April 24, 1945. B. J. SCHWENDT 2,374,624

PRECAST FOUNDATION

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Fig. 1.

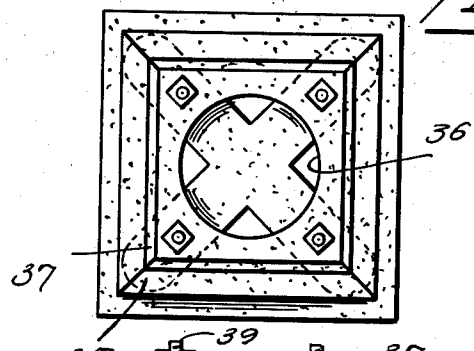


Fig. 4.

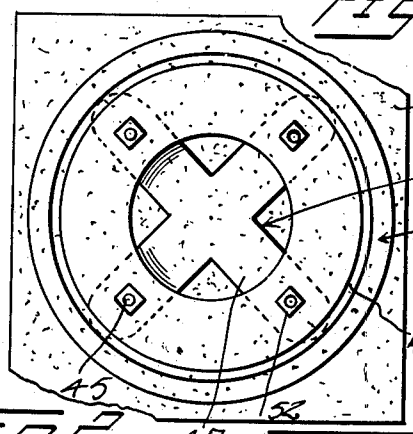


Fig. 2.

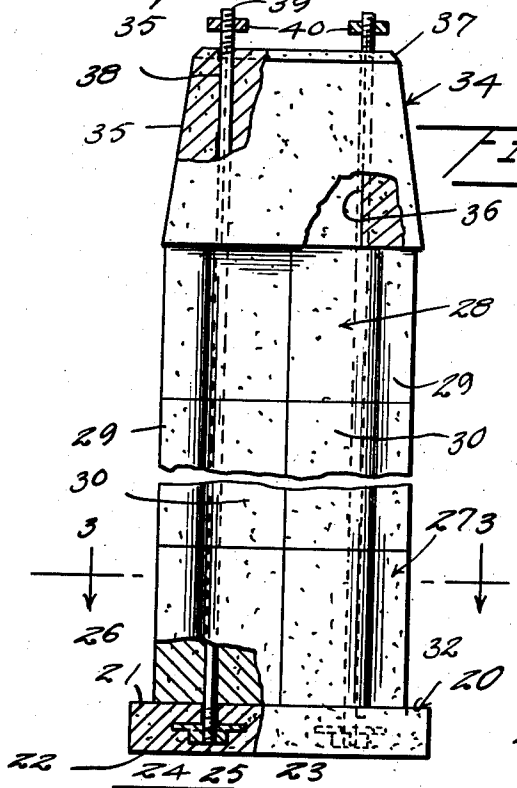


Fig. 5.

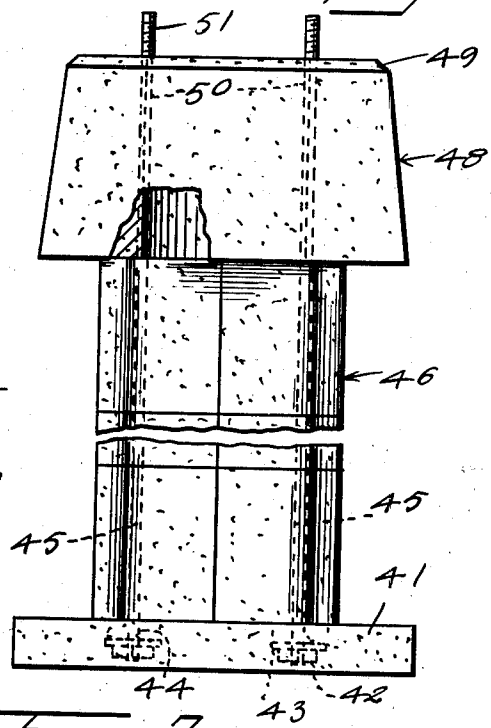
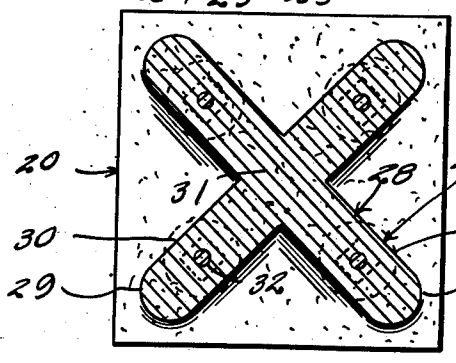


Fig. 3.



