My invention relates to supporting structures for transformers used in the distribution of electric power and has for its object to provide a structure whereby a bank of transformers may be conveniently and safely supported at an elevation considerably above ground level.

Another object of the invention resides in providing a supporting structure whereby the transformers may be readily hoisted into position without the requirement of additional supports.

Another object of the invention resides in employing a pair of spaced poles and in attaching to said poles near their upper ends a pair of transverse frame members situated one above the other and in further attaching to said frame members spaced hangers having attaching members mounted thereon for the individual support of each transformer of a bank of transformers.

A still further object of the invention resides in constructing said frame members and hangers so that the entire frame structure lies substantially in a plane adapted to substantially coincide with the center plane of said poles and in further disposing said attaching members so that the transformers when mounted thereon are positioned with their centers of gravity falling substantially in the plane of said frame and poles.

With the foregoing and other objects in view, which will appear in the following description, the invention resides in the novel combination and arrangement of parts and in the details of construction hereinafter described and claimed.

In the drawings:
Fig. 1 is a perspective view of a form of my invention illustrating a bank of three transformers supported thereon.
Fig. 2 is a vertical sectional view taken on line 1—1 of Fig. 3.
Fig. 3 is a fragmentary perspective view of one of the hangers illustrating the method of attaching the transformers thereto.

In the ordinary method of supporting a bank of transformers on poles, a platform is usually mounted between two poles, on which platform the transformers are placed in upright position, one adjacent the other. With such supporting structure, considerable difficulty is encountered in hoisting the transformers into place. Due to the fact that transformers have to be raised to an elevation greater than that of the platform, an additional supporting structure is required for holding the block and tackle or other hoisting apparatus during the installation of the transformers. When a sling is placed across the tops of the two poles supporting the platform it frequently occurs that the enormous force exerted upon the tops of the poles by the weight of the transformers causes the said poles to break. In addition, considerable lateral displacement of the transformers is necessary when the block and tackle are centrally located on the poles in order to swing the same past the edges of the platform which causes considerable inconvenience to the construction crew. My invention overcomes these difficulties by providing a supporting structure in which the upper frame member may be used for the attachment of a block and tackle for hoisting up the transformers into position and in which the transformers are rigidly supported through the attaching lugs formed thereon in identically the same manner as when the same are mounted individually on the poles. At the same time my improved supporting structure does not require any appreciable lateral displacement of the transformers when the same are being elevated into position.

In conjunction with my invention I employ two poles 10 and 11 which may be two of the poles of a transmission or distribution line and which are spaced apart a sufficient distance to allow the mounting of a bank of transformers therebetween. These poles may be provided with the usual cross arms 12 and 13 for supporting the insulators and line wires mounted thereon, which have not been illustrated in this application.

Near the upper ends of the poles 10 and 11 are disposed two spaced transverse frame members 14 and 15 which are arranged in horizontal position, one above the other, and which are rigidly bolted to the poles 10 and 11 by means of bolts 16. These frame mem-
bers may be constructed of channel iron with the backs of the webs 17 thereof in contact with the said poles and with the flanges 18 thereof extending outwardly from said poles. At suitable intervals along the said transverse frame members are provided a plurality of hangers 19, 20 and 21 corresponding to the number of transformers in the bank, which hangers are preferably constructed of angle iron and are arranged with the back of one of the flanges 22 thereof against the backs of the webs 17 of the transverse frame members 14 and 15. These hangers are bolted to the transverse frame members 14 and 15 by means of bolts 23 and are disposed relative to said frame members so as to provide a plurality of openings 24, 25 and 26 in the frame structure corresponding in number to the number of transformers in the bank and of such dimensions as to freely receive the transformers as clearly illustrated in Fig. 1. For the purpose of illustrating the application of the invention, I have shown a number of transformers 27, 28 and 29 which may be of the conventional type constructed with a cast iron or steel case 30 having attaching lugs 31 formed in the back of the said case. These lugs are usually constructed with T-slots 32 adapted to receive the heads of bolts used for attaching the same to the structure on which they are mounted. With my invention I employ two attaching plates or bracket members 33 and 34 which are bolted to the outwardly extending flanges 35 of each of the hangers 19, 20 and 21. These plates are so disposed as to extend outwardly from the said hangers on both sides of the center plane of the entire supporting structure and are provided with bolts 36 adapted to be inserted in the T-slots 30 of the attaching lugs 31 on the transformers and to support the same thereby. It will be noted that when the transformers are so supported on the supporting structure, the same are disposed within the respective openings 24, 25 and 26 in the supporting structure and that the same extend outwardly from said supporting structure in both directions so that the center of gravity of the respective transformers lie substantially in the plane of said supporting structure and in the center plane of the poles. This is highly advantageous in that the load from the weight of the transformers is centrally disposed upon the poles so that the load is carried by the pole as a column with but a small amount of bending moment. This greatly increases the safety of the installation and reduces the dimensions of the supporting structure and the size of poles necessary to carry the transformers.

