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SPACER FOR CONCRETE REINFORCING BARS

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FIG. 1

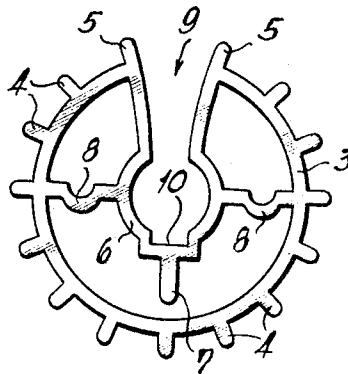
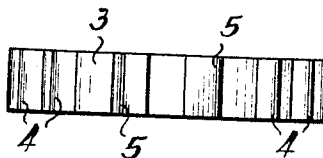


FIG. 2



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SPACER FOR CONCRETE REINFORCING BARS
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5 Claims. (Cl. 52—689)

This invention relates to reinforced concrete, and more particularly to spacers for the reinforcement bars. More specifically, the invention relates to spacers of the type comprising an essentially cylindrical disk having an inner and an outer ring, and a radially extending and outwardly expanding mouth-like opening.

Spacers of this type which are intended to be clamped on the reinforcing bars, are known in a variety of embodiments. Preferably they are made of plastics. Among the known spacers is one which has an octagonal configuration, smooth exterior walls, and a mouth-like opening formed by two tongues bent inwardly from the exterior mantle. The inner recess serving to accommodate the reinforcing bar, is formed by the free ends of the two tongues as well as by two clawlike stays extending from the exterior mantle inwardly, at right angles to the tongues; this inner recess has a square section. This construction provides for a strip-like contact only of the reinforcing bar with the wall segments of the inner recess. In order to prevent individual spacers from being placed on the form differently—i.e. one with a side face, another with a corner edge—whereby the distance between reinforcing bars and form would be rendered non-uniform, a rib extends around the octagonal body. As the width of this rib, however, is materially narrower than the height of the wall of the spacer, a spacer of this or any similar type can not be manufactured by an extrusion process, much as this mode of manufacture would be preferred for economic reasons. Moreover, the smooth outer faces of this kind of spacer lack the capacity of establishing and maintaining gripping contact with the surrounding concrete.

It is an object of the present invention to provide an improved spacer which has none of the drawbacks associated with spacers of the prior art, but which combines a sound stability with yielding, springlike elasticity and which moreover, is firmly and securely gripped by the surrounding concrete.

It is a further object of this invention to provide a spacer which when disposed in horizontal position, protects the reinforcing bar from the access of moisture coming from the outside.

It is another important object of the present invention to provide a spacer which can be readily manufactured by an extrusion process.

A still further object of the invention is the provision of a spacer particularly adapted for use in connection with reinforcing bars made of torsion steel.

Other objects, and the manner in which the same are attained, will become apparent as this specification proceeds.

Pursuant to the above objectives, the present invention contemplates to provide a spacer comprising an inner and an outer ring, and one or several stays or spokes extending therebetween. Preferably, the spokes are provided with curved or angular portions so they will withstand the compression or tensile stresses encountered when the spacer is slid onto the reinforcing bar, without any danger of rupture. In order to avoid compression of the spacer in the direction of the opening in which the reinforcing bar is inserted, a stay is provided on the side of the inner ring remote from such opening, this stay ex-

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tending toward the outer ring but terminating at a distance therefrom so its free end is disposed between the two rings. This stay may also be provided on the outer ring and extend inwardly, its free end being disposed in proximity to but spaced from the inner ring.

In order to accommodate a reinforcing bar made of torsion steel and therefore, comprising helical ribs extending around the bar, the inner ring of the spacer according to the invention is provided, on the side remote from the mouth-like opening through which the reinforcing bar is inserted in the spacer, with a recess or groove adapted to be engaged by one of such ribs while the other extends in the mouth-like opening.

