Nov. 5, 1935. C. L. PEIRCE, JR 2,019,992

INSULATOR RACK

Original Filed May 9, 1933 3 Sheets-Sheet 1

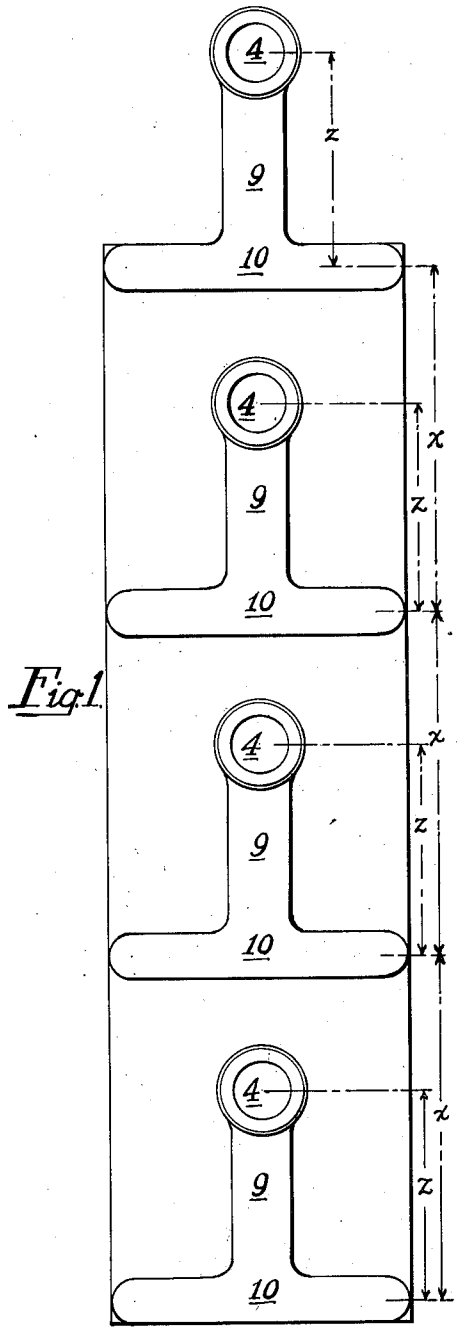

Fig. 1.

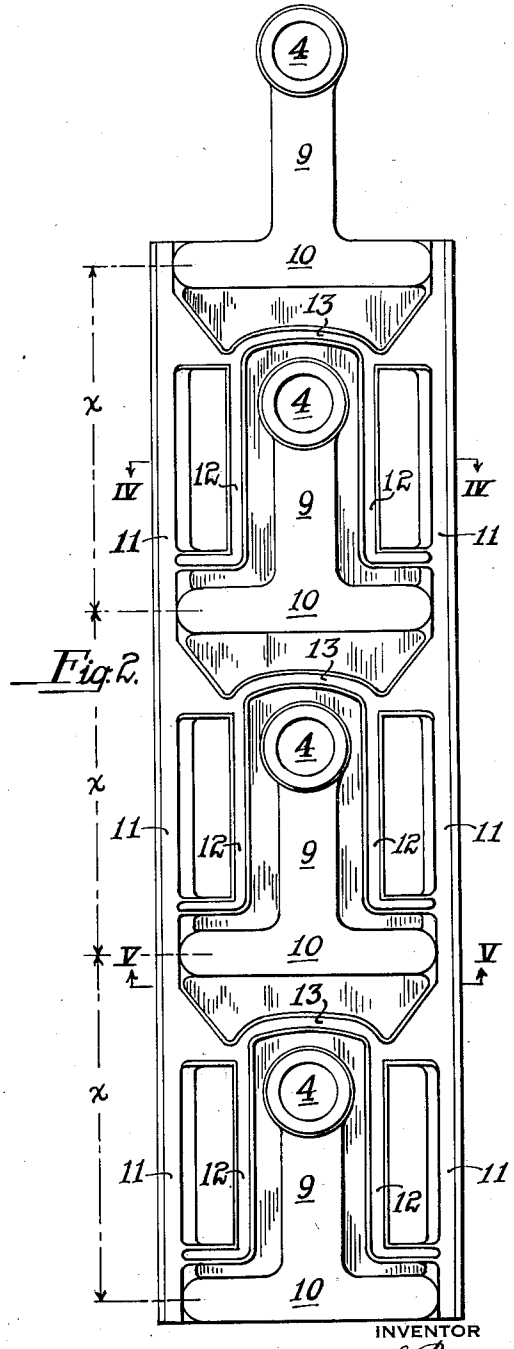

Fig. 2.