In installation, the supporting structure may be first assembled in its entirety upon the ground and then hoisted up by means of block and tackle attached to the cross arms 12 and 13 of the poles and the same then bolted to the poles by means of the bolts 18. If desired the structure may be taken apart and the upper transverse frame member 14 first raised and bolted in proper position upon the poles. The hangers 19, 20 and 21 may be then successively bolted in place by means of the bolts 27 and the lower transverse frame member next attached to said hangers. This frame member may be then lastly bolted to the poles through the bolts 16 so as to rigidly and firmly attach the structure to the poles. In the installation of the transformers on the supporting structure, a block and tackle is attached to the upper frame member 14 immediately above the respective openings 24, 25 or 26 in which the transformer is to be installed. The transformer may then be hoisted upwardly until the same reaches the lower frame member 15. A slight lateral movement of the transformer is sufficient to cause the edge thereof to clear said frame member 15 to permit of hoisting the transformer into place. Due to the central disposition of the block and tackle on the frame member 14, upon the lower edge of said transformer clearing the transverse frame member 15, the transformer immediately moves into central position where the bolts 36 may be readily inserted in the T-slots 32 of the transformer case 30 and bolted to the attaching plates 33 and 34. After being bolted, the tackle may be removed and the remaining transformers of the bank installed in the same manner. It will be noted that the hangers 19, 20 and 21 also form suitable supports for conduits 37 and 38 and the respective fittings 39 and 40 appurtenant thereto when used in conjunction with the wiring for the respective transformers 27, 28 and 29.

The invention is highly meritorious in that a simple and effective supporting structure is provided which has a minimum amount of weight for the load adapted to be carried by it, and which is sufficiently rigid and substantial to carry the transformers in a safe and effective manner. The weight from the transformers is carried by the two transverse frame members so that the load is transferred to the poles at different locations. The frame members in conjunction to transferring the load to the poles also serve to brace the poles and form a more rigid and unitary construction. The transformers are mounted centrally with respect to the supporting structure and poles so that the center of gravity of the said transformers is substantially in the center plane of the pole and excess stresses upon the pole from eccentric loading is practically eliminated. The supporting structure in addition to supporting the transformers provides an exceedingly convenient structure to which a block and tackle may be.
connected for hoisting the transformers in place and at the same time permits of raising the transformers with only a small amount of lateral movement in moving the said transformers into final position. By dispensing with the platform on which the transformers usually rest, the attractiveness of the installation to trespassers is greatly reduced and the hazards caused by a slippery platform due to rain or snow is entirely eliminated. At the same time the installation does not extend beyond the poles as far as the usual platform and a more pleasing appearance is given to the installation. The supporting structure forms a convenient support for the wiring or conduits used in conjunction with the same so that additional supports therefore are entirely unnecessary. With my invention the case of the transformer is effectively grounded to the supporting structure so as to form a more safe installation at the same time complying with the various electrical codes.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

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

1. In combination with a pair of spaced poles, a pair of transverse beams of channel cross section attached to said poles, one above the other, with their webs in contact with said poles, a hanger of angle cross section attached to said beams with one flange thereof in contact with the webs of said beams and the other flange extending towards the center plane of said poles, and an attaching member secured to the other flange of said hanger.

2. In combination with a pair of spaced poles, a pair of horizontally spaced beams secured to said poles and displaced laterally from the axis of said poles, a hanger secured to said beams and displaced laterally from said beams, said hanger being displaced in a direction opposite to the direction of displacement of said beams from said poles, and an attaching member secured to said hanger.

3. A supporting structure for attachment to a pair of poles comprising a frame work constructed with transverse and upright frame members arranged substantially in a single plane, said members being disposed to form an opening through said frame work, an attaching member secured to one of said upright frame members at right angles to the plane thereof and extending on each side of the plane thereof for supporting a transformer with the center of gravity thereof substantially in the plane of said frame work.

4. A supporting structure for attachment to a pair of spaced poles comprising a frame work constructed with a pair of transverse flanged beams arranged to extend across said poles, one above the other with one of the flanges of each beam facing said poles, a flanged hanger disposed between said poles and attached to said beams said hanger having a flange thereof contacting with said flange of said beams and having another flange extending towards the center plane of said poles, and an attaching member secured to the last named flange of said hanger.

5. In combination with a pair of spaced poles, a pair of horizontally spaced beams secured to said poles at corresponding sides thereof, a vertically spaced hanger secured to said beams on the sides thereof next to said poles and disposed in proximity to the plane common to the axis of the poles, and a pair of bracket members secured to said hanger, substantially centrally thereof and disposed in a plane at right angles to said plane of the poles for supporting a transformer with the center of gravity thereof substantially in said last named plane.

In testimony whereof I have affixed my signature to this specification.

EDMOND J. LE BLOND.