The present invention relates to supporting structures for transformers used in the distribution of electric power and more particularly relates to a transformer rack for supporting a bank of transformers at a considerable distance above ground level.

It has been customary, when raising transformers for mounting in elevated positions on poles to first mount the transformers supporting cradle on the pole, then raise each transformer and its attachments separately and mount them on the racks or cradles separately. This has required much of the installation work to be done by workmen on the poles, thus providing extremely inconvenient working conditions and necessarily requiring large expenditures of time. These undesirable features are obviously magnified when a bank of transformers is to be mounted on a pole.

A primary object of the present invention is to provide a transformer cradle assembly that can be pre-assembled complete with transformers, fuses, lightning arrestors and connections prior to hoisting the assembly onto a pole.

A further object of the present invention, ancillary to the preceding object, is to provide a transformer cradle assembly complete with a bank of transformers that may be completely assembled in the shop and the entire assembly hoisted as a unit to its elevated position on the pole whereby the linemen need only attach the primary risers to the primary line and the secondary conductors to the secondary side of the transformers.

A further object of the present invention is to provide an open front transformer cradle or rack which allows one or more transformers to be removed and replaced in a minimum of time and without necessitating removal of the entire assembly from the pole.

These, together with various ancillary features and objects of the invention which will later become apparent as the following description proceeds, are attained by this structure, a preferred embodiment of which is to be illustrated by way of example only in the accompanying drawings, wherein:

Figure 1 is a top view of the transformer cradle assembly of the present invention with a bank of transformers mounted thereon;

Figure 2 is a perspective side view of the transformer rack or cradle of the present invention;

Figure 3 is an enlarged detail view of the pole attaching means of the present invention;

Figure 4 is an enlarged detail view of the transformer supporting brackets of the present invention taken substantially along the section line 4—4 of Figure 2; and

Figure 5 is a detail view of the present invention taken substantially along the section line 5—5 of Figure 2.

It will be noted that throughout the specification and the various views of the drawing like reference numerals are used to designate like parts.

Referring now to the accompanying drawings in detail, attention is first directed to Figure 2 wherein the transformer rack or cradle of the present invention is generally indicated by the numeral 10. The rack or cradle 10 generally comprises a top rail 12, a bottom rail 14 and a plurality of studs 16 and 18 extending between the top and bottom rails and being secured at their ends to the top and bottom rails. The center stud is given the numeral 18 to differentiate it from the end studs 16. In the preferred embodiment the rails and studs are shown as being tubular members and welded to one another, but it is obvious that other structural shapes and fastening means may be utilized without destroying the essential rack construction.

Secured to the front faces of the studs 16 and 18 and the bottom rail 14, as by welding, are the vertical legs of U-shaped brackets generally designated by the numeral 19. Integally connected with the vertical legs 20 are the horizontally extending legs 18 which extend forwardly from the front of the rack 10 in a direction perpendicular to the longitudinal axis of the bottom rail 14. Reinforcing braces 24 are secured at their ends to legs 20 and 22 and serve to rigidify the legs at their junction. Secured to the ends of top rail 12 are cross arms 26, the purpose of which will become apparent as the description proceeds. Secured to the rear of the rack or cradle 10 adjacent the center stud are attaching lugs 28.

Figure 3 clearly shows the attaching lug 28 secured to the top rail 12 and the center stud 18. The attaching lug 28 comprises an angular web portion 32 and flat parallel end plates 30 and 34 extending from opposite ends thereof. The flat plate portion 30 is welded to the top rail 12 and to the center stud 18 and overlies the joint between these members thereby serving as an additional reinforcement for the joint. Offset plate portion 34 has a U-shaped notch in the end thereof, which is adapted to receive a pole attached bolt (not shown).

Referring now more particularly to Figure 4, it will be seen that the lower attaching lug 28 is welded to the rear lower portion of the center stud 18 as at 40. Also apparent in this figure is the attachment of the leg 20 to the center stud 18 and the bottom rail 14 whereby the leg overlies the joint between these two members and effectively serves to reinforce this joint. The reinforcing brace 24 is shown extending between the angularly related legs 20 and 22 and having its ends welded thereto as at 40.

Figure 5 discloses the top view of the connection between one of the legs 20 and the end studs 16 and the bottom rail 14. It will be noted that this connection is identical to that of the leg 20 as attached to the center stud 18.

Figure 1 shows a top view of the entire transformer cradle assembly 42 including the rack 10 and a three-phase transformer bank mounted thereon. Each of the electrical distribution lines 44 of the transformer bank, is supported adjacent its corresponding studs 16 or 18 on the leg 22 of a corresponding bracket 19. Channel members 46 extend from the back portion of each of the transformers 44 and abut the surface of the legs 20. Clamping plates 48 are disposed behind each of the studs 16 and 18 and U-shaped clamping bolts 50 extend from the flanges of the channels through the clamping plates 48 and securely clamp the transformers 44 to the rack 10. Mounted on the top rail 12 are lightning arrestors 52 and fuses 54 which are selectively fastened to the top rail via apertures 38 (Figure 2). Secured to the cross arms 26 are U-shaped insulator clamps 56 having insulators 58 secured between their flanges and fasteners 60 extending through their webs securing them to the cross arms 26. The primary bus 62 extends between the insulators 58 on the rack 10 and includes the leads 62 to the high voltage side of the transformers.
The secondary busses are indicated by the numeral 64 and are shown as being directed attached to the transformer lugs on the low voltage side of the transformers. Also extending from the high voltage side of the transformer are high voltage conductors 66 which extend to the fuses 54.

Thus, the entire structure is assembled as shown in Figure 1 and hoisted up a pole where the rack 19 is attached to the pole through the medium of lugs 28 and the linemen are only required to extend high voltage risers from the fuses 54 to the line on top of the pole and run a ground lead from the secondary bushings 68 on the center tapped transformer 44.

From the foregoing description, it is believed that one skilled in the art will be fully aware of the construction and operation of the present invention. However, since numerous modifications and changes will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A transformer assembly for pole suspension including a supporting frame comprising a top rail, bottom rail and a plurality of vertically extending studs connecting said top and bottom rails, brackets on said studs, transformers supported on said brackets, means attaching said transformers to said studs, cross arms secured to the ends of said top rail and insulators carried by said cross arms, a conductor extending between said insulators, lightning arrestors and fuses mounted on said top rail and leads connecting said transformers to said conductor, lightning arrestors and fuses, and attaching lugs on said frame for suspending said assembly from a pole.

2. A transformer assembly for pole suspension including a supporting frame comprising a top rail, bottom rail and a plurality of vertically extending studs connecting said top and bottom rails, brackets on said studs, transformers supported on said brackets, means attaching said transformers to said studs, cross arms secured to the ends of said top rail and insulators carried by said cross arms, a conductor extending between said insulators, lightning arrestors and fuses mounted on said top rail and leads connecting said transformers to said conductor, lightning arrestors and fuses, and attaching lugs on said frame for suspending said assembly from a pole.

3. A transformer cradle assembly including a transformer supporting frame comprising a top rail, a bottom rail and studs connecting said top and bottom rails, an L-shaped bracket having one leg secured longitudinally to each of said studs and said bottom rail and the other leg extending substantially at right angles to said bottom rail and stud, a transformer supported on each right angularly extending leg, clamping means attaching said transformers to said studs, and lugs on said cradle for securing the assembly to a pole.

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