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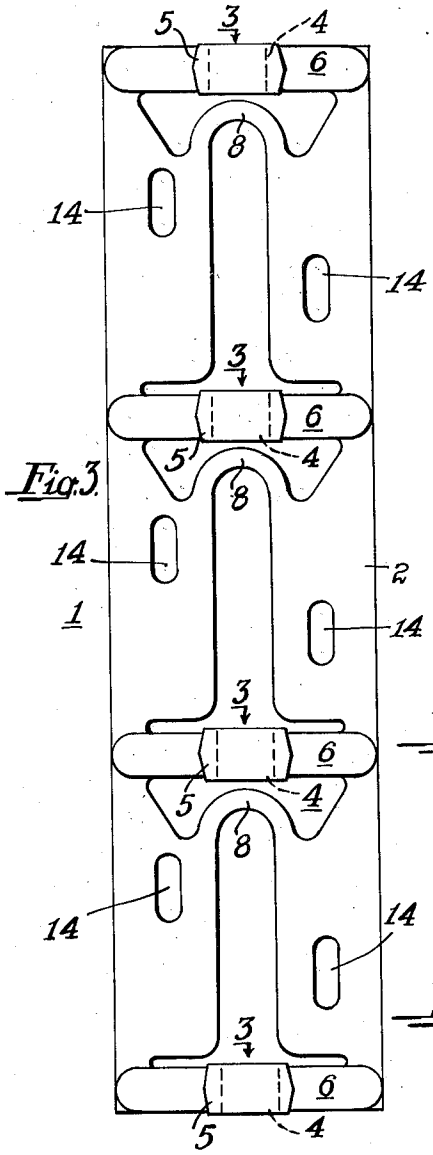

Fig. 3.

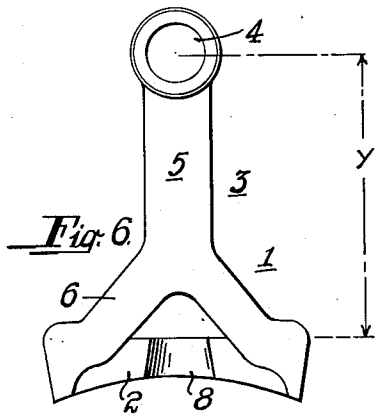

Fig. 6.

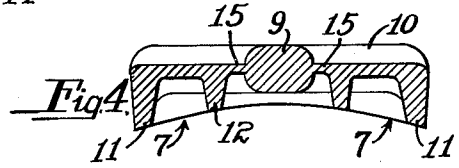

Fig. 4.

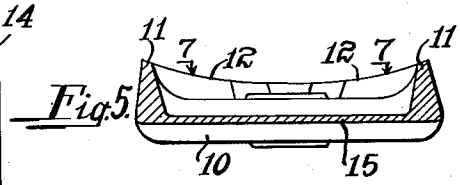

Fig. 5.

