A profiled member, such as an essentially elongated cylinder, is formed with at least two spatially relatively offset openings therein, the openings being of such size to receive reinforcing rods, and formed to engage the rods and interlock therewith. The profiled members are open at both ends to permit pouring of cement therethrough.
SPACER MEMBER FOR REINFORCING RODS, IN REINFORCED CONCRETE CONSTRUCTION

The present invention relates to a spacer member for use in reinforced concrete construction, and more specifically to space the reinforcing rods from the pouring form.

In reinforced cement construction, reinforcing rods are placed into the pouring form which, together with the form, must be mounted before the cement can be poured. The reinforcing rod must be of such length, and must be so arranged that, when the cement is poured, they will not be at the surface of the poured cement. This requires location of the rods with distance elements which provide distance of the reinforcing rods from the cement form which, when the cement hardens, will form the outer surface of the concrete. The reinforcing rods must be so arranged and so fixed that, when cement is poured, they will not move or shift in position. The distance members have reinforcing rods placed thereon, determining the distance of the reinforcing rods from the form. To prevent shifting, for example when cement is being poured or, if the cement is being vibrated, the distance members have customarily been provided with wire loops or the like with which the distance members and the reinforcing rods are interconnected, by twisting.

Distance members with wire loops for interconnection have the disadvantage that the interconnection must be carried out, for each distance member, at the construction site. This is time consuming and is a source of error and trouble later.

It is an object of the present invention to provide a spacer member which can be placed in position on the job, and which does not require additional work steps to securely the reinforcing rods thereto.

SUBJECT MATTER OF THE PRESENT INVENTION

Briefly, the distance member is a profiled shaped structural body, open at both longitudinal ends, formed with at least two relatively spatially offset openings which are shaped and sized that they will receive reinforcing rods therein, the opening being formed with respect to the rods to engage and interlock therewith, as the rods are being placed.

DRAWINGS

FIG. 1 is a detailed side view of another embodiment of the spacer member;
FIG. 2 is a view similar to FIG. 1 rotated 90°; and
FIG. 3 is a bottom view of the embodiment of FIGS. 2 and 3.

The spacer member comprises a body 21 which is generally sleeve-shaped, and has two pairs of openings 22, 23, and 24, 25 (FIG. 8), at right angles, diametrically, with respect to each other. Each opening itself has parallel side surfaces 26, 27, 26', 27'. The base of the openings 22 - 25 is extended into two slits, 28, 29, between which a ridge 30 will be left. The reinforcing rod is placed on the ridge 30 in the respective opening. Slits 28, 29 extend the sides 26, 27 of the opening, so that the portions 31 - 34 of the body 21 have a relatively long free length. Extending the sides 26, 27, 26', 27' by the slits 28, 29, 28', 29' permits leaving the cross-sectional area of the free portions of the body 31 - 34 to remain constant, so that these portions will be resiliently yielding. This is particularly important when a spacer member is to be used with reinforcing rods of different diameters. The bottoms of the pair of openings 22, 23 are at a lower level than those of openings 24, 25 (see FIGS. 1 and 2).

The spacer members 21 have the openings shaped in such a manner that the sides 26, 27, 26', 27' defining the openings are formed with constricting projections 35, 35', projecting slightly inwardly. The distance of projection is big enough so that space between projections is just slightly less than the smallest diameter of the reinforcing rods with which the spacer member is to be used. Upon insertion of the spacer member, the inwardly extending projection 35 will securely lock the spacer to the rods. The openings slightly diverge in the direction towards bottom 36 of the spacer member, that is, form the top 37 downwardly (FIGS. 1 - 2). This facilitates insertion of the reinforcing rods. The projections 35, 35' of transversely arranged openings are located at different distances from the bottom of the openings — compare FIGS. 1 and 2. Preferably, the lower position of the projection, as shown projection 35 (FIG. 1) is associated with the deeper openings 22, 23. The member bears with surface 36 against the pouring form. This surface is not continuous, but rather undulates, being formed with depressions or grooves 38, in order to facilitate penetration of cement into the interior of the body 21. A number of bearing surfaces 39 will remain on the bottom side 36, the bearing surfaces 39 themselves engaging the pouring form.

The interior of body 21 is ribbed, as generally seen at 40. Ribs 40 are divided into radially extending webs 41, and longitudinal ribs 42, the ribs 42 serving, simultaneously, as a reinforcement for the ridges 30, which extend over the webs 41. Additionally, ribs 43 are located in the region of the form bearing surfaces 39. Transition of the ribs 42, or 43, respectively, to the webs 41 may, as in ribs 42, be abrupt; it may, also, as illustrated with ribs 43, be gradual. Ribbing 40 substantially increases the strength of the spacer element. The ribs 43, insofar as they are not yet reinforced by the webs 41, are additionally reinforced, as well as the surface 39, where the spacer member bears on a pouring form. The elastic yielding property of the hollow body portions 31 - 34 is not impaired; the ribbing, however, increases the bearing strength and the form stability of the entire spacer member. By forming the openings, as illustrated, sufficient elasticity is provided to accept reinforcing rods of various diameters, and at the same time provide for interlocking of the element with the reinforcing rods, so that, after the reinforcing rods are inserted, it is practically impossible that they snap out, without application of substantial outside force.

Body 21 is illustrated as a cylindrical sleeve; the body may have any other cross-sectional aspect, for example elliptical, or polygonal, triangular, or square. The spacer need not be cylindrical, but can be conical or spherical, or hemispherical.

Various changes and modifications may be made within the inventive concept.

We claim:
1. Spacer member for reinforcing rods to space the rods from the wall of a pouring form comprising a profiled body having at least two pairs of transversely directed openings therein (22, 23; 24, 25), each adapted to receive a reinforcing rod therein, the openings being formed, with respect to the
rods, to engage and interlock with the rods, the bottoms of the openings of one pair being at different level with respect to the bottom of the opening of the other pair, the inside edges (26, 27, 26', 27') of the openings extending beyond the bottom to form longitudinally extending slits (28, 29, 28', 29') continuing the opening and extending the opening beyond the bottom, leaving a ridge (30, 30') therebetween, the ridge forming a bearing surface for the reinforcing rods, the ridges at the bottoms of one pair of openings being at different longitudinal level with respect to the ridges at the bottoms of the other pairs of openings; cross-connecting webs (41) formed transversely of the hollow body (21); and ribs (42, 43) formed on the walls of the hollow body and merging with said webs (41).

2. Spacer member according to claim 11, wherein the edge surfaces (26, 27, 26', 27') defining the openings have necked-in projections extending slightly towards each other to form a narrowed neck portion (35, 35') in the region of the mouth of the openings.

3. Spacer member according to claim 1, wherein the webs are located at the level of oppositely located ridges (30).

4. Spacer member according to claim 1, wherein the ribs (43) extend longitudinally of the body to substantially the terminal end of the lower surface thereof.

5. Spacer member according to claim 1, wherein the mouths of the openings are divergent and enlarged to about the diameter of the rods to be received by the spacer member.