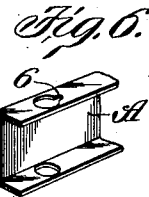
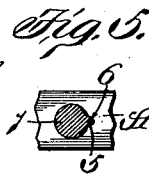
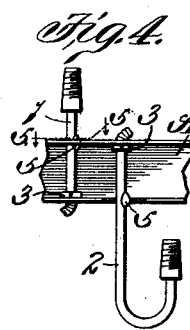
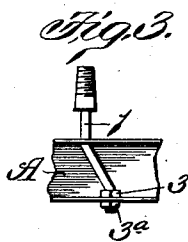
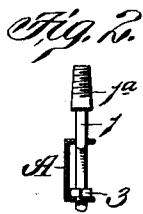
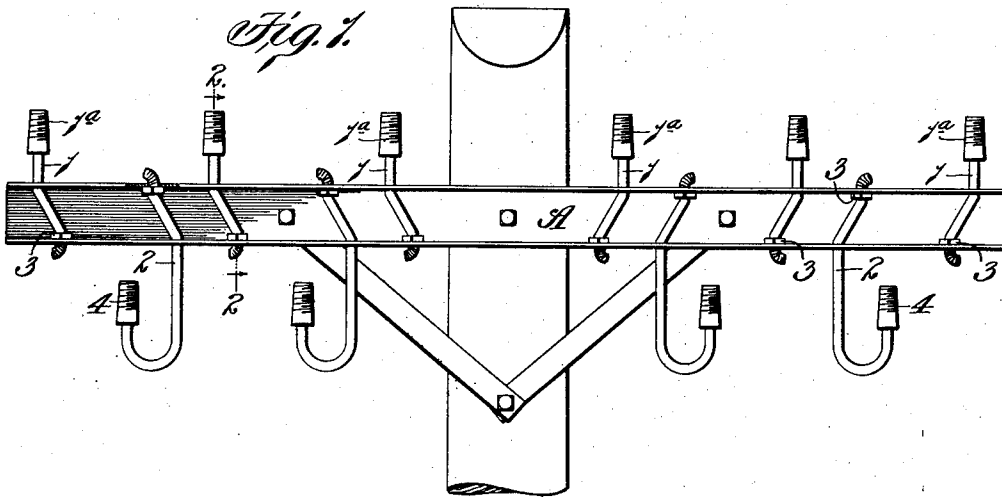


C. G. ETTE.
POLE CROSS ARM.

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1,027,709.

Patented May 28, 1912.



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UNITED STATES PATENT OFFICE.

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POLE CROSS-ARM.

1,027,709.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed September 18, 1911. Serial No. 649,971.

To all whom it may concern:

Be it known that I, CHARLES G. ETTE, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Pole Cross-Arms, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cross-arms such as are used on poles for carrying insulators.

Various attempts have been made to reduce the weight and increase the efficiency of pole cross-arms by using a channel-shaped metallic cross-arm equipped with insulator-pins. Such structures have not gone into general use, however, owing to the high cost of manufacture and the amount of labor involved in connecting the insulator-pins to the cross-arm.

The object of my invention is to provide an inexpensive and durable means for supporting a large number of insulators which are spaced the required distance from each other.

Briefly stated, my invention consists in a channel-shaped metallic cross-arm and insulator-pins projecting upwardly and downwardly from said cross-arm and passing through the horizontal flanges thereof, said pins being preferably formed from iron rods which can be bent easily into the desired shape and provided with threads for receiving fastening devices which prevent them from moving relatively to the cross-arm. Such a structure is inexpensive to manufacture because the insulator-pins are formed from bar iron, preferably round rods, which can be bought in the open market in long lengths and severed into short sections that can be threaded at one end to receive the insulator heads and at the opposite end to receive the fastening devices which secure the pins to the cross-arm. Holes are punched in the flanges of the cross-arm to receive the pins, and the pins are preferably provided with means that prevents them from turning or rotating in the cross-arm.

Figure 1 of the drawings is a front elevational view of a pole cross-arm constructed in accordance with my invention; Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1; Fig. 3 is a front elevational view showing another way from that illustrated in Fig. 1 for securing the pins to the

cross-arm; Fig. 4 is a front elevational view showing another way from that illustrated in Fig. 1 for preventing the pins from rotating in the cross-arm; Fig. 5 is a horizontal sectional view taken on the line 5—5 of Fig. 4; and Fig. 6 is a perspective view of a portion of the cross-arm shown in Figs. 4 and 5.