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Fig. 6.

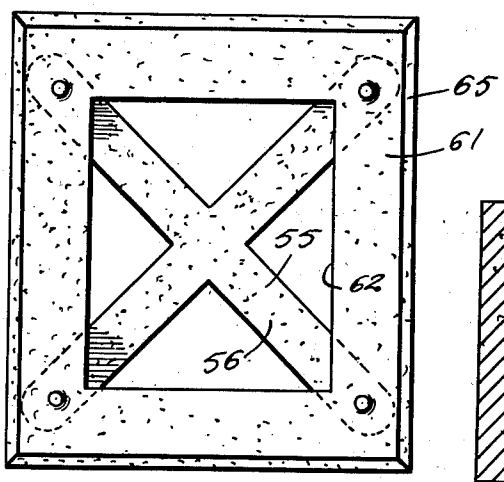
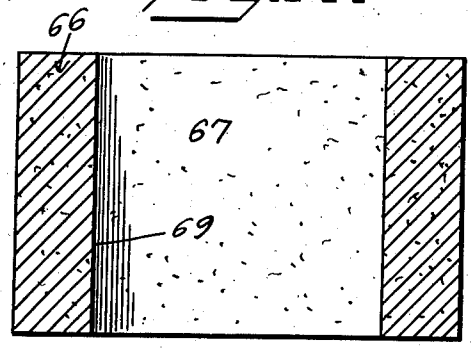


Fig. 11.



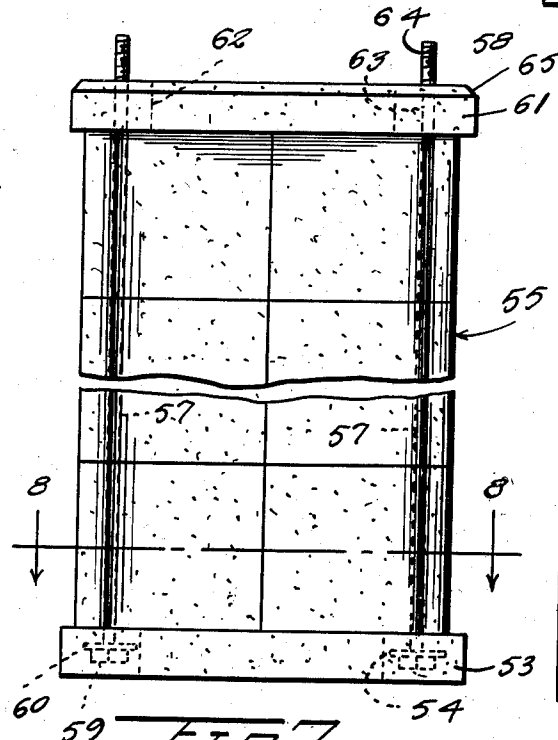
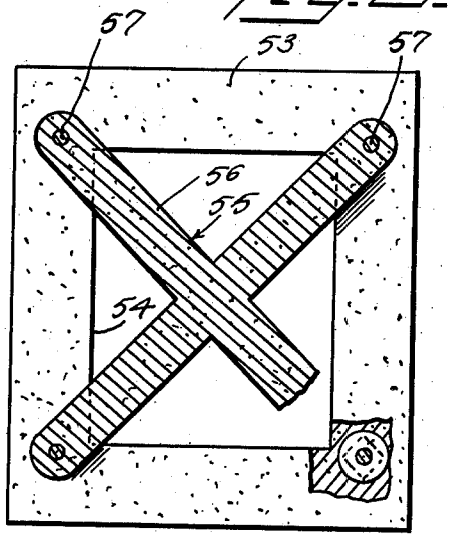


Fig. 7.

Fig. 8.



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Fig. 9.

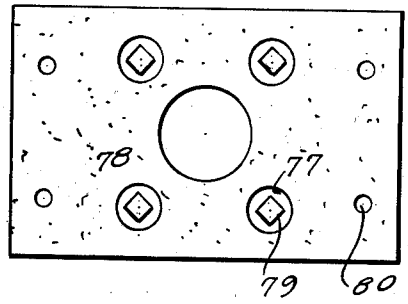


Fig. 12.