The spacers according to the invention lend themselves with particular advantage to being used in connection with vertically extending reinforcing bars. In this event an embodiment of the novel spacer is selected wherein the stays extending between the inner and outer rings are mounted on only one of these rings. This arrangement prevents water accumulating on the outer ring from penetrating via the stays, to the inner ring and hence to the reinforcing bar; instead, the water is absorbed by the concrete. Thus the reinforcing bar is protected against access of moisture, and any danger of rusting is effectively eliminated. In order to secure this effect the spacer is clamped on the reinforcing bar in such a manner that the mouth-like opening is disposed remote from the wall of the form, so that once the form has been filled with concrete, the reinforcing bar is completely protected toward the outside.

The relatively large cut-outs remaining intermediate the inner and outer rings, insure that in the region of the spacer, the concrete mass is not weakened appreciably.

In the drawing accompanying this application and forming part thereof, one embodiment of the invention is shown diagrammatically by way of example, with illustrative rather than limitative intent.

In the drawing:

FIG. 1 is a plan view of a spacer according to the invention, and

FIG. 2 is a side view of the spacer shown in FIG. 1.

Referring now to the drawing, wherein like elements are denoted by identical reference numerals, the spacer according to the invention is seen to comprise an outer ring 3 from which ribs 4 extend radially and outwardly. Joined to the outer ring 3 is a band-shaped piece of material comprising the guiding walls 5 defining between them, the mouth-like opening 9, and the inner ring 6 which, together form a keyhole into which the reinforcing rod is fitted. Reinforcing spokes 8 enhancing the stability of the spacer, extend between the outer ring 3 and the inner ring 6. These indented spokes 8, as shown in the drawing, include curved portions which could also be angular which are needed for taking up such compression or tensile stresses as may be encountered when the spacer is clamped on the reinforcing steel bar.

The inner ring 6, on the side remote from opening 9, is provided in its interior, with a squared recess 10, and behind this squared recess and on the outside of the inner ring 6 there is provided a stay 7 which serves as a stop because the free end of said stay extends into the proximity of the outer ring 3. This stay is effective to prevent the inner ring of the spacer from bending excessively at the base of the keyhole slot, under the influence of a large external downward or twisting load or stress which is transmitted to the spacer by the reinforcing bar.

The reinforcing bar (not shown in the drawing) is inserted in the spacer through the mouth-shaped opening 9. In the event this bar is made of torsion steel, one of the two helical ribs extending around the bar en-

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gages the groove 10 while the other, opposite rib is accommodated in the opening 9.

I wish it to be understood that I do not desire to be limited to the precise details of construction, design and operation shown and described, as modifications within the scope of the following claims, which do not depart from the spirit of the invention nor sacrifice any advantage thereof, may occur to workers in this field.

I claim:

1. A one-piece cylindrical disc spacer for the longitudinal alignment of reinforcing bars which are laid in concrete and tensioned to reinforce the concrete, said one-piece disc having an outer ring, an inner ring, said outer ring being interrupted by substantially straight guiding walls which project beyond the periphery of said outer ring, said guiding walls extending inwardly to define a mouth opening to said inner ring, said inner ring having its base portion which is remote from said opening squared and thereby forming with said guiding walls a keyhole with a squared base into which the reinforcing bar is fitted, spokes including indented portions disposed between and connecting said inner ring and said outer ring for taking up stresses when the spacer is clamped onto the reinforcing bar and a stay which projects away from the squared base of the keyhole slot into proximity with the inside of the outer ring to serve as a stop for preventing excessive bending of the keyhole slot under external stress.

2. Spacer according to claim 1, wherein the indented portion of the spokes is a curved portion.

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3. Spacer according to claim 1, wherein the indented portion of the spokes is an angular portion.

4. Spacer according to claim 1, comprising ribs extending radially and outwardly from said outer ring, said ribs projecting beyond the periphery of said outer ring to the same extent as said guiding walls, to thereby aid in the longitudinal alignment of the reinforcing bar.

5. A spacer for concrete reinforcing bars as claimed in claim 1, wherein said spokes interconnecting said outer and inner rings are displaced by about 90° from said guiding walls, and said stay is mounted at the back of the squared base of the keyhole slot and is displaced by about 90° from said spokes.

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