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(54) **REINFORCEMENT BAR BOX**

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(57) **ABSTRACT**

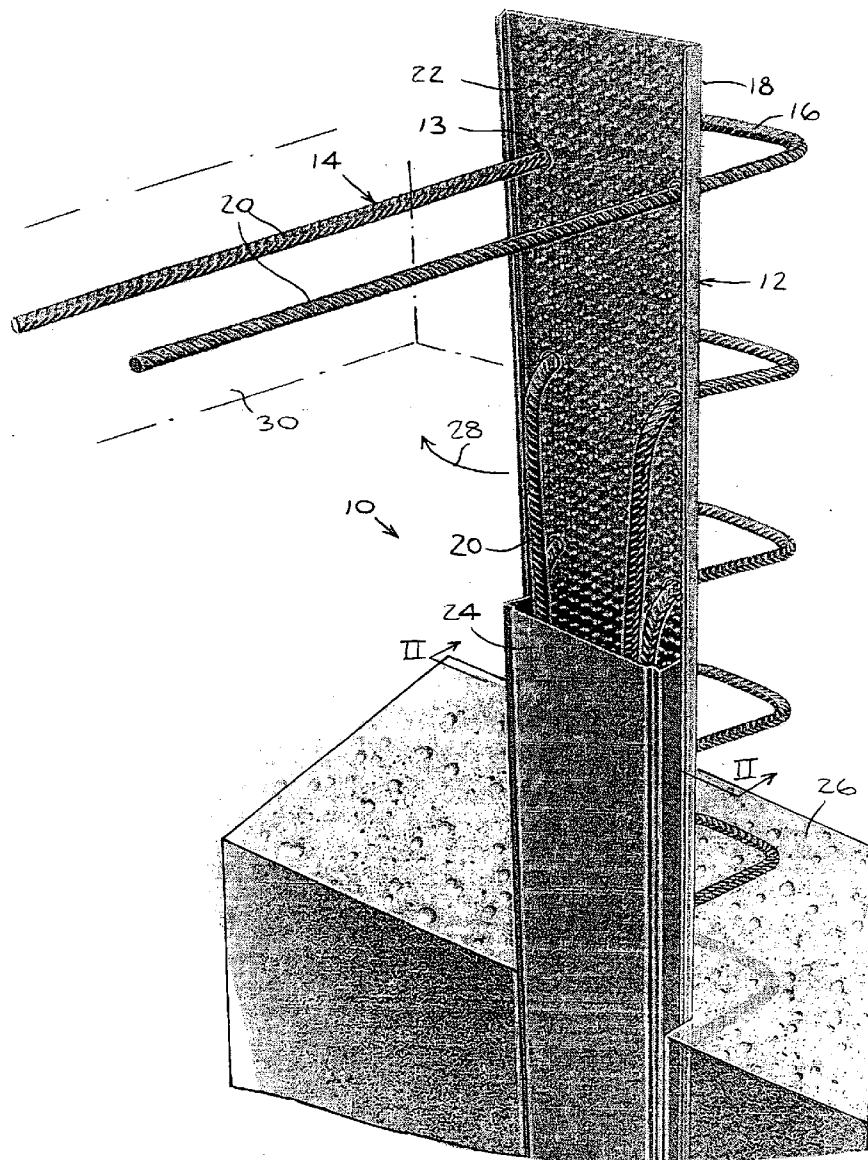
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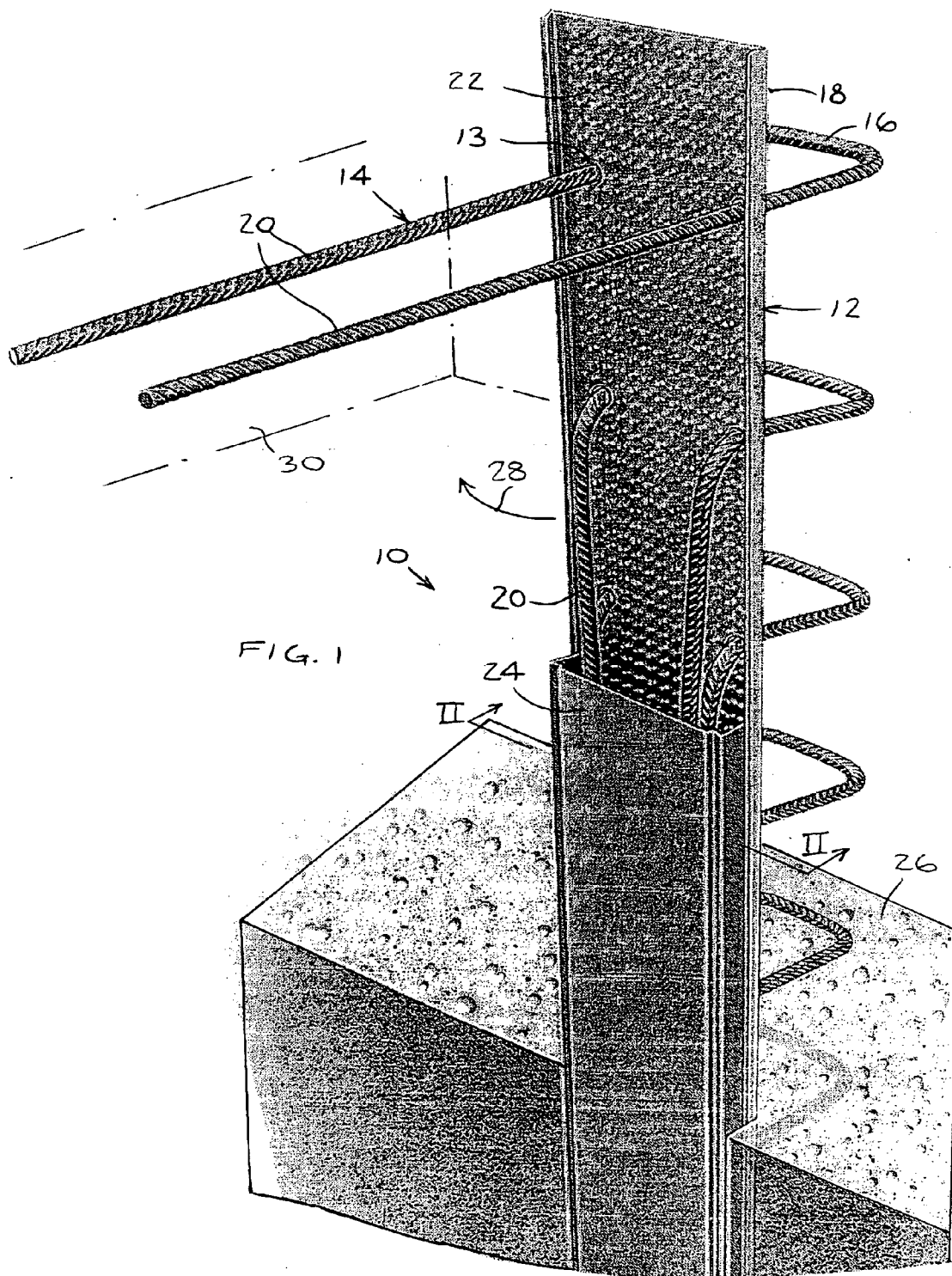
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A reinforcement bar box including a plurality of reinforcement bars aligned at spaced intervals along a plate, and a cover that covers a portion of the reinforcement bars, the cover including a moisture absorbing material. The moisture absorbing material may have sufficient moisture absorbing capability so as to prevent concrete or cement from sticking to the reinforcement bars inside the reinforcement bar box.





