Feb. 9, 1926. 1,572,669

K. MÜLLER

REENFORCED CONCRETE POST

Filed August 13, 1924

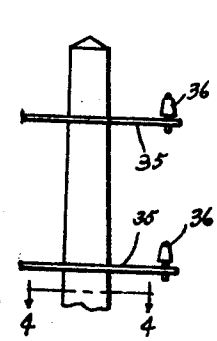


Fig. 1.

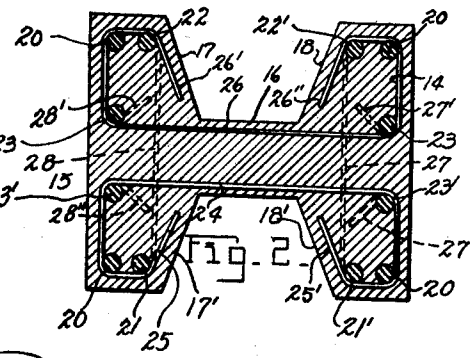


Fig. 2.

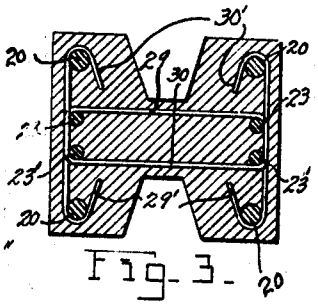
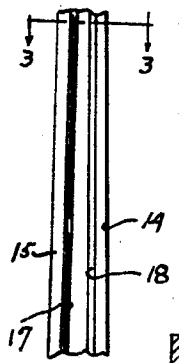


Fig. 3.



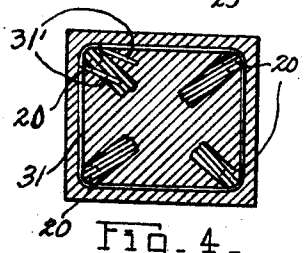


Fig. 4.

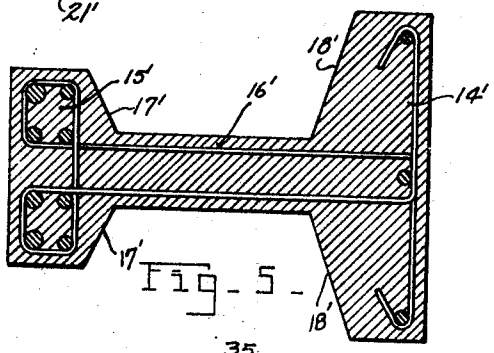
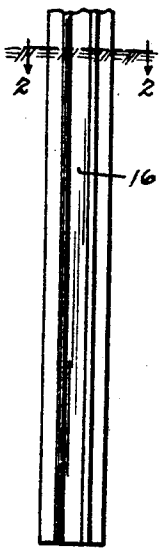


Fig. 5.



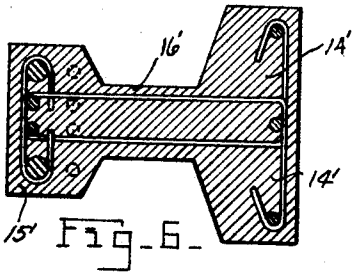


Fig. 6.

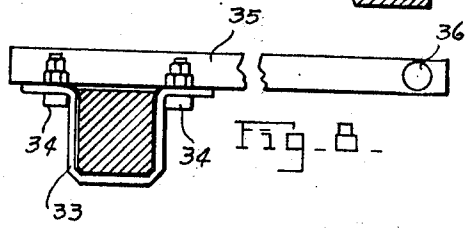


Fig. 8.

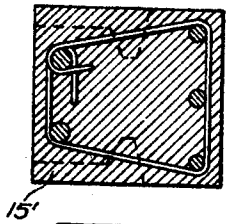


Fig. 7.

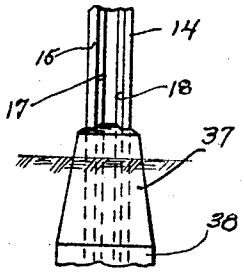


Fig. 9.

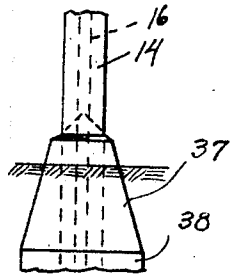


Fig. 10.

