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(54) Stirrups for the construction of rebar reinforcements for reinforced concrete beams

(57) This invention consists of constructing the stirrups in a way that the top horizontal bar is shaped with high and low sections so that the top longitudinal round bars are placed on the high sections and the top of the negative round bars are supported on the low sections. In this manner, the vertical branches of the stirrups are anchored on the top longitudinal round bars above the round bars that cover the negative moments, meeting the conditions imposed by the shear and tangential stress calculation.

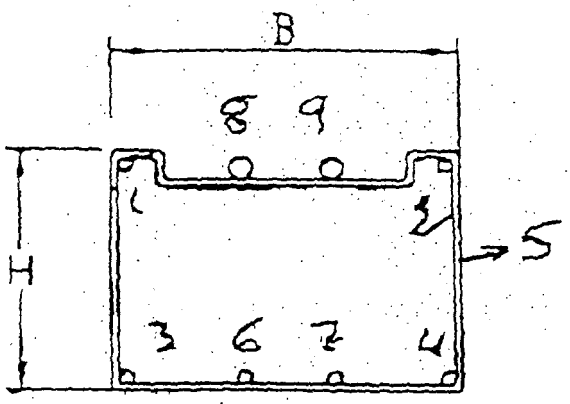

Fig 2

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Description

PURPOSE OF THE INVENTION

[0001] This descriptive fact sheet refers to an application corresponding to stirrups for the construction of rebar reinforcements for reinforced concrete beams which enables the negative round bars to be placed on the top horizontal bar of the stirrup.

FIELD OF THE INVENTION

[0002] This invention is to be applied in the construction industry, specifically in the manufacture of rebar reinforcements for reinforced concrete beams.

BACKGROUND OF THE INVENTION

[0003] We are not aware of any precedents to this invention given that the calculation and construction manuals for reinforcements of reinforced concrete beams have always specified that the round bars for absorbing negative moments should be inside the stirrups

DESCRIPTION OF THE INVENTION

[0004] The habitual elements that make up the reinforcement for reinforced concrete beams are: the top longitudinal round bars nos. 1 and 2; the bottom longitudinal round bars nos. 3 and 4, the stirrups no. 5; the bottom reinforcement round bars nos. 6 and 7 and the round bars for absorbing the negative moments nos. 8 and 9, as illustrated in figure 1. The drawing presented here is of a generic and non-exhaustive nature. When the reinforcements constructed according to this model are placed in situ, to position the negative round bars at the point determined by the calculation these must be shifted until placing them on the bottom part of the top horizontal transversal branch of the stirrups.

[0005] This procedural method is very laborious due to the difficulty involved in shifting the negative moments reinforcements between the reinforcements of the pillars and placing them inside the reinforcements of generally two beams. We must bear in mind that this involves various rigid steel bars of considerable length.

[0006] This invention proposes constructing the stirrups in a way that the top horizontal bar is shaped with high and low sections so that the top longitudinal round bars are placed on the high sections and the top of the negative round bars are supported on the low sections. In this manner, the vertical branches of the stirrups are anchored on the top longitudinal round bars above the round bars that cover the negative moments, meeting the conditions imposed by the shear and tangential stress calculation. The negative moments bars can be placed above the horizontal part of the transversal reinforcement as illustrated in figure 2. This system reduces the cost of manufacturing the reinforcements.

[0007] This fact sheet refers to an invention patent application for the construction of rebar reinforcements for reinforced concrete beams using a type of stirrup that enables the negative round bars to be placed supported on the top part of the horizontal bar of the transversal reinforcement, whilst complying with the rules of the calculation for reinforced concrete as regards shear and tangential stress, thereby facilitating the placement in situ of the round bars for absorbing the negative moments as well as the construction in factory of the corresponding reinforcements.

