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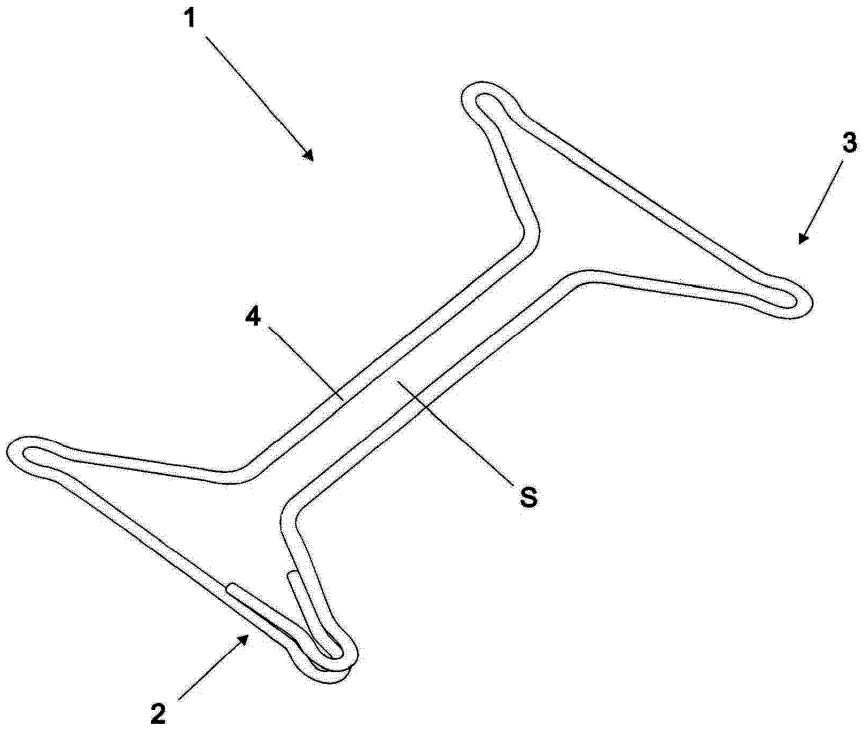
(54) Metal stirrup

(57) A stirrup (1), made of material with dimensions compatible with rebars (V) to be connected and locked, whose configuration from the industrial process of folding has vertexes have the shape of the letter "L", with a double intermediate portion (4), so that no vertex is "swinging".

FIG 1



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Description

[0001] This invention relates to a metal stirrup, ie to a support for reinforcing bars (rebars) used in structural building components, notably of reinforced concrete. In particular, the stirrup allows more uniform and rapid assembly of hardwares used in structural components in civil construction, mainly for composing frames used in the manufacture of beams, columns and other structural components. This invention is distinguished by being absolutely innovative and more enhanced than the usual stirrups, facilitating the building procedure and making it more safe, giving greater stability to the hardware in the procedure of concrete filling.

[0002] Metal structures are known to those skilled in civil construction, and are referred to as frames, for composing beams, columns and other components made of reinforced concrete. Such structures are composed of rebars, that are normally distributed in such a way to form rectangular or square pieces. Said rebars are joined by formed metal components called stirrups, which can have various dimensions and shapes, compatible with the technical needs of construction, in order to give the frame its final shape. For that, it is necessary that the stirrup vertexes are compatible in number with the number of rebars used in the manufacture of the hardware.

[0003] A current prior art stirrup, regardless of its configuration, presents vertexes having a concave rounding that allow the perfect and precise fixing of said stirrup to the respective rebars that form the frame, not needing metal wire, like, for instance, annealed wire, to fix said stirrup to the set of rebars. Related to the configuration, the conventional models mostly have a crossing with a single intermediary section, which connects the ends of said stirrup, making it susceptible to twisting moments, not manually absorbed, which can cause movement during the process of filling, inside the moulds.

[0004] In view of these and other inconveniences, the inventor, after much research, has created the stirrup of the invention, which consists of a metal piece, of material previously selected and suitable for the locking function for which it was developed, being obtained by an industrial manufacturing process, including folding in specific equipment. The stirrup resulting from said folding process has in its final appearance vertexes with an L-shape with a double intermediate portion, so that no vertex is "swinging".

[0005] Therefore, the set is compact, safe and resistant.

[0006] The stirrup may be formed from material of circular cross-section, eg metal wire or rod material, such as iron or steel.