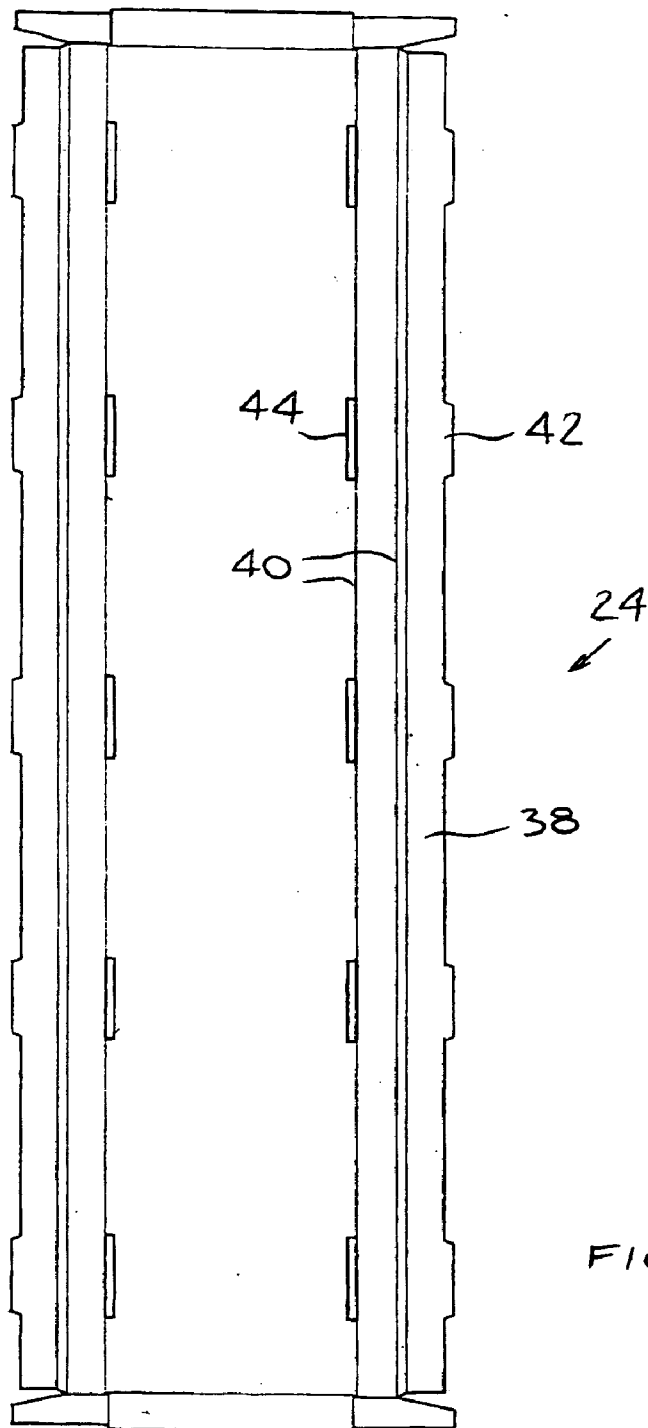
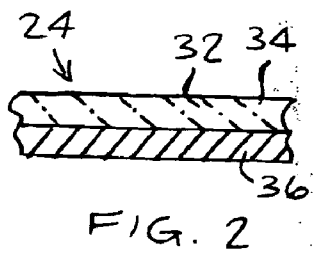