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Patented Feb. 9, 1926. 1,572,669

UNITED STATES PATENT OFFICE.

KARL MÜLLER, OF DETROIT, MICHIGAN.

REENFORCED-CONCRETE POST.

Application filed August 13, 1924. Serial No. 731,705.

To all whom it may concern:

Be it known that I, KARL MÜLLER, a former citizen of the Republic of Germany, and who have declared my intention of becoming a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in a Reenforced-Concrete Post, of which the following is a specification,

My invention relates to a new and useful improvement in a post and particularly posts used for supporting telephone wires, telegraph wires, and trolley wires, and the like, in which a post of great strength is required together with considerable length. The present invention provides a post of this class, made from concrete, and so reenforced as to afford a post of this nature, which will be simple in structure, economical of manufacture, and highly efficient in use.

An object of the invention is to provide a post of this class so constructed and reenforced as to present at those parts of the post which are subjected to heavy strain, particularly side strain, a maximum amount of strength.

Another object of the invention is the provision of a post having a contour in cross section, which presents to the post the maximum amount of strength, at the same time reducing the amount of material used in its construction to a minimum.

Another object of the invention is the provision of a concrete post of this class having anchoring means at one end, adapted for imbedding in the ground, or other material upon which mounted, so as to securely anchor the post in position for use.

Another object of the invention is the arrangement in the post of reenforcing members, so co-ordinately positioned as to reduce the amount of reenforcement to a minimum, and without sacrificing the strain resisting qualities desired in the post.

Another object of the invention is the provision in a post of this class of binding members for securing the reenforcing members in assembled relation, which will be simple and tend to retain the reenforcing members in the proper position, while, at the same time, the binding members positioned about the reenforcing members will be quickly and easily assembled.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood from a reference to the accompanying drawings, which form a part of this specification and in which,

Fig. 1 is a side elevational view of a post with parts broken away,

Fig. 2 is a transverse sectional view taken on substantially line 2—2 of Fig. 1,

Fig. 3 is a transverse sectional view taken on substantially line 3—3 of Fig. 1,

Fig. 4 is a transverse sectional view taken on substantially line 4—4 of Fig. 1,

Fig. 5 is a sectional view of a modified form of the invention, taken on substantially line 2—2 of Fig. 1,

Fig. 6 is a sectional view of a modified form of the invention, taken on substantially line 3—3, as shown in Fig. 1,

Fig. 7 is a sectional view of a modified form of the invention, taken on substantially line 4—4, as shown in Fig. 1,

Fig. 8 is a sectional view showing the means of attaching a cross arm to the post when used for that purpose,

Fig. 9 is a fragmentary side elevational view illustrating the anchoring means used in the invention,

Fig. 10 is another side elevational view of the anchoring means shown in Fig. 9.

The post shown in the drawings is formed, preferably from concrete, or other plastic material which may be moulded in forms. In the preferred form, the post is formed double T shaped in cross section, as shown in Fig. 2, having two portions which may be termed "heads" 14 and 15, connected by a portion which may be termed a "neck" 16, the inwardly faced side walls 17, 17′ and 18′ being inclined outwardly from the outer face of the heads, as shown in Fig. 2, so that a proper form is provided into which the plastic material may be formed. Mounted in the forms and extending longitudinally of the post are reenforcing metallic rods 20, which are positioned at the outside corners of the heads 14 and 15. Mounted so as to extend longitudinally of the post in alinement with the rods 20, so as to determine a line parallel to the neck 16, are reenforcing rods 21, 21′, 22 and 22′. Imbedded in the post, so as to lie in the line transversely to the neck 16 determined by the reenforcing rods 20 are reenforcing rods 23 and 23′. As shown in Fig. 3, the reenforcing rods 22, 22′

and 21 and 21′ do not appear, these reenforcing rods extending approximately one half of the length of the post from the bottom upwardly. It is thus seen that the lower portion of the post is more heavily reenforced than that portion above it. The purpose of reenforcing the posts in this way is to assure the greatest strength at that portion of the post which is subjected to the greatest strain. This is particularly important where the post is subjected to a side strain resulting from the elements, or an unusual pull sideway, because of the load which is mounted on the post. As shown in Fig. 4, only the reenforcing rods 20 extend to the upper portion of the post. This serves to lighten the reenforcing material at the upper portion of the post, which is subjected to less strain than the lower portion of the post, thus reducing the reenforcement in the post, as the distance from the ground is increased, the reduction of the reenforcement being proportionate to the reduction in strain to which the post is under normal conditions subjected. As shown in Fig. 4, the formation of the post, at its upper end in cross section, does not show the recess shown in Figs. 2 and 3, the side walls being continuous throughout.

