the view of Fig. 4 being a plan view partly in section, the section being taken in the plane of line *b b* of Fig. 5. Fig. 6 shows a similar view to that of Figs. 2 and 4, illustrating the method of attachment of a cross arm to a pole by means of still another modification of my device, and Fig. 7 shows a perspective view of this latter modification.

Referring now more particularly to the preferred form of my invention in Figs. 1, 2 and 3, A indicates the device as a whole. This is formed preferably from a flat piece of sheet steel made first into a suitable blank and then bent so as to have two forwardly projecting flanges B B′, and two rearwardly projecting flanges C C′, the two forwardly projecting flanges being at right angles to the rearwardly projecting flanges. In the exact form shown a large square opening D is formed in the center of the plate, but this may assume any size or shape as will be explained later. As a result of this conformation of the device, the flat portion of the plate from which the device is formed, together with the forwardly projecting flanges B B′ form a seat or gain for the cross arm E, which serves the same purpose as the notch usually cut in the pole in accordance with the old method above outlined. The two rearwardly projecting flanges C C′ serve to engage the pole as is clearly indicated in Figs. 1 and 2. The device A and the cross arm E are held in place on the pole by means of the through bolt F passing through both cross arm and pole, and through the opening D in the piece A. In order that the nut *f* of the bolt F and the head of that bolt may not sink into the wood of the pole and cross arm respectively, large washers *f′* and *f′* are provided as clearly indicated in Fig. 2.

The forwardly projecting flanges B B′ are made just far enough apart to snugly em-

brace the cross arm E and thus prevent the movement of the arm in the socket thus formed for it. Owing to the fact that poles for use in electrical construction are ordinarily round rather than rectangular, and owing further to the fact that their size varies to a considerable extent the rearwardly projecting flanges C C′ are made of different form than those which embrace the rectangular cross arm. The rear portion of these flanges are bent into such shape as to conform to the approximately cylindrical surface of the pole. The radius of curvature of the inner surfaces of the flanges C C′ are preferred to be made somewhat smaller than the radius of the smallest pole to which the device is to be applied, so that there will be a tendency for the corner edges *c c′* to project somewhat into the surface of the pole. On the poles of larger radius the tightening of the nut *f* upon the bolt F, will by virtue of the resiliency of the flanges C C′ allow the inner surface of these flanges to conform to the surface of the pole. A peculiar advantage brought about by this construction is that when a cross arm is thus attached to a pole that is not thoroughly seasoned, the resiliency of the flanges C C′, and of the metal to which they are attached, will compensate in large measure for any shrinkage in the diameter of the pole which may be caused by its drying out. The hole D in the center of the device A is preferably made large so as to allow access of air to those parts of the exposed surfaces of the wood between the cross arm and the pole. In this way any tendency to rot which might exist, due to retained moisture, is largely obviated. If desired, however, the hole D may be reduced to circular form and of such size only as to admit of the passage of the bolt F through it.

In the modification shown in Figs. 4 and 5, the device A, retaining the principal features of that shown in Figs. 1, 2 and 3, is made of such design as to adapt it to being cast rather than formed from sheet metal. The forwardly projecting flanges B B′ are best shown in Fig. 5, and the rearwardly projecting flanges C C′ being best shown in Fig. 4. In this latter figure the device is shown as applied to a pole having about as small a radius as the device is well adapted to fit without trimming the pole. For larger diameters of poles the cross arm would stand out from the pole rather than lie flat against it as viewed in this figure. If it became necessary to apply the device to a pole of even smaller relative diameter than that shown in this figure, then this could be accomplished by trimming away a small portion of the face of the pole against which the cross arm would otherwise bear. The employment of this latter expedient could be obviated by making the inner surfaces of the flanges C C′ so related to each other that they would both bear firmly against even the smallest pole that might be used.

The modification shown in Figs. 6 and 7 is preferably to be made of sheet steel. In this there are four forwardly projecting lugs or flanges B B′ B^2 and B^3, and two rearwardly projecting flanges C and C′, each of which has two rearwardly projecting points *c c′* and c^2 c^3 respectively. The method of applying cross arms to a pole by means of this device and the adaptability of the device to poles having different diameters, is quite obvious from an inspection of Fig. 6. The points *c c′* in this case actually enter into the substance of the wood of the pole and thus prevent movement of the device A, and consequently of the cross arm E with respect to the pole.

I do not wish to limit myself to the exact forms I have here shown, and described. It is obvious that many changes of form might be made without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent is:

1. The combination of a pole, a cross-arm, a single interposed member having a plane surface to receive the cross-arm, and a curved surface formed in resilient material adapted to engage the pole, and means for clamping said member and the cross-arm to the pole.

2. The combination of a pole, a cross-arm, a body having a plane surface against which said cross-arm may rest, and a smooth curved surface adapted to engage the pole, means to prevent the cross-arm from moving on said body, and a through bolt for clamping the support against the pole.

3. The combination of a pole, a cross-arm, an interposed support having a smooth curved surface for engaging the pole, and projecting members for engaging the cross-arm to prevent angular motion thereof, and a through bolt for clamping the cross-arm and support to the pole.

