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Bender

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[54] **METHOD FOR JOINING A NUMBER OF REINFORCING BARS SIMULTANEOUSLY AND A TOOL FOR CARRYING OUT THIS METHOD**

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[52] **U.S. Cl.** ..... **29/200 R**, 29/155 R, 29/453

[51] **Int. Cl.**... **B23p 19/00**, B23p 17/00, B23p 11/02

[58] **Field of Search** ..... 29/200 R, 155 R, 29/453, 200 B

[56] **References Cited**

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Primary Examiner—Thomas H. Eager

[57] **ABSTRACT**

A retaining member, a number of which are fastened to a concrete reinforcing bar causing recesses between said bar and said members, and a method to force a number of other reinforcing bars into said recesses simultaneously, and a tool to carry out this method.

3 Claims, 4 Drawing Figures

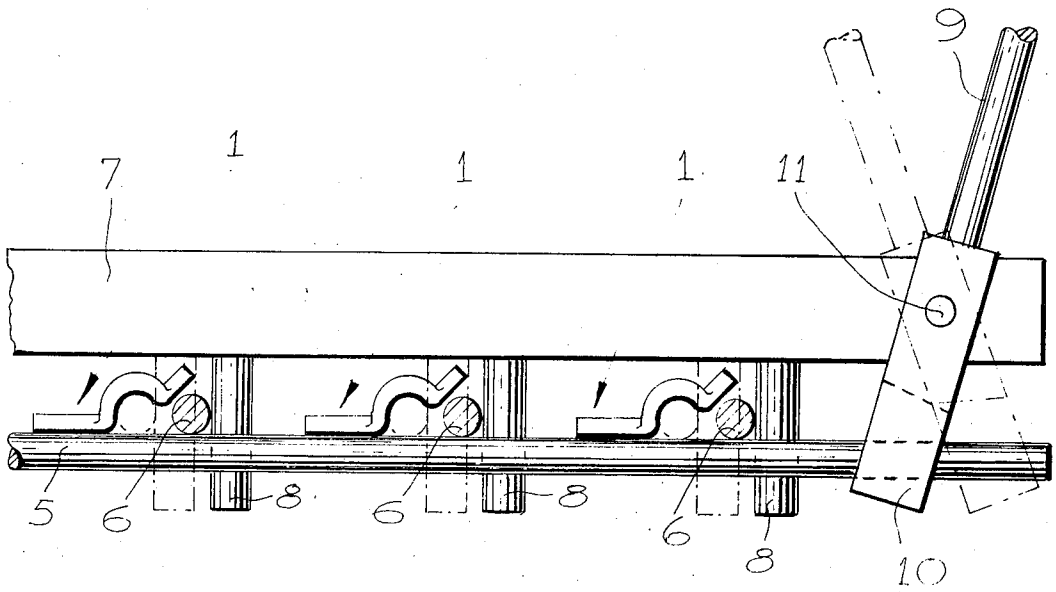


Fig. 1

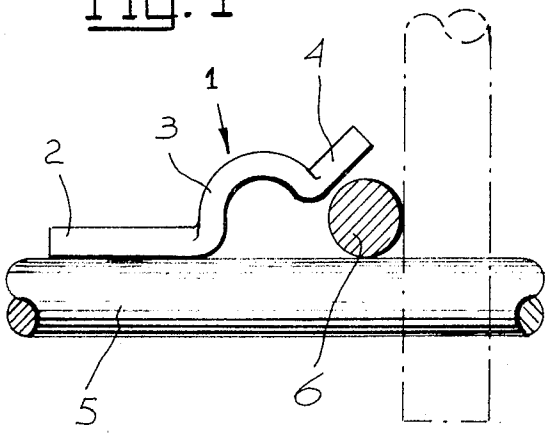


Fig. 2

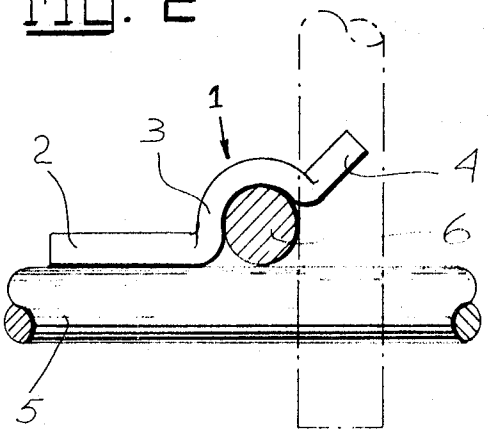


Fig. 3

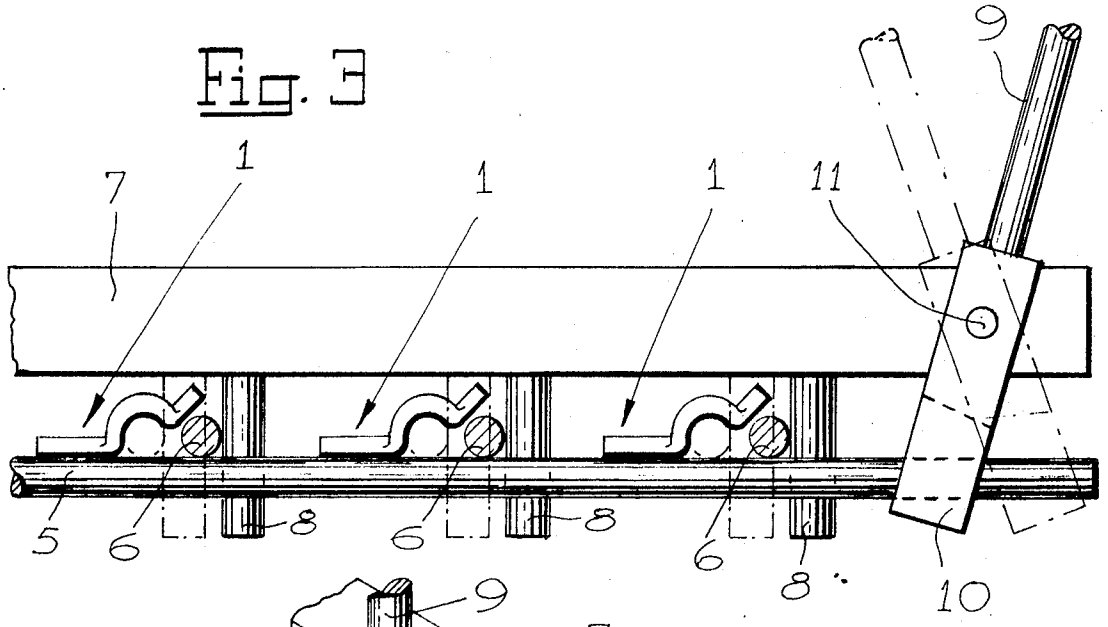
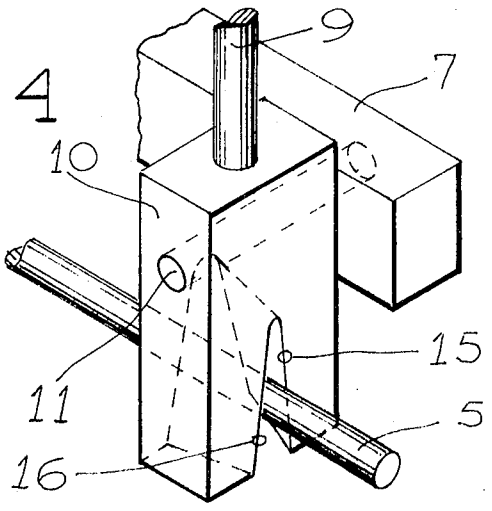


Fig. 4



INVENTOR

METHOD FOR JOINING A NUMBER OF REINFORCING BARS SIMULTANEOUSLY AND A TOOL FOR CARRYING OUT THIS METHOD

The present invention relates to a retaining member, a tool, and a method to join simultaneously a given number of reinforcing bars.

In concrete casting of road beds and floors, typically a number of reinforcing bars are laid parallel to each other at a given distance from the underside of the casting. Other reinforcing bars are then laid above and crosswise to said first bars and fastened together by means of wires or retaining clips fastened to said first bars at the crossing points. All the methods are time consuming and laborious since each joint has to be attended to individually. Until now a method for joining simultaneously several bars has not been found.

According to the present invention said problem is solved by the use of a retaining member, a number of said members essentially being fastened to a reinforcing bar at the given crossing points, causing recesses at said points, and a tool to force simultaneously a number of other reinforcing bars, arranged crosswise to said first bar, into said recesses.

According to the invention said retaining member comprises a free end, said end being arranged parallel with and permanently fastened to a reinforcing bar, preferably by welding, and a circular-shaped portion connected to said end and said circular-shaped portion extending approximately two thirds around a diameter, said diameter corresponding at least to the diameter of a second reinforcing bar laid crosswisely and on top of said first bar and a second free end extending away from and perpendicular to said diameter, providing a sloping surface for said second bar. According to the invention said retaining member is preferably formed in one piece and made from wire.

The invention comprises a tool to force simultaneously a given number of parallel arranged reinforcing bars into recesses existing between retaining members and a reinforcing bar, said bar extending crosswise and below said parallel bars, said tool comprising a main member and a number of prong-type members extending in a downward direction between a number of parallel arranged reinforcing bars, said prongs to push against said parallel bars, and a pivotally mounted lever, said lever being connected to a preferably fork-shaped member, said fork-shape being tapered to accommodate different sizes of reinforcing bars, said bars being arranged below and crosswise to said parallel bars.