DESCRIPTION OF THE DRAWINGS

[0008] To complete the description provided here and for the purpose of a better comprehension of the characteristics of the invention, attached to this descriptive fact sheet, as an inseparable part of it, is a set of illustrative and non-exhaustive plans representing the following:

Figure 1 - Illustrates a section of the reinforcement with the conventional two-branch stirrup.
Figure 2 - Illustrates a section of the reinforcement with the proposed stirrup.
Figure 3 - Illustrates a section of the reinforcement with another variation of the proposed stirrup.
Figure 4 - Illustrates a section of a reinforcement with a conventional stirrup of three vertical branches, and in this figure the round bars for absorbing the negative moments are nos. 9 and 10.
Figure 5 - Illustrates a section of the reinforcement with the proposed stirrup, to substitute that of figure 4.
Figure 6 - Illustrates a section of a reinforcement with the conventional four-branch stirrup. In this figure the round bars for absorbing the negative moments are nos. 11 and 12.
Figure 7 - Illustrates a section of the reinforcement with the proposed stirrup to substitute that of figure 6.

[0009] Given that the variety in shape and dimensions of the stirrups is unlimited, the above-mentioned drawings and the preferred embodiment of the invention refer to the most widely employed stirrups in construction. We must bear in mind that the novelty resides in that the top bar of the stirrups has high and low sections, i.e., a broken line.

PREFERRED EMBODIMENT OF THE INVENTION

[0010] As we can see from these figures, this invention can be applied to all reinforced concrete structures as per the following instructions:

[0011] The formwork of the beams is put in place and the reinforcements of the beams are supported on it. Subsequently, the round bars of the negative moments are supported on the top part of the reinforcements instead of initially having to introduce them into a reinforcement,

run them inside the reinforcement until the end of the negative round bars and then shift them through the inside of the other reinforcement as far as the position determined by the calculation, finishing off with the task of tying or welding them one by one under the top horizontal bar of the stirrups.

[0012] We consider it unnecessary to make this description more extensive as any expert in the field will understand the scope of the invention and the advantages that it entails

[0013] The materials, shape, size and positioning of the elements will be subject to variation, provided that this does not alter the essence of the invention.

[0014] The terms employed in this descriptive fact sheet should be interpreted in a broad and non-restrictive manner.

Claims

1. st - Stirrups for the construction of rebar reinforcements for reinforced concrete, **characterised by** their top horizontal bar being in the shape of a broken line, enabling the longitudinal round bars to be positioned on its higher sections and fastened by welding or any other joining method, with the round bars of the negative reinforcements supported on its lower sections.

2. nd - Stirrups for the construction of rebar reinforcements for reinforced concrete, **characterised by** the method of placing the negative round bars as per claim no. 1, consisting of supporting these round bars over the lower section of the top bar of the stirrups of the beam's reinforcement.

3. rd - Stirrups for the construction of rebar reinforcements for reinforced concrete, **characterised** because in their manufacture, the negative round bars can be joined as per claims nos. 1 and 2, enabling these to be placed on the top section of the stirrups of the beam's reinforcement at a single time without laborious operations