Although the post may be made of various sizes and various lengths for the purposes of illustration, when the post is used for carrying telephone or telegraph wires, the length of it would be approximately 9.9 meters. The heavy reenforcement would extend approximately 4.8 meters from the lower end of the post. In other words, the reenforcing rods 22, 22′, 21 and 21′ extend, when the post is the length mentioned, approximately 4.8 meters from the lower end. The reenforcing rods 23 and 23′ would extend approximately 8.3 meters, the reenforcing rods 20 extending throughout the entire length of the post. The cross section of the post would be changed at the place where the reenforcing rods 23 and 23′ terminate at their upward end, so that, from the point of terminating, the reenforcing rods 23 and 23′ upwardly, the contour of the post would be as shown in Fig. 4. If desired, the reenforcing rods 20 may be terminated slightly below the upper end of the post, so that the post would then have a contour and formation, as shown in Fig. 8. As shown in Fig. 2, the reenforcing rods are held in co-operative relation by means of binding wires bent around the reenforcing rods. At the position shown in Fig. 2, four separate pieces of wire are used, the wire 24 being bent around the reenforcing rods 20, 21 and 23′ and having the angularly extending portion 25 at one end and the angularly extending portion 25′ at the opposite end. The wire 26 is similarly bent around the reenforcing rods 20, 22 and 23 at one end and provided with the angularly extending portion 26′. At the opposite end, the wire is bent around the reenforcing members 20, 22′ and 23 and provided with the angularly extending portion 26″. The wire 27 is at one end bent around the reenforcing rods 22′, 20 and 23 and provided with the angularly extending end 27′. The opposite end is angularly turned and bent around the reenforcing rods 21′, 23′ and 20 and provided with the angularly extending end 27″. The wire 28 is bent at one end around the reenforcing rods 22, 20 and 23, and provided with the angularly extending end 28′. The opposite end is bent around the reenforcing rods 20, 21 and 23′ and provided with the angularly extending end 28″. It is thus seen that the reenforcing rods are bound firmly to each other and retained in their relative position. A feature of this arrangement of the binding wires is that the wires are all of uniform size and shape and easily assembled upon the reenforcing rods to retain the same in operative position.

The reenforcing rods shown in Fig. 3 are held together by binding wires, the wire 29 being bent around the reenforcing rod 23 in engagement with the rod 23′ and around the rod 20, so as to provide the angularly extending end 29′. The wire 30 is bent around the reenforcing rod 23′ extending in engagement with the rod 23 and curled around the rod 20 at its opposite ends, to provide the angularly extending portions 30′ at each end. The rods 20, as shown in Fig. 4, are bound together by means of a wire 31, which is bent at its ends around one of the reenforcing rods, to provide the inwardly projecting angularly turned ends 31′.

In the modified form, the post, throughout the major portion of its length, is formed of such contour as to be provided with an enlarged head 14′ connected by an elongated neck forming portion 16′ to a smaller head 15, the faces 17′ and 18′ of the heads being inclined inwardly toward the neck and away from the outer face of the heads. The contour of the post changes slightly proceeding from the base to the top, inasmuch as the post is designed to be made tapered toward the top. Imbedded in the lower portion of the post, are reenforcing rods positioned in the smaller head 15′ in groups of fours, two of such groups being present, as shown in Fig. 5. The inner set of these reenforcing rods projects along the post to substantially that line which is indicated by the section line 3—3 on Fig. 1, the section shown in Fig. 6 being taken just above the termination of these reenforcing rods, the inner set of these groups being shown in dotted lines in Fig. 6. The distance of extension of the inner set of these groups of reenforcing rods, which are shown in dotted lines in Fig. 6, is substantially 4.8 meters when the