The two surfaces between said fork members are sloping away from a plane centered between said fork members, said slope commencing at the point of intersection of a second plane placed at approximately right angles to said first plane causing two knife-like edges, giving said edges a tendency to shear and cut with a downwardly applied force into a reinforcing bar straddled by said fork members. Said tool is used in performing a method for joining simultaneously a number of crosswise arranged iron reinforcing bars at the crossing points of said bars, said method comprising the steps of pushing against a number of parallel arranged reinforcing bars by means of prong-type members connected rigidly to the main member of said tool, the same extending thru and between said reinforcing bars and pulling another reinforcing bar, said bar having retaining members fastened at the given crossing points, by

means of a fork-shaped member pivotally mounted on the tool, said fork being tapered and two knife-like edges to lock with said reinforcing bar, said relative pushing against said parallel bars and pulling of a crosswise arranged bar to cause said parallel bars to be forced into recesses existing between retaining members and a reinforcing bar, said retaining members essentially being fastened to said reinforcing bar and said bar being arranged crosswise and below said parallel bars.

The objects and advantages of the present invention are described in more detail in the following, with reference to the accompanying drawings in which:

FIG. 1 represents a perspective view showing two crosswise arranged reinforcing bars before joining and a retaining member fastened to a reinforcing bar.

FIG. 2 corresponds to FIG. 1 but shows the two reinforcing bars joined and held together.

FIG. 3 represents a side view showing the application of the tool according to the invention.

FIG. 4 is a perspective view of the fork-shaped member and a portion of the tool.

The retaining member 1 shown in FIG. 1 comprises free end 2 fastened to a reinforcing bar 5, said free end being connected to a circular portion 3 which extends approximately two thirds around the periphery of a diameter, said diameter corresponding at least to the diameter of reinforcing bar 6 causing a recess between bar 5 and circular portion 3 which is connected to a second free end 4 extending away from and approximately perpendicular to said diameter to provide a sloping surface which facilitates entry for bar 6 to be forced into said recess, said retaining member 1 is preferably formed in one piece and made from metal wire.

FIG. 2 shows reinforcing bar 6 after being forced into a circular recess formed in combination by retaining members 1 and bar 5, said reinforcing bar 6 also being held in place by retaining members 1.

FIG. 3 is a side view of the tool as positioned both prior to and after joining of bars 5 and 6, said tool comprising prong-type members 8 connected to main members 7, said prong-type members to push against reinforcing bars 6, and a pivotally mounted gripping tool 10 to which are connected fork members said gripping tool to lock and exert a relative pull on bar 5, also showing said tool as positioned after bars 6 are pushed into recesses existing between bars 5 and retaining members 1, this being accomplished by pushing against handle 9.

FIG. 4 is a perspective view showing in more detail gripping tool 10 pivotally mounted with pin 11 to main member 7, said gripping tool comprises fork members and knife-like edges 15, said fork members tapering away from each other to accommodate different sizes of bars 5. Said knife-like edges 15, 16 are caused by sloping the two inside surfaces of the fork-shaped members, said slope commencing at edges 15, 16 and extending away from a plane centered between said members.

The description above shows that the invention provides a simple method for joining several reinforcing bars simultaneously to a crosswise arranged reinforcing bar at greatly reduced labor effort and cost with the use of an easily operated and inexpensive tool in cooperation with pre-made retaining members fastened to said crosswise arranged reinforcing bar.

What I claim is:

1. A tool for joining simultaneously a number of crosswise arranged reinforcing bars as used in concrete casting of road beds by means of pre-fabricated, partially circular shaped retaining members fastened to a reinforcing bar, said tool comprising in combination means to grip and pull said reinforcing bar and means to push against other parallel and crOsswise arranged reinforcing bars thereby forcing said parallel bars into recesses existing between said partially circular shaped retaining members and said first reinforcing bar.

2. A tool according to claim 1 comprising a main member adapted to be laid across parallel arranged reinforcing bars and a number of prong-type members connected approximately perpendicular to said main member, said prong-type members extending thru the spaces existing between said parallel bars and adapted

to push at right angles against said bars, a fork-shaped gripping tool pivotally mounted to said main member, said fork-shape adapted to straddle and lock onto a reinforcing bar extending crosswise and below said parallel bars, and the pivot action of said tool adapted to exert a relative pull on said crosswise arranged reinforcing bar.

3. A tool according to claim 2, whereby said fork-shaped and pivotally mounted gripping tool comprises two fork members with a tapered opening between same to accommodate different sizes of bars and two knife-like edges produced by sloping the two inside surfaces away from a plane centered between said fork members, said edges adapted to partially cut into said bar thereby to lock onto same.

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