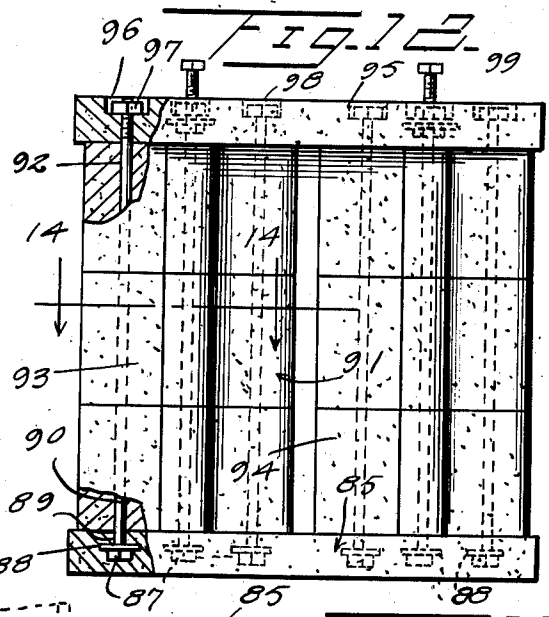


Fig. 10.

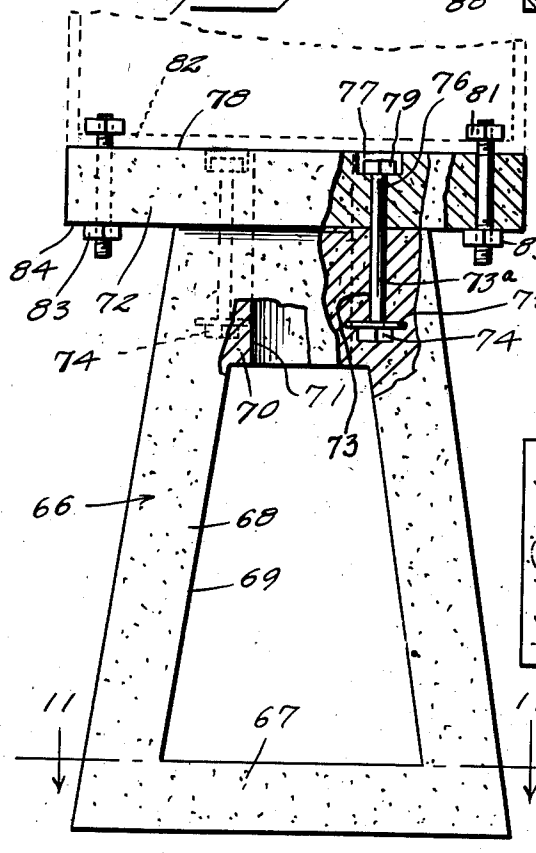
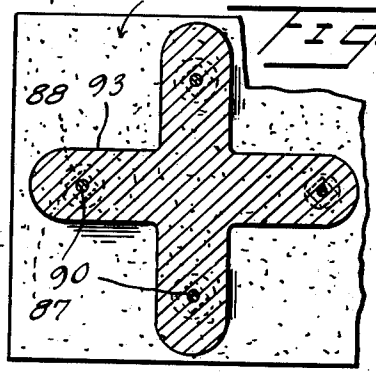


Fig. 11.



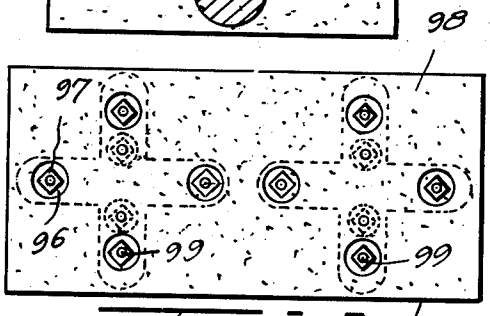


Fig. 13.

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Fig. 15.