post is formed 9.9 meters in length. As shown in Fig. 5, a single wire is provided for retaining the reenforcing rods in position, this wire being looped around the separate groups of fours intermediate its ends, the ends of the wire being angularly turned around the reenforcing rods projected through the head 14'. The rods shown in the head 14' extend throughout the length of the post terminating a short distance below its top. As shown in Fig. 6, two binding wires are used for tying the reenforcing rods together, one end being bent around the end reenforcing rod in the head 14' and the other end being bent around one of the outside reenforcing rods, as shown in Fig. 6. The contour of this modified form of post is also changed at a certain height to a square form as shown in Fig. 7. It will be noted that the central reenforcing rods which appear in the head 15' in Fig. 6 do not appear in Fig. 7, these reenforcing rods being terminated below the point at which the section shown in Fig. 7 was taken. The length of the inner set of reenforcing rods, which do not appear in Fig. 7, is substantially 8.3 meters in length. In the formation shown in Fig. 7, a single tie wire is used for binding the reenforcing rods together, the opposite end of this tie rod being curled around the same reenforcing rod. The purpose of terminating the reenforcing rods is as above stated to provide the greatest reenforcement in the post at those points which are subjected to the greatest strain, and to reduce the reenforcement as the points in the post are reached which are subjected to less strain.

In Fig. 8, I have shown a section of the post taken above the termination of all of the reenforcing rods, should it be desired to terminate the remaining rods slightly below the top, the post in this instance being substantially square and embraced by a U-shaped clip 33, which is bolted by suitable bolts 34 to an angle iron 35, which serves as a cross arm for carrying wires which are attached to insulators 36. It is apparent that any necessary attachment may be made to the post, in order to provide the proper carrying means for the purposes for which the post is intended. In Fig. 9, I have shown the post provided with an enlarged base adapted for anchoring the post in the ground more securely, the base having a tapered portion 37 terminating in the portion 38 in which the walls are parallel. If desired, a flat base may be extended outwardly from the periphery or sides of the portion 38 in order to give a more secure anchoring to the post when mounted in operative position.

In the present invention, it is thus seen that I have provided a concrete post which may be used for the purposes indicated herein, possessing the necessary strength to resist lateral strains and to carry the loads usually placed upon such posts. It is also apparent that the reenforcement is reduced to a minimum, and that the method of tying the reenforcing rods together is one that is practicable and permits of easily tying of the rods and offers the least resistance to the plastic material, when the same is being poured into the form. It is to be noted that the neck which joins the heads is traversed by reenforcing rods adjacent its opposite sides and that the heads have traversing throughout their greater length reenforcing rods which serve to present great tensile strength to the neck and the heads and bind the reenforcing rods in their proper positions.

While I have illustrated and described the preferred form of structure, I do not wish to limit myself to the precise form of structure shown but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. A post formed from concrete or the like and having oppositely disposed web-forming portions connected by a neck-forming portion; reenforcing rods projected longitudinally through said web-forming members, the number and location of said reenforcing rods in each of said web-forming members being duplicated at opposite sides of the medial line of said neck-forming portion; and wires projected through said neck-forming portion and bent at opposite ends around the reenforcing rods in the opposite web-forming members, said wires being projected through said neck on the same side of the medial line of said neck as the reenforcing rods embraced thereby are positioned.

2. A post formed from concrete or the like and having oppositely disposed web-forming portions connected by a neck-forming portion; reenforcing rods projecting longitudinally through said web-forming members, the number and location of said reenforcing rods in each of said web-forming portions being duplicated at opposite sides of the medial line of said neck-forming portion; and a plurality of binding members projected through said neck-forming portion, each of said binding members being projected between the medial line and the outer edge thereof for connecting the reenforcing rods in opposite webs on corresponding sides of the medial line of said neck, a plurality of said binding members being positioned on one side of said medial line, and a plurality being positioned on the opposite side of said medial line.

3. A post formed from concrete or the

like, and having oppositely disposed web-forming portions connected by a neck-forming portion; reenforcing rods projecting longitudinally through said web-forming member, the number and location of said reenforcing rods in each of said web-forming portions being duplicated at opposite sides of the medial line of said neck-forming portion; and a plurality of binding members projected through said neck-forming portion, each of said binding members being projected between the medial line and the outer edge thereof for connecting the reenforcing rods in opposite webs on corresponding sides of the medial line of said neck, a plurality of said binding members being positioned on one side of said medial line, and a plurality being positioned on the opposite side of said medial line, each of said binding members being angularly turned at opposite ends outwardly from said medial line and doubled upon themselves, adjacent their extreme ends.

In testimony whereof I have signed the foregoing specification.

KARL MÜLLER.