FIG. 3

REINFORCEMENT BAR BOX

FIELD OF THE INVENTION

[0001] The present invention relates generally to structural reinforcement systems, such as for concrete structures, and particularly to reinforcement bar boxes with bendable reinforcement bars closed by a cover.

BACKGROUND OF THE INVENTION

[0002] Many concrete structures, such as at joints of walls and floors of buildings, are reinforced by means of structural reinforcement systems. A typical reinforcement system generally includes a reinforcement bar box with bendable reinforcement bars closed by a cover. One non-bent portion of the reinforcement bars may be placed in a first structure, e.g., a wall, and the other portion, which is stored in a bent position inside the box, may be exposed by removing the cover, and then may be re-bent for insertion into another structure, such as a floor.

[0003] Reinforcement bar boxes are manufactured and commercially available from many manufacturers. For example, the company PLAKABETON manufactures a reinforcement bar box under the trademark STABOX. This is a box in which reinforcement bars with diameters from 6 to 12 mm are bent inside a casing. The casing is made of a shaped rough steel plate, and the bent reinforcement bars are aligned at a determined distance. A cover closes the entire length of the casing. The STABOX may be fixed to a structure or formwork of the first phase of concreting by simple nails (for wooden panels) or magnetized strips (for metallic formwork). The cover is removed and discarded after removing the formwork and the reinforcement bars are re-bent out to ensure the continuity of the two phases of concreting. The casing has a dovetail profile. The surface of the STABOX is corrugated and is covered with diamond point holes. The cover is made of simple sheet metal.