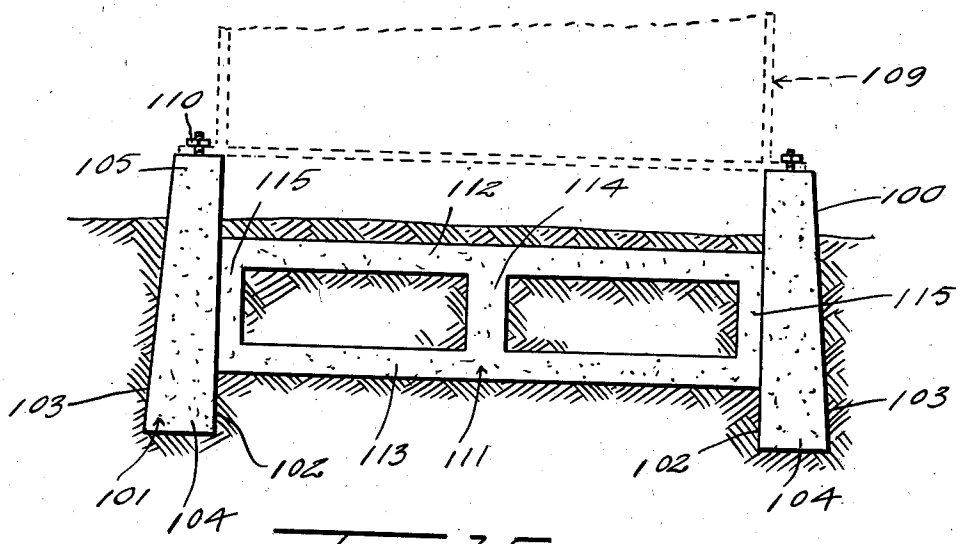


Fig. 16.

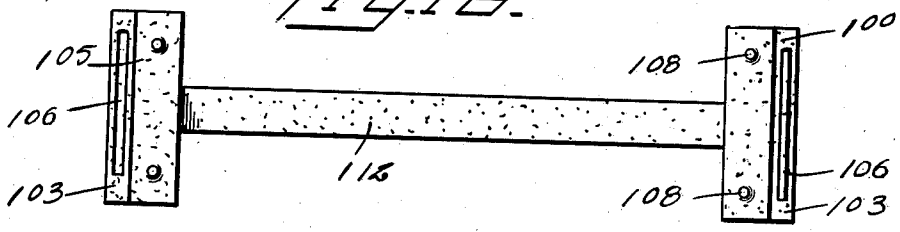


Fig. 17.

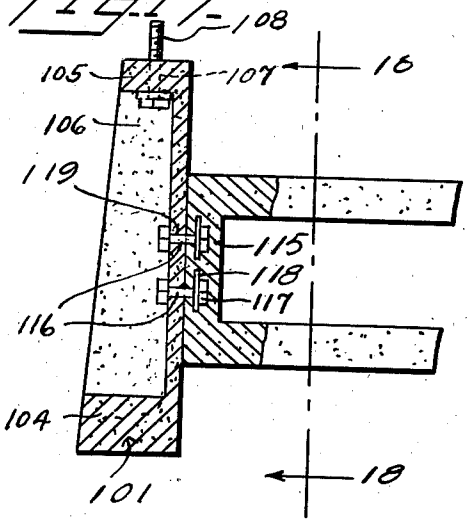
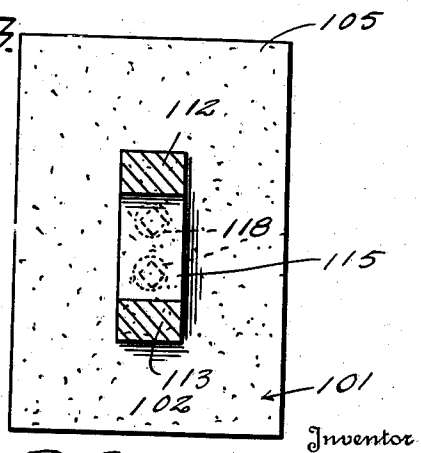


Fig. 18.



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UNITED STATES PATENT OFFICE

2,374,624

PRECAST FOUNDATION

Bernard J. Schwendt, Fort Thomas, Ky., assignor to Ethel F. Schwendt, Fort Thomas, Ky.

Application February 24, 1942, Serial No. 432,141

1 Claim. (Cl. 72—77)

This invention relates to precast concrete foundations for signal masts, signal supply cases, signals or the like.

An object of this invention is to provide a precast foundation for supporting a signal mast or the like wherein the foundation is built up of precast blocks.

Another object of this invention is to provide a foundation of this kind including a base block, a plurality of superposed standard forming blocks, and a head or cap block.

A further object of this invention is to provide in a foundation of this kind an improved precast standard structure formed of star-shaped superposed blocks secured between a lower base block and an upper head or cap block.

A further object of this invention is to provide an improved foundation including a base for embedding in the ground and formed of downwardly divergent sides whereby the earth may be packed therebetween.