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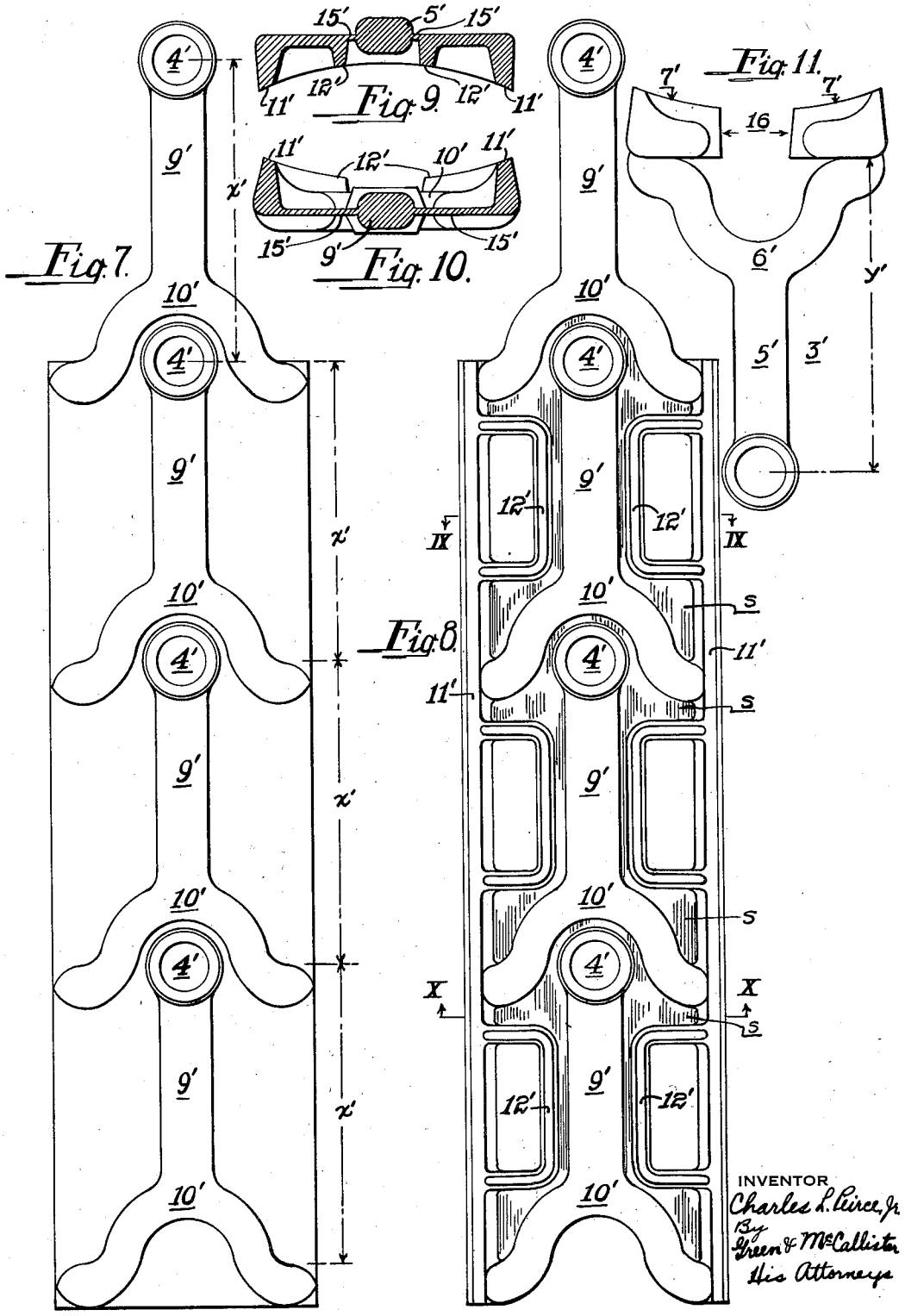

Patented Nov. 5, 1935 2,019,992

UNITED STATES PATENT OFFICE

2,019,992

INSULATOR RACK

Charles L. Peirce, Jr., Pittsburgh, Pa., assignor of one-half to Hubbard and Company, a corporation of Pennsylvania

Original application May 9, 1933, Serial No. 670,098. Divided and this application August 18, 1933, Serial No. 685,745

2 Claims. (Cl. 173—321)

This invention relates to insulator racks of the type on which two or more insulators of the spool type are mounted, and is a division of my copending application covering an invention in Insulator racks and method of making same, serially numbered 670,098, filed May 9, 1933, on which United States Patent 1,990,667 was granted February 12, 1935.

An object of this invention is the provision of an insulator rack that may be made as a single or unitary structure, and possessing great strength, rigidity and durability.

Another object of the invention is the provision of an insulator rack that comprises essentially a base and a series of spaced insulator support arms disposed normally to and formed integrally with the base by arched bars extending crosswise of the base.

A further object of the invention is the provision of an insulator rack of the type referred to above that may be made of strong material and of light weight.

And a still further object of the invention is the provision of a rack that may be made either as a forging or casting.

Other objects of the invention will, in part, be apparent and will, in part, be obvious from the following description taken in conjunction with the accompanying drawings, in which:

Figures 1 and 2 are views in front and rear elevation, respectively, of a plate or bar in the process of forming an insulator rack embodying the invention;

Fig. 3 is a view in front elevation of a finished rack;

Figs. 4 and 5 are views in section, of a partially formed rack taken on lines IV—IV, and V—V, respectively, of Fig. 2;

Fig. 6 is a bottom view of a finished rack as seen looking up at the lower end of the rack of Fig. 3;

Figs. 7 and 8 are views similar to Figs. 1 and 2 showing a partially formed rack made in accordance with a modified form of the invention;

Figs. 9 and 10 are views of the partially formed rack of Figs. 7 and 8 on lines IX—IX and X—X, respectively, of Fig. 8; and

Fig. 11 is a top plan view of the rack of Figs. 7 and 8 in its completed form.