[0004] Another well known reinforcement bar box is made by HALFEN Reinforcement Systems (Halfen-Deha Company), and is marketed under the trademark H.B.T. This system comprises pre-bent reinforcement bars housed in a purpose-designed carrier casing. Here again, as with all known prior art reinforcement bar boxes, the cover is made of simple sheet metal.

[0005] A problem associate with prior art reinforcement bar boxes is that since they are not hermetically sealed, upon placement in the concrete structure, concrete or cement or other building materials tend to seep into the reinforcement bar box. The concrete or cement dries on the pre-bent reinforcement bars and seeps into the box, thereby effectively sealing the cover shut. This makes it difficult to remove the cover to gain access to the bars and to remove dry concrete from the reinforcement bars. Sometimes pneumatic tools must be used to remove the cover, involving very costly manual labor to clean the reinforcement bars before proceeding with casting the concrete structure. This may jeopardize the structural integrity of the joint or structure.

SUMMARY OF THE INVENTION

[0006] The present invention seeks to provide a novel reinforcement bar box, which may have a cover that absorbs moisture, as is described more in detail hereinbelow. In tests,

the moisture absorbing cover has prevented concrete or cement from sticking or caking inside the box, with the result that the reinforcement bars are kept clean and readily bendable. Synergistically, the moisture absorbing cover is extremely easily removed, either by peeling away or by ripping.

[0007] There is thus provided in accordance with an embodiment of the present invention a reinforcement bar box including a plurality of reinforcement bars aligned at spaced intervals along a plate, and a cover that covers a portion of the reinforcement bars, the cover including a moisture absorbing material. The moisture absorbing material may have sufficient moisture absorbing capability so as to prevent concrete or cement from sticking to the reinforcement bars inside the reinforcement bar box.

[0008] In accordance with an embodiment of the present invention the cover covers an initially bent portion of the reinforcement bars. The cover may include an inner layer of moisture absorbing material and an outer layer of non-absorbent material. Additionally or alternatively, the cover may include a foldable casing. The foldable casing may be foldable about score lines, and may include tabs insertable into slots.

[0009] The reinforcement bars may have a first portion protruding from a first face of the plate and a second portion protruding from a second face of the plate. The reinforcement bars may be U-shaped, wherein the first portion includes a closed, non-bent portion of the U-shaped bar and the second portion includes legs of the U-shaped bar.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The present invention will be understood and appreciated more fully from the following detailed description taken in conjunction with the drawings in which:

[0011] **FIG. 1** is a simplified pictorial illustration of a reinforcement bar box, constructed and operative in accordance with an embodiment of the present invention;

[0012] **FIG. 2** is a simplified sectional illustration of a cover of the reinforcement bar box of **FIG. 1**, constructed and operative in accordance with an embodiment of the present invention, taken along lines II-II in **FIG. 1**; and

[0013] **FIG. 3** is a simplified illustration of the cover constructed as a foldable casing, in accordance with another embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS

[0014] Reference is now made to **FIG. 1**, which illustrates a reinforcement bar box **10**, constructed and operative in accordance with an embodiment of the present invention.

[0015] Reinforcement bar box **10** may include a plate **12** formed with holes **13** through which a plurality of reinforcement bars **14** are aligned at spaced intervals. Without limitation, plate **12** may be constructed of a shaped rough steel plate (e.g., corrugated and covered with diamond point holes). Plate **12** may have any size or shape, such as but not limited to, a dovetail profile.

[0016] Without limitation, bars **14** may be constructed of any suitable reinforcement material, such as iron or steel alloy. Bars **14** may have a first portion **16** protruding from

a first face 18 of plate 12 and a second portion 20 protruding from a second face 22 of plate 12. In the illustrated embodiment, bars 14 are U-shaped with the first portion 16 comprising the closed, non-bent portion of the U-shaped bar and the second portion 20 comprising the bent portion, which are the legs of the U-shaped bar. The invention, however, is not limited to U-shaped bars and other shapes may be used to carry out the invention.