A further object of this invention is to provide an improved base or foundation for a cabinet or case which includes a pair of spaced apart upright base members and a connecting web therebetween.

To the foregoing objects and others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawings, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a detail top plan of a precast concrete foundation constructed according to an embodiment of this invention,

Figure 2 is a detail side elevation partly broken away and in section of the foundation shown in Figure 1,

Figure 3 is a sectional view taken on the line 3—3 of Figure 2,

Figure 4 is a detail top plan of a modified form of this invention,

Figure 5 is a detail side elevation partly broken away and in section of the form of the invention shown in Figure 4,

Figure 6 is a detail top plan of another modified form of this invention,

Figure 7 is a detail side elevation partly broken away of the form of invention shown in Figure 6,

Figure 8 is a sectional view partly broken away and taken on the line 8—8 of Figure 7,

Figure 9 is a detail top plan of a further modified form of this invention,

Figure 10 is a detail side elevation partly broken away and in section of the form of invention shown in Figure 9,

Figure 11 is a sectional view taken on the line 11—11 of Figure 10,

Figure 12 is a detail side elevation partly broken away and in section of a further modification of this invention,

Figure 13 is a detail top plan of the form of invention shown in Figure 12,

Figure 14 is a fragmentary sectional view taken on the line 14—14 of Figure 12,

Figure 15 is a detail side elevation of a further modification of this invention,

Figure 16 is a detail top plan of the form of invention shown in Figure 15,

Figure 17 is a fragmentary side elevation partly in vertical section of the form of invention shown in Figures 15 and 16, and

Figure 18 is a sectional view taken on the line 18—18 of Figure 17.

Referring to the drawings and first to Figures 1 to 3 inclusive, the numeral 20 designates generally a base or lower block which is substantially square in plan and is formed of precast concrete. The block or base 20 has embedded between the upper surface 21 thereof and the lower surface 22 thereof a nut or threaded body 23. A washer or anchoring plate 24 is also embedded in the block 20 and engages above the nut or threaded member 23. The washer or anchoring member 24 is substantially larger in diameter than the size of the nut 23 and the block 20 is formed with an upwardly extending opening 25, so that a tie rod 26 may be extended through the opening 25 for threaded engagement with the nut 23.

A plurality of superposed standard forming blocks generally designated as 27 are disposed on the upper side 21 of the base block 20. Each standard forming block 27 is constructed in substantially star-shape, being formed of a plurality of radially arranged arms 28 which have rounded outer vertical edges 29 and parallel flat sides 30. The arms 28 radiate from a central body 31 and are formed integral with the central body 31. Each arm 28 is formed with a vertically disposed bore or opening 32 through which the tie rod 26 is adapted to loosely engage.

A cap block or head generally designated as 34 is disposed on the uppermost of the standard forming blocks 27. The cap block 34 as shown in Figures 1 and 2 is substantially square in plan and is constructed substantially in the form of

a truncated pyramid having upwardly inclined or convergent side walls 35. The central portion of the cap or head block 34 is formed with a circular opening 36 for not only reducing the weight thereof but also to provide for extension of wires, cables or the like upwardly into the mast or signal apparatus. The block or cap 34 is also provided at the upper end thereof with beveled upper edge portions 37, so as to eliminate any sharp corners at the upper end of the block 34. The block 34 is substantially equal in size to the square formed by the outer edge portions of the superposed standard forming blocks 27. The block 34 is provided with a plurality of vertically disposed spaced apart openings 38 through which the tie rods 26 are adapted to loosely engage.

The tie rods 26 are of a length slightly greater than the overall height of the foundation, extending upwardly from the upper side of the cap or head block 34, so that the lower or base portion of a mast or other supported element may be securely fastened to the upper side of the block or cap 34. The upper end 38 of each rod 26 is threaded as at 39 and a nut 40 is threaded onto each rod 26, so as to firmly hold the mast or other supported element on the upper side of the cap or head 34.

Referring now to Figures 4 and 5 there is disclosed a slightly modified form of this invention. A square base block 41 is formed of concrete which, if desired, may be reinforced in the conventional manner. The base block 41 has embedded therein a plurality of radially arranged nuts 42, and a washer or anchoring member 43 is also embedded in the base block 41 above each nut 42. The block 41 is provided with an upwardly opening socket 44 communicating with the bore of the nut 42, so that a threaded rod 45 may be extended downwardly through the opening 44 for threaded engagement with a nut 42.