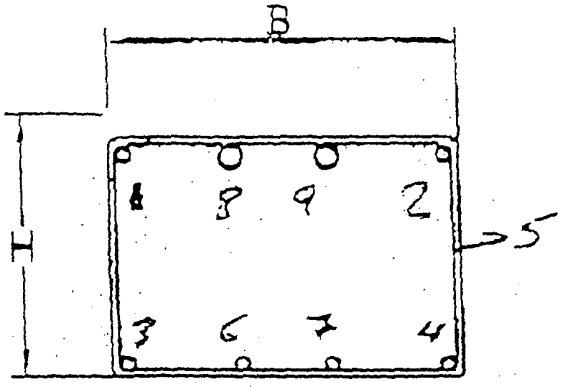

Fig 1

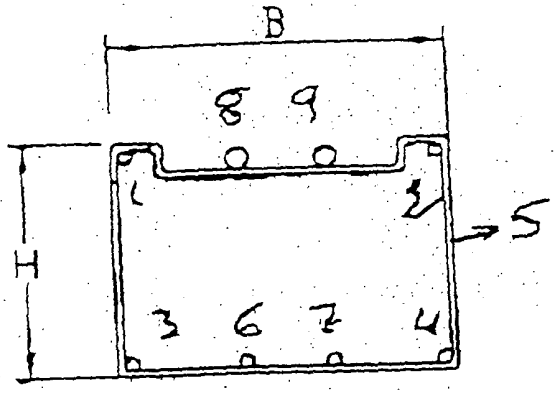

Fig 2

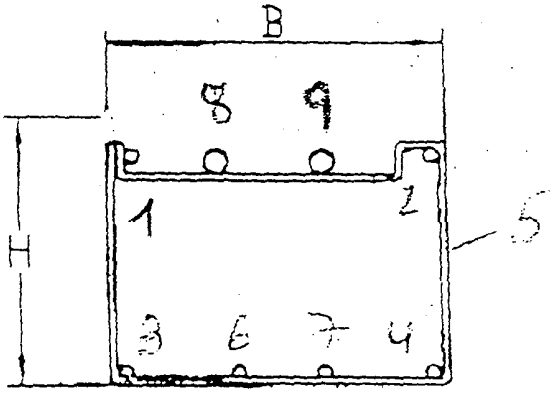

Fig 3

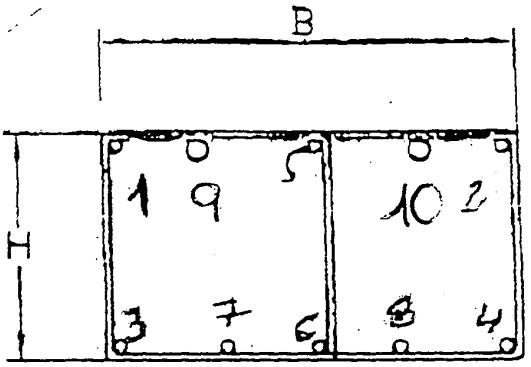

Fig 4

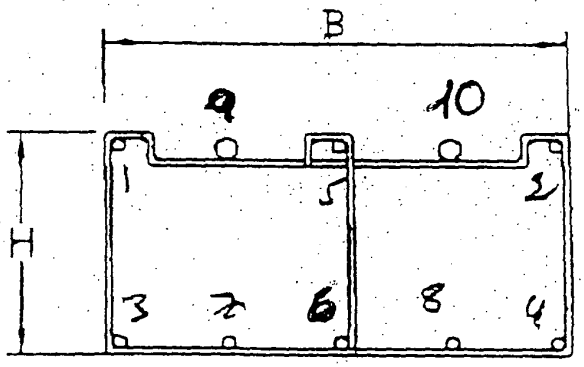

Fig 5

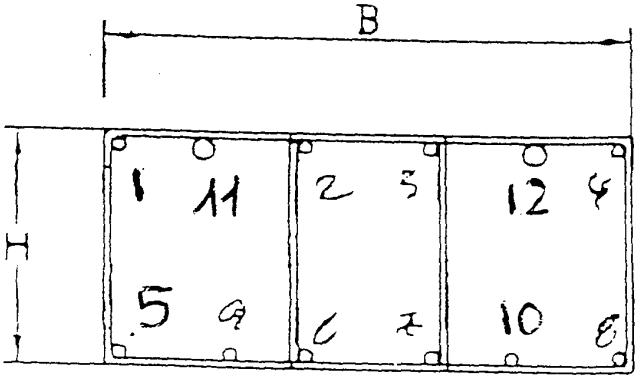

Fig 6

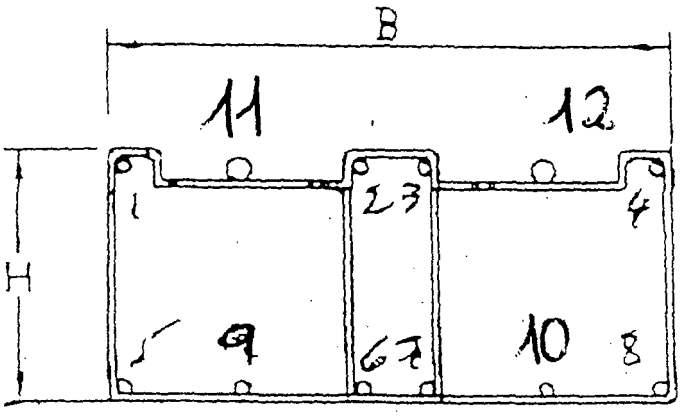

Fig 7