Throughout the drawings and specification, like reference characters indicate like parts.

The racks illustrated in the drawings may be forged or cast, and in either form the method of making is essentially the same. For most purposes, the forged rack is preferred, although it is to be understood that the cast rack is intended to be included in the scope of the invention.

For convenience, a description of each of the finished racks will be followed by a description of the method of making the same.

In Figs. 3 and 6, a rack 1 is shown that comprises a base 2 having a plurality of spaced insulator support arms 3 formed integrally with the base. The support arms are perforated or apertured at their outer ends as at 4, to accommodate a bar or pin (not shown) adapted to extend through insulators (not shown) of the spool type, placed between the arms. As may be seen in Fig. 6, each support arm comprises a bar portion 5, in the outer end of which the aperture is pierced, and an arched cross bar 6 that extends transversely of the base 2, preferably in the plane of the bar portion. The ends of the several arched cross-bars terminate at the sides of the base and are integral therewith.

The base of the finished rack approximates two side channels 7 with which the arched bars 6 are integrally formed, said channels being integrally connected at spaced points by arched struts or ties 8.

The dimensions of spool type insulators for which rack 1 is designed, are such as to require that the center-to-center distance or dimension X between the support arms be equal to the distance or dimension Y, as measured from the face of the rack base to the centers of the apertures 4. Thus, dimension Y may be considered as the length of the support arms.

In accordance with the method of this invention, integral supporting racks may be formed in which equality of the aforesaid dimensions X and Y may be conveniently attained; and whereby dimension Y, that is, the length of the support arms, may be made greater or less than the dimension X, or the distance the arms are spaced apart.

Figs. 1 to 6, inclusive, depict the steps involved in the method of making rack 1. If the rack is made as a forging, this method comprises hot forging a bar or plate to form a series of longitudinally extending ribs 9 disposed centrally of the longitudinal axis of the bar and a series of cross ribs 10. As shown, corresponding ends of each longitudinal rib merge with a cross rib 10 at substantially the middle thereof, and the ends of the cross ribs terminate at the sides of the bar or plate. In the finished rack, ribs 9 form the bar portions 5 of the support arms and ribs 10 form cross bars 6 thereof.

In the forging operation or in a separate sub-

sequent operation, the ends of the ribs 9, remote from cross ribs 10, may be punched to form the apertures or openings 4.

When the initial forging operation has been performed, the face of the bar or plate is smooth except for the connected longitudinal and cross ribs, that have the appearance of embossed inverted T's. The rear side of the bar also shows the inverted T-formations produced by these ribs.

In the forging operation, the rear side of the bar or plate is flanged as at 11, along the longitudinal edges to give rigidity and strength thereto. The rear side of the bar is also formed with a series of flanges 12 that close on the side flanges 11. A series of arcuate flanges 13 is also formed on the rear side of the bar, and these join the ends of flanges 12 at points adjacent the respective cross ribs 10. In the finished rack, flanges 13 form the ties or struts 8 thereof.

As may be seen by inspection of Figs. 1 and 2, the distance Z measured from the center of any cross rib 10 to the center of a perforation 4 in its associated longitudinal rib 9, is less than the center to center distance between contiguous cross ribs 10. In subsequent steps of the method, the base portion of the rack and the cross ribs 10 are so manipulated that distances Z are increased and made equal to distances X. As will appear from the description of the method, the distances Z may be made greater than or less than distances X.

Having forged the bar or plate as above described, metal fins 15, indicated by the shaded surfaces in Fig. 2, are punched out and removed, whereby the inverted T formations of Figs. 1 and 2 are severed from the forged bar except at the ends of the cross ribs. The longitudinal ribs may now be swung outwardly from the face of the rack base until they extend at substantially right angles thereto. In swinging the longitudinal ribs outwardly, the cross ribs twist about the ends thereof but remain in substantially the same plane as they were previous to this operation.

The partially formed rack may now be placed in a die which simultaneously squeezes the side channels toward each other so as to narrow base 1; the connecting ties 8 are arched in a direction longitudinally of the base; and the cross bars 6 are arched outwardly from the face of the base in a direction longitudinally of the bar portions 5. Thus, while the base of the rack is made narrower throughout its length, the insulator support arms are extended and made longer by arching the cross bars outwardly and giving them the form indicated in Fig. 6.