Referring to Fig. 1 of the drawings which illustrates one form of my invention, A designates a pole cross-arm which preferably consists of a piece of commercially-rolled channel iron. Said cross-arm is provided with one set of insulator-pins 1 that project upwardly from the cross-arm, and a separate set of insulator-pins 2 that project downwardly from the cross-arm, the set of insulator-pins 2 on the under side of the cross-arm being arranged intermediate the pins 1 on the upper side of the cross-arm or in staggered relation to said upper pins. By arranging the insulator-pins in this manner I am able to mount a large number of insulator-pins on a comparatively short cross-arm and still maintain the required distance of ten or twelve inches between the insulators. Both sets of pins are preferably formed from round iron rods, and the top and bottom flanges of the cross-arm are provided with holes through which said pins pass, as shown clearly in Fig. 2. The upper pins 1 are provided at their upper ends with heads 1^a for receiving the insulators, and said pins are bent intermediate their ends so that the lower portion of the pin which passes through the bottom flange of the cross-arm will be offset or out of alinement with the upper portion of the pin on which the insulator head is arranged. By forming the pins in this manner I eliminate all possibility of their turning or rotating in the cross-arm which, of course, is a very essential feature of structures of this character. The offset lower portion of each of the upper pins 1 is provided with screw-threads for receiving a fastening device such, for example, as a nut 3, that bears upon the top face of the bottom flange of the cross-arm and thus overcomes any tendency for the pin to drop downwardly. In arranging the upper pins in operative position the lower ends of same are first inserted in the openings in the top flange of the cross-arm and the nuts 3 are then screwed onto the threaded portions at the lower ends of the pins.

The portions which project beyond said nuts are thereafter inserted in the openings in the bottom flange of the cross-arm and the pins are locked in position either by bending over the portions of the pins which project through the bottom flange of the cross-arm, as shown in Fig. 1, or if desired, nuts 3^a may be screwed onto the pins, as shown in Fig. 3, the bent portions or the nuts 3^a preventing the pins from moving upwardly. The lower pins 2 on the under side of the cross-arm are also formed from iron rods, and they are bent or offset intermediate their ends, as shown in Fig. 1, so that the portion of each pin which passes through the top flange of the cross-arm will be out of alinement with the portion of the pin that passes through the bottom flange of the cross-arm. Said lower pins 2 are provided with arms 2^a which project laterally and also upwardly so that the insulator heads 4 on said lower pins will be arranged intermediate the insulator heads on the upper pins or in staggered relation to same.

In the structure shown in Fig. 1 the cross-arm is provided with ten insulator-pins, six being arranged on the upper side of the cross-arm and four on the under side of the cross-arm, but it will, of course, be obvious that the cross-arm may be provided with any desired number of insulator-pins without departing from the spirit of my invention.

In Figs. 4, 5 and 6 I have illustrated a structure which embodies the same characteristics as the structure illustrated in Fig. 1 but a slightly different means is employed for preventing the pins from rotating. In the structures shown in Figs. 4, 5 and 6 the holes or openings in the top and bottom flanges of the cross-arm which receive the upper and lower pins are arranged in alinement with each other, and the pins are provided with lugs 5 which project into notches or recesses 6 in the flanges of the cross-arm. An opening of this character, namely, a round hole provided at one side with a recess 6, as shown in Fig. 6, can be formed about as cheaply as a round hole because punches are used to form the holes in the cross-arm which receive the pins. The lugs 5 on the pins also add very little to the cost of manufacture because they are produced by pressing or pinching the pins so as to displace a portion of the metal therein. The pins shown in Figs. 4, 5 and 6 are mounted in the cross-arm in practically the same manner as the pins shown in Fig. 1, and

when they are arranged in operative position the lugs 5 will positively prevent the pins from turning.

In case it is desired to have the insulators on the upper and lower side of the cross-arm arranged in alinement with each other instead of in staggered relation, the lower pins 2 can be turned so that the insulator heads thereon will lie directly under the insulator heads on the upper pins.

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

1. A pole cross-arm consisting of a member provided with horizontally disposed flanges having a pair of openings formed in its top and bottom flanges that are arranged out of alinement with each other, and an insulator-pin that passes through both of said openings.

2. A pole cross-arm consisting of a member provided with horizontally disposed flanges arranged one above the other, said flanges being provided with openings that are arranged out of alinement with each other, and insulator-pins passing through said flanges and provided intermediate their ends with offset portions.

3. An insulator supporting means consisting of a member provided with horizontally disposed top and bottom flanges having openings that are arranged out of alinement with each other, and an insulator-pin passing through the openings in both of said flanges and provided intermediate the points where it passes through said flanges with an offset portion.

4. An insulator-supporting means consisting of a member provided with horizontally disposed top and bottom flanges having openings that are arranged out of alinement with each other, an insulator-pin passing through both of said flanges and consisting of an iron rod that is bent intermediate its ends so as to form an offset portion, and independent means on said pin which co-operates with one of said flanges to prevent the pin from moving vertically relatively to said member.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this fourteenth day of September, 1911.

CHARLES G. ETTE.

Witnesses:

WALTER C. RAITHEL,
EDWARD SCHWIDDE.