[0007] The material of the stirrup may be formed into the requisite number, eg four, of vertexes, each of which is generally L-shaped. The L-shaped vertexes may be arranged such that the stirrup as a whole has an H-shape, comprising two pairs of vertexes (arranged back to back) connected by double transverse members.

[0008] An embodiment of the invention is described in greater detail in the following, by way of illustration only, with reference to the attached drawings:

Fig. 1: perspective view of the stirrup;
Fig. 2: plan view of the stirrup;
Fig. 3: perspective view of the stirrup in use.

[0009] The metal stirrup of this invention is composed essentially of a metal piece known as stirrup (1), made of material previously selected, as, for instance, iron, carbon steel or the like. The material of said stirrup (1) has a circular cross-section and the vertexes are arranged in a rectangular shape, with dimensions compatible with the rebars (V) to be connected and locked.

[0010] The stirrup (1) is obtained from an industrial process of mechanical shaping, with folding or drawing, the ends (2) being connected through welding or the like.

[0011] Said stirrup (1) has vertexes (3) with semicircular concavities, each one with a diameter compatible with said rebar (V), in order to bring about, once the stirrup (1) is fitted to these rebars (V), immediate locking between the pieces, notably as a function of the configuration adopted for said roundings.

[0012] The stirrup (1), from one of its vertexes (3), makes a continuous crossing, like the "L" letter, so that all vertexes (3) are connected to the intermediate section (S), forming a double crossing (4) in this area, offering more rigidity to the set. Each vertex (3) has the general shape of the letter "L", with the result that the stirrup (1) as a whole has the general shape of an "H" having double transverse bars (4) connecting the four vertexes (3).

[0013] Therefore, the structural sets formed by rebars (V) and stirrups (1) are less susceptible to the twistings inherent to concrete filling procedures, inside the moulds, ensuring a finished product with more quality and more reliability, making it more suitable for modern techniques of construction.

Claims

1. A metal stirrup, composed essentially of a stirrup (1) with dimensions compatible with rebars (V) to which the stirrup (1) is to be connected and locked, the stirrup being obtained from an industrial process of mechanical shaping, with folding or drawing, wherein, from one of its vertexes (3), it makes a continuous crossing, shaped like the letter "L", so that all vertexes (3) are connected to an intermediate section (S), forming a double crossing (4) in this area.

2. A metal stirrup as claimed in Claim 1, which is made of material of circular cross-section.

3. A metal stirrup as claimed in Claim 1 or Claim 2, wherein the material is iron or steel wire or rod ma-

terial.