A plurality of superposed standard forming blocks 46 are disposed on the base 41 and are of like construction to the blocks 27. Each of the blocks 46 is formed with an opening in an arm 47 thereof through which a rod 45 is adapted to loosely engage. An upper block or cap member generally designated as 48 is mounted on the uppermost of the standard forming blocks 46. The upper block or cap 48 is rounded in transverse section and has a diameter at the lower portion thereof considerably larger than the transverse width of each block 46. The block or cap 48 is of substantially truncated conical configuration tapering upwardly and at the upper end of the block 46 the upper edge thereof is beveled as at 49, so as to eliminate any sharp corner at the upper end of this block. The block 48 is also provided with a plurality of circumferentially spaced apart openings 50 through which the rods 45 are adapted to loosely engage. The upper ends of the rods 45 are threaded as at 51, so that a nut 52 may be threaded onto the threads 51 for securing the supported element in the form of a mast or the like on the cap block 48.

Referring now to Figures 6 to 8 inclusive there is disclosed a further modified form of this invention. The foundation structure disclosed in Figures 6, 7 and 8 includes a base block 53 which is rectangular in plan and is formed in substantially the center thereof with an opening 54.

A plurality of superposed standard forming blocks 55 which are similar to the blocks 27 are mounted on the base block 53. The arms 56 of the blocks 55 extend in the direction of the outer corners of the base block 53 and the outer portions of the arms 56 are formed with an opening 57 through which a tie rod 58 is adapted to engage. The lower end of the tie rod 58 is adapted to be threaded into a nut 59 which is embedded in the base block 53, and an anchoring washer or plate 60 is also embedded in the base block 53 on the upper side of a nut 59.

A cap or head block 61 is disposed on the upper end of the uppermost of the standard forming blocks 55 and is substantially rectangular in plan and of a size substantially equal to the size of the base block 53. The cap or head block 61 is formed with a central rectangular opening 62 and the block 61 is also provided with openings 63 adjacent the corners thereof through which the upper end portions of the tie rods 58 are adapted to engage. The upper end portions of the tie rods 58 are threaded, as at 64, so as to provide for the securing of the lower end portion of a signal mast or other supported element on the upper side of the cap or head block 61. The cap or head block 61 is also provided with a beveled upper edge portion 65, so as to eliminate any sharp corners. The opening 63 provides a means for extending wires, cables or the like, through the cap 61 into the signal apparatus, and also reduces the weight of the cap 61.

Referring now to Figures 9, 10 and 11, there is disclosed a further modification form of precast foundation structure. In this form of the invention, there is disclosed a base member generally designated as 66 which is adapted to be substantially entirely embedded in the ground. The base member 66 includes a lower base plate 67 which has formed integral therewith a pair of upwardly convergent side wall forming members 68.

The space or opening 69 between the two side forming members 68 provides a space for receiving dirt or the like so as to provide additional anchorage of the base structure 66 in the ground. A head or cap 70 is cast integral with the upper ends of the two side forming members 69, and is provided with a central circular opening 71 through which wires, cables or the like may be extended into the signal apparatus.

A cap or head plate 72 is disposed on the upper end of the base member 66 and is rectangular in plan as shown more clearly in Figure 9. The base member 66 has embedded therein a plurality of nuts, and an anchoring plate or washer 75 is disposed above each nut 73. The base member 66 is formed with openings 74 through which bolts 73*a* may extend for engagement with the nuts 73. The bolts 73*a* may extend downwardly through openings 76 which are formed in the cap or head member 72, and the head member 72 is also provided with enlarged openings 77 opening through the upper side 78 of the head member 72 for countersinking the heads 79 of the bolts 73*a*.

The cap or head member 72 is also provided with a plurality of spaced apart openings 80 adjacent the corners thereof and spaced outwardly from the openings 76. Bolts 81 are adapted to engage through the openings 80 and through the base portion 82 of a mast or other supported element. The bolts 81 have nuts 83 threaded onto the lower ends thereof which engage against the lower side 84 of the cap or head member 72.

Referring now to Figures 12 to 14 inclusive, there is disclosed a foundation structure including a base block 85. The base block 85 has embedded therein a plurality of threaded nuts 87,

and an anchoring plate or washer 88 is also embedded in the base block 85 and engages against the upper side of a nut 87. The block 85 is also provided with upwardly extending openings 89 which open through the upper side of the block 85, so that tie rods 90 may be extended through the openings 89 for threaded engagement with the nuts 87.