[0017] Initially, such as during storage, the second portion 20 is bent and second face 22 is closed with a cover 24 (shown partially removed in FIG. 1). The first portion 16 of reinforcement bars 14 may be placed in a first structure 26, e.g., a wall. The second portion 20 may be exposed by removing cover 24, bent or straightened in the direction of arrow 28, and then may be inserted into another structure 30, e.g., a floor or wall 90° to the first structure 26.

[0018] Reference is now made to FIG. 2. In accordance with an embodiment of the present invention, cover 24 may include a moisture absorbing material 32, such as but not limited to, moisture absorbent paper, fibers, cloth, or any other synthetic or natural material with moisture absorbing properties. For example, cover 24 may comprise an inner layer 34 of moisture absorbing material 32, with an outer layer or backing 36 of non-absorbent material, such as but not limited to, water-resistant or non-absorbent paper, cardboard, metal or plastic, for example. The moisture absorbing material 32 may have sufficient moisture absorbing capability such that it prevents concrete or cement from sticking or caking to bars 14 inside reinforcement bar box 10.

[0019] Referring to FIG. 3, it is seen that alternatively cover 24 may comprise a foldable casing 38. The foldable casing 38 may be folded about score lines 40, and tabs 42 may be inserted into slots 44 to form cover 24. In such an embodiment, part of the casing 38 (which after folding faces the inner part of reinforcement box) may be made of moisture absorbing material (e.g., moisture absorbing cardboard), whereas the other part of the casing 38 (which after folding faces the inner part of reinforcement box) may be made of non-absorbent material (e.g., non-absorbent cardboard). As another alternative, moisture absorbing material 32 may be placed inside the folded casing 38.

[0020] It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the present invention includes both combinations and subcombinations of the features described hereinabove as well as modifications and variations thereof which would occur to a person of skill in the art upon reading the foregoing description and which are not in the prior art.

What is claimed is:

1. A reinforcement bar box comprising:

a plurality of reinforcement bars aligned at spaced intervals along a plate; and

a cover that covers a portion of said reinforcement bars, said cover comprising a moisture absorbing material.

2. The reinforcement bar box according to claim 1, wherein said moisture absorbing material has sufficient moisture absorbing capability so as to prevent concrete or cement from sticking to said reinforcement bars inside said reinforcement bar box.

3. The reinforcement bar box according to claim 1, wherein said cover covers an initially bent portion of said reinforcement bars.

4. The reinforcement bar box according to claim 1, wherein said cover comprises an inner layer of moisture absorbing material and an outer layer of non-absorbent material.

5. The reinforcement bar box according to claim 1, wherein said cover comprises a foldable casing.

6. The reinforcement bar box according to claim 5, wherein said foldable casing is foldable about score lines, and includes tabs insertable into slots.

7. The reinforcement bar box according to claim 1, wherein said reinforcement bars have a first portion protruding from a first face of said plate and a second portion protruding from a second face of said plate.

8. The reinforcement bar box according to claim 7, wherein each of said reinforcement bars is U-shaped, wherein the first portion comprises a closed, non-bent portion of the U-shaped bar and the second portion comprises legs of the U-shaped bar.

9. The reinforcement bar box according to claim 1, wherein said moisture absorbing material has sufficient moisture absorbing capability so as to prevent concrete or cement from sticking to said reinforcement bars inside said reinforcement bar box, and wherein said cover covers an initially bent portion of said reinforcement bars, and wherein said cover comprises an inner layer of moisture absorbing material and an outer layer of non-absorbent material.

10. The reinforcement bar box according to claim 1, wherein said moisture absorbing material has sufficient moisture absorbing capability so as to prevent concrete or cement from sticking to said reinforcement bars inside said reinforcement bar box, and wherein said cover covers an initially bent portion of said reinforcement bars, and wherein said cover comprises an inner layer of moisture absorbing material and an outer layer of non-absorbent material, and wherein said cover comprises a foldable casing foldable about score lines and including tabs insertable into slots, and wherein said reinforcement bars have a first portion protruding from a first face of said plate and a second portion protruding from a second face of said plate, wherein each of said reinforcement bars is U-shaped, wherein the first portion comprises a closed, non-bent portion of the U-shaped bar and the second portion comprises legs of the U-shaped bar.

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