4. A metal stirrup as claimed in any preceding claim, wherein its ends (2) are connected by welding or the like.

5. A metal stirrup as claimed in any preceding claim, which has four vertexes (3)

6. A metal stirrup as claimed in Claim 5, wherein the vertexes are arranged in a rectangular arrangement.

7. A metal stirrup as claimed in Claim 6, which has the general shape of the letter "H".

8. A set of rebars connected and locked by means a plurality of stirrups as claimed in any preceding claim.

9. A reinforced concrete component comprising a set of rebars as claimed in Claim 8.

FIG 1

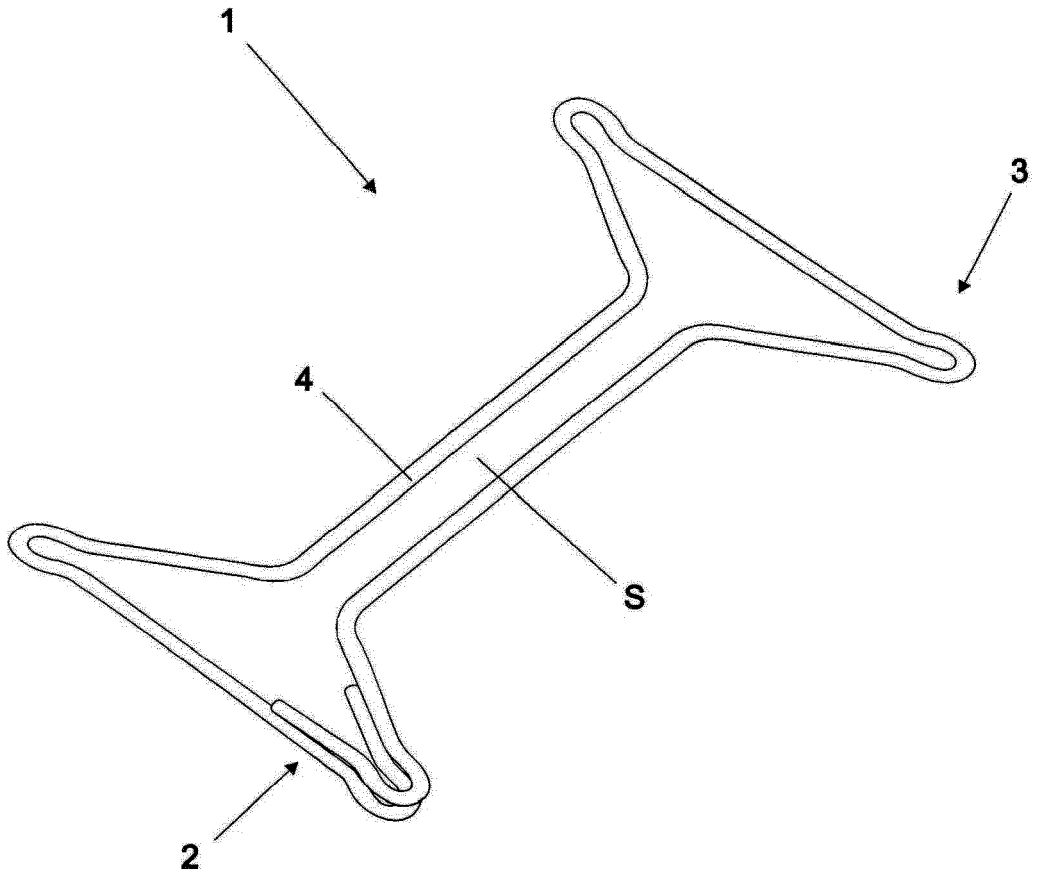


FIG 2

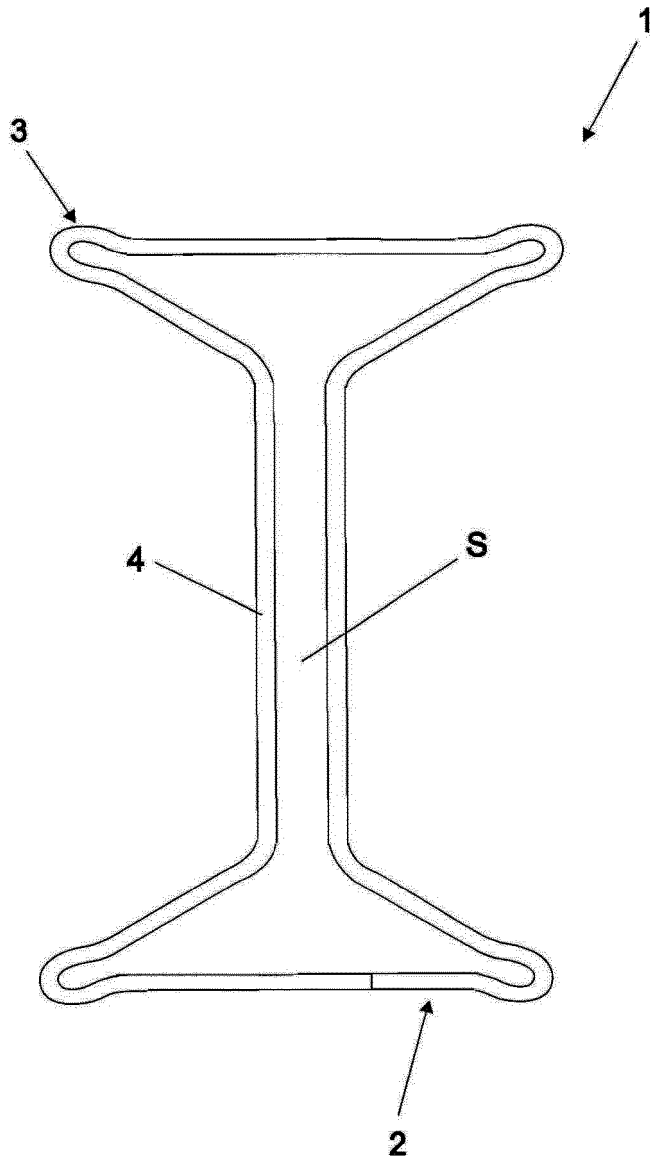
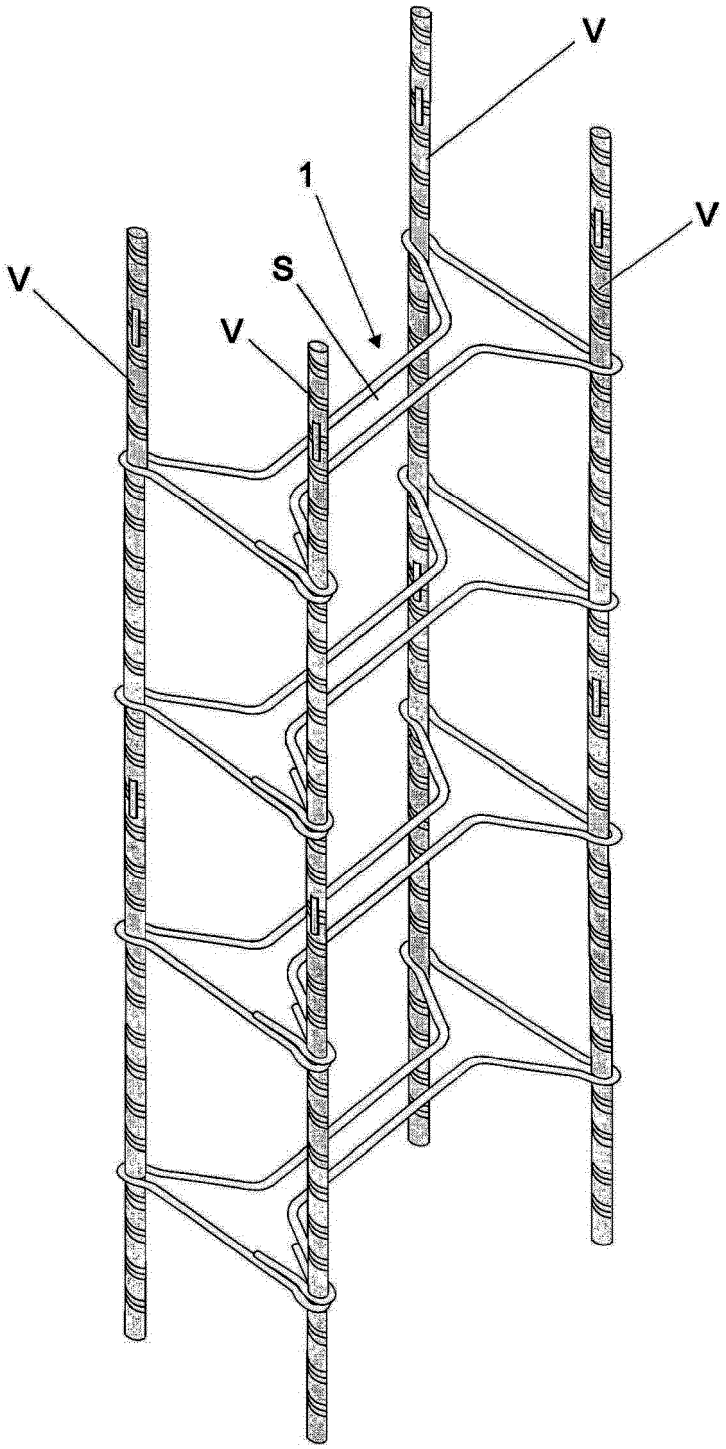


FIG 3



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EUROPEAN SEARCH REPORT

Application Number
EP 12 19 4126

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 2 962 746 A1 (BONNA SABLA [FR]) 20 January 2012 (2012-01-20) * figures 5-7 * * page 8, line 10 - line 34 *	1-3,5-9	INV. E04C5/06 E04C5/16
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X	FR 482 687 A (AKTIENGESELLSCHAFT HENZIKER & CIE HARTSTEINWERKE & [CH]) 12 April 1917 (1917-04-12) * figures 4, 11 *	1-9	
X	US 5 119 614 A (REX ROBERT G [US]) 9 June 1992 (1992-06-09) * figure 4 *	1-3,8,9	
X	CN 2 078 351 U (SONG LIGUO [CN]) 5 June 1991 (1991-06-05) * figure 11 *	1-3,5-9	

TECHNICAL FIELDS SEARCHED (IPC)

E04C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 May 2013	Bauer, Josef

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 19 4126

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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08-05-2013

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82