A plurality of superposed standard forming blocks 91 which are similar in every detail to the blocks 27 are disposed on the base block 85, and each standard forming block 91 is provided with an opening 92 in each arm 93 thereof through which the tie rods 99 are adapted to loosely engage. A second series of standard forming blocks 94 which are similar to the blocks 91 and to the blocks 27 are disposed on the base 85 in spaced relation to the blocks 91.

A cap or head block 95 is disposed on the uppermost of the blocks 91 and 94 and is formed with recesses 96 for permitting the countersinking of nuts 97 within the block 95. The rods 90 terminate at their upper ends substantially coplanar with the upper side 98 of the block 95. The block 95 also has secured therein a plurality of upwardly extending bolts 99 which are embedded at the lower ends within the block 95 and extend upwardly therefrom to permit the attachment of the base portion of a signal pipe compensator or other supported element to the upper side 98 of the block or cap member 95.

Referring now to Figures 15 to 18 inclusive, there is disclosed a foundation structure generally designated as 100, which is adapted to be embedded for the most part within the ground. The foundation structure 100 includes a pair of spaced apart side forming blocks 101 which constitute base blocks, and which have vertically disposed inner edge portions 102.

The blocks 101 have upwardly and inwardly inclined outer side portions 103, so that each block 101 is formed with a relatively large lower end portion 104 and a relatively small or narrow upper end portion 105. Each block 101 is formed with a recess 106 in the outer side thereof and with one or more openings 107 in the upper portion 105 through which bolts 108 may be extended for securing a supported element 109 on the blocks 101. The supported element 109 may be secured to the blocks 101 by means of nuts 110 which are threaded onto the bolts 108.

The blocks 101 are held in spaced apart relation by means of a combined spacing and bracing web or member generally designated as 111. The bracing and spacing member 111 comprises upper and lower elongated bars 112 and 113, respectively, which are disposed in parallel spaced apart relation and are connected together intermediate the ends thereof by a vertically disposed connecting member 114 which is formed integral therewith. The opposite end portions of the bars 112 and 113 are also connected together by an end connecting member 115.

The end connecting members 115 have embedded therein a pair of nuts 117 which are disposed in vertically spaced apart relation, and are anchored within the end member 115 by means of anchoring plates 118. Bolts 116 extend outwardly through openings 117 formed in an end member 101 and are threaded into the nuts 117, being extended through openings 119 formed in the end member 101. As shown in Figure 15, when the base structure 100 is in operative position, the connecting web or spacing member 111 is disposed a substantial distance below the upper surface of the ground, and only the upper reduced end portions of the end or side blocks 101 project above the surface of the ground.

In the use of the foundation structures herein disclosed the base blocks, the standard forming blocks and the webs or head members are initially cast and the height of each foundation which includes the superposed standard forming blocks is determined by the particular size of the element to be supported thereby. By providing the star-shape or crossed standard forming blocks, the ground will firmly pack about the sides of the right angularly related arms of each standard forming block, thereby providing a more firm anchoring means for the foundation than is possible by a solid column or standard.

The standard forming blocks 27 are adapted to be embedded in the ground, and if desired a substantial portion of each head block may also be embedded within the ground. By providing a foundation of a prefabricated construction, as hereinbefore described, it is possible to provide a substantially light foundation having exceptionally strong anchoring capacity to hold the supported structure against overturning, which however is relatively easy to handle due to the fact that the completed foundation may be set up at the location and may also be set up within the hole which is formed in the ground to receive the foundation.

What I claim is:

A precast foundation comprising a solid base block having flat upper and lower faces, nuts imbedded in said base, washers of appreciably greater diameter than said nuts resting upon said nuts to brace the nuts against upward pull, said base having sockets therein leading from its upper face in alignment with registering openings of the washers and the nuts, blocks stacked upon said base to form a column having a solid central portion and arms radiating therefrom and formed with vertical openings aligned with the sockets of the base, a head block resting upon said column, said head block being tapered upwardly and formed with a center opening of appreciably greater diameter than the central portion of the column and with openings registering with the openings of said column, metal rods passed downwardly through the registering openings of the head block and the column and having threaded lower ends engaged in the sockets of the base and screwed into said nuts, upper ends of said rods being threaded and protruding upwardly from said head block, and nuts screwed upon the upper ends of said rods to secure the head block.

BERNARD J. SCHWENDT.