4. The combination of a pole, a cross-arm, a single member interposed between them provided with a smooth curved surface to engage the pole, and arms to engage the cross-arm, and a bolt passing through the cross-arm, the interposed member, and the pole for securing all the parts together.

5. A support for cross-arms comprising a sheet metal plate having forwardly projecting flanges for engaging the cross-arm, and rearwardly projecting flanges adapted to partially surround a pole, said flanges being integral with the plate.

6. Supporting means for cross-arms, comprising a metal plate, forwardly projecting horizontal flanges on said plate forming a gain to receive a cross-arm, rearwardly projecting flanges curved to conform to the sur-

face of a pole, and means for clamping the plate to the pole.

7. Supporting means for cross-arms comprising a metal plate, forwardly projecting horizontal flanges on said plate forming a gain to receive a cross arm, rearwardly projecting flanges curved to conform to the surface of a pole, and a bolt for clamping the cross arm in said gain and said flanges against the pole.

8. Supporting means for cross-arms comprising a metal plate against which a cross-arm is adapted to rest, with rearwardly projecting flanges on said plate adapted to embrace the surface of the pole to which the cross-arm is to be attached.

9. Supporting means for cross-arms comprising a metal plate against which a cross arm is adapted to be clamped, rearwardly projecting flanges on said plate angularly disposed with respect to each other and the plate, so as to adapt them to the surfaces of poles of different diameters, and means for securing the cross-arm to the plate and the plate to a pole.

10. Supporting means for cross-arms comprising a channel piece adapted to receive a cross arm and to be applied to a pole, a bolt passing through the channel piece and also through the cross-arm and pole when in position, and a resilient member adapted to conform itself to the curvature of the pole surface under pressure from said bolt.

11. Supporting means for cross-arms comprising a member having a channel-way to receive a cross arm, and a surface to engage a pole, a bolt passing through the member and also through the cross-arm and pole when the parts are in place, said member being in part resilient to adjust itself to the curvature of the pole.

12. A support for cross-arms having two channel-ways at right angles to each other, one being rectangular and the other a curved figure, in cross section.

13. A support for cross-arms having two channel-ways, one being rectangular in cross-section and adapted to receive a cross-arm, and the other formed by resilient flanges and varying its figure to conform to the contour of a pole.

14. A support for cross-arms having a plane surface against which a cross-arm may rest, flanges adapted to engage the cross-arm and hold it in position, and a curved surface formed by flanges adapted to engage a pole.

15. A support for cross-arms having a plane surface adapted to receive a cross-arm, forwardly extending flanges to engage and control the position of the arm on said surface; and an opposite surface formed by rearwardly extending flanges and curved so as to be adapted to the surface of a pole.

16. A support for cross-arms having a resilient member adapted to engage a pole, a plane surface adapted to engage a cross-arm, and flanges off-standing from said surface adapted to embrace and hold the arm at right angles to the pole.

17. A support for cross-arms having separately curved resilient members adapted to engage a pole, and a plane surface adapted to engage a cross-arm, with flanges off-standing from said surface adapted to embrace and hold said cross-arm.

18. In combination, a pole, a cross-arm, and an interposed support comprising as elements a cross-arm member and a resilient pole member, with means to engage said members and hold the cross-arm at right angles to the pole.

19. In combination, a pole, a cross-arm, an interposed sheet metal support having a resilient curved surface partially surrounding the pole and flat projecting portions engaging the cross-arm to prevent angular motion thereof with respect to the pole, and means for clamping said support and cross-arm in position with the latter at right angles to the pole.

20. In combination, a pole, a cross-arm, and a single integral supporting device adapted to be interposed between the pole and arm, one face of said device shaped to embrace the pole and the other to rest against the face of the cross-arm, and a securing bolt passing through the center of the pole, the cross-arm and the said interposed device.

21. In combination, a pole, a cross-arm, and means for supporting the arm horizontally on the pole comprising a unitary integral device adapted to be interposed between the pole and arm, said device having one face plain and shaped to embrace the pole in order to prevent turning thereon, and another face receiving the cross-arm with means to prevent its turning thereon, and a through bolt for binding the pole and arm together with said device between them.

22. In combination, a pole, a cross-arm, a single intermediate member lying between the pole and cross-arm with its opposite sides shaped and adapted to fit the two respectively and positioned so as to have its longitudinal axis approximately bisected by a line passing through the center of the pole perpendicularly to the cross-arm, and a through bolt passing through the arm, the intermediate device, and the pole on said line.

23. In combination, a pole, a cross-arm, and means for supporting the arm on the pole, comprising a single integral device adapted to be interposed between the arm and the pole, said device having members adapted to embrace the pole, and a member

for supporting the cross-arm, and a securing bolt passing through the pole, the cross-arm and the interposed device.

24. In combination, a pole, a cross-arm, and means for supporting the arm on the pole comprising a device adapted to be interposed between them, one face of said device shaped to embrace the pole and the other to rest against the face of the cross arm, and a securing bolt passing through the center of the pole, the cross-arm and the interposed device.

Signed by me at Quincy, Adams county, Illinois, in the presence of two witnesses.

JOHN M. HUMISTON.

Witnesses:

S. F. SCOTT,

MONTAGUE FERRY.