Thus, in the finished rack the insulator support arms are of substantially Y shape and constitute an integral part of the base in which they were forged.

By varying the extent to which the sides of the base are brought together, it will be apparent that the insulator support arms may be made longer than dimension X or the center-to-center spacing of these arms, or they may be made shorter than this dimension.

It is apparent by inspection of Figs. 4, 5, and 6, that the rear side of the bar is somewhat concave, so that it will fit, more or less, the contour of a pole on which the rack is mounted.

As shown in Fig. 3, a series of oblong holes 14 are punched in the base of the rack through which bolts or screws may be passed to secure the rack to a pole or other support.

If rack 1 is made as a casting, say of cast steel, the casting is made in the form shown in Figs. 1 and 2, except that the webs 14 which are punched out of the forged bar or plate, need not be present in the casting.

The support arms are bent out while hot at right angles to the face of the base in the same manner as if the casting were a forging. After the support arms are bent out to position, the partially formed rack is placed in a die, wherein the base is made narrower, and the cross bars of the support arms arched sufficiently to give the support arms the desired length.

In Fig. 11, an insulator rack 16 is shown which, in its finished form is, in many respects similar to rack 1; therefore similar or corresponding parts will be designated by the same reference characters primed.

The method of making rack 16 comprises forging a series of longitudinally extending ribs 9' and a series of arched cross ribs 10' in a bar or plate. In this method, the crown of each arched cross rib is formed integrally with one end of an adjacent longitudinal rib so that in effect a series of embossed Y's is formed in bar. These ribs form the arched cross bars 6' and the bar portions 5', respectively, of the several support arms 3'.

The free ends of the longitudinal ribs may be punched or perforated to provide apertures 4' through which a rod or pin (not shown) may be passed to hold spool type insulators in place on the support arms.

By predetermining the radius of the arched ribs 10' and forming the perforated ends of longitudinal ribs 9' at substantially the center of curvature of these arches, the distance X as measured from the face of the base of the rack to the center of apertures 4' may be made equal to the center-to-center spacing distance Y' of the support arms, without narrowing base 1' and arching the cross bars 6'.

After the bar or plate has been forged as above described, the metal webs indicated by the shaded areas S are punched out thereby severing ribs 9' and 10' from the plate, except at the ends of arched ribs 10'. The base now comprises two side channels 7' which are connected only by the arched cross ribs 10'.

When the metal webs have been punched out, the longitudinal ribs and the arched cross ribs 9' and 10', respectively, are bent outwardly from the face of base 1' at substantially right angles thereto as indicated in Fig. 11, to form the support arms 3'. These arms are spaced vertically by a dimension X center-to-center, and the arms are each dimension Y' long as measured from the face of the base to the centers of apertures 4'.

In the form illustrated, distances Y and X are equal, but it is apparent that distance Y may be made greater or less than dimension X, by merely increasing or decreasing the radii of the arched cross ribs 10', or by increasing or decreasing the length of longitudinal ribs 9'.

If this rack is made as a casting, the casting may be formed in the shape of the forged bar or plate shown in Figs. 7 and 8, without the webs S, and the support arms bent hot to operative position in a die or other suitable device.

While several forms of the invention have been illustrated and described, it will be apparent to those skilled in this art that various modifications and changes may be made without departing either from the spirit or the scope thereof. It is desired, therefore, that only such limitations

shall be placed on the invention as are imposed by the prior art and the appended claims.

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

1. An insulator supporting rack comprising a base and a series of spaced substantially parallel support arms extending approximately at right angles to the base, said base and support arms being unitary, characterized by that each support arm comprises a relatively narrow bar portion of a length less than the distance between support arms and having a perforated outer end, and that the inner end of each such bar portion is unitarily connected to the sides of the base by a cross bar that is curved outwardly to such extent that the distance from the base to the outer end of each bar portion is greater than the length of each such bar portion.

2. An insulator supporting rack comprisng a base and a series of spaced substantially parallel support arms extending approximately at right angles to the base, said base and support arms being unitary, characterized by that each support arm comprises a relatively narrow bar portion having a perforated outer end, and that the inner end of each such bar portion is unitarily connected to the sides of the base by a cross bar that is curved outwardly to such extent that the distance from the base to the outer end of each bar portion is greater than the length of each such bar portion.

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