United States Patent [19]

Allen

[11] **3,782,058**

[45] **Jan. 1, 1974**

[54] **TYING DEVICES FOR TYING WOODEN MEMBERS TO COMPOSITE BRICK AND MASONRY WALLS**

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[73] Assignee: **Allen Anchor Corporation,** Dolton, Ill.

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[52] **U.S. Cl.** **52/300,** 52/562, 52/712

[51] **Int. Cl.** **E04b 1/38,** E04h 12/00

[58] **Field of Search** 52/96, 293, 295, 52/300, 369, 370, 562, 665, 712, 713, 714

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Primary Examiner—Frank L. Abbott
Assistant Examiner—Mark Wolk
Attorney—Charles B. Cannon

[57] **ABSTRACT**

A tying device for tying a wooden board or so-called "plate," to the uppermost tier of face bricks and a composite face brick and concrete block or like composite wall construction. In the preferred embodiment of the invention the tying device is formed in its entirety, as by stamping, from a relatively thin sheet of flat metal stock, such as thin sheet metal or aluminum, without the need or necessity for any welds, rivets, or attachments, and is designed to be installed at any desired point laterally between the inside faces and the outside faces of the concrete or like masonry blocks, and to lie between the butt joints of the concrete or like masonry blocks and does not require installation at the butt joints, and does not require the use of any diagonally extending or like brace member. A first modified form of the tying device is likewise formed, as by stamping, from a single sheet of flat relatively thin metal stock, without the need for any welds, rivets, or attachments, or any diagonally extending or like brace member, and may be positioned at any selected point along the face brick between the butt joints or at the butt joints between the face bricks. A second modified form of construction is similar to the first modification but employs a brace member which is formed separately from the body of the tying device but is adapted to be mounted thereon in use.

7 Claims, 20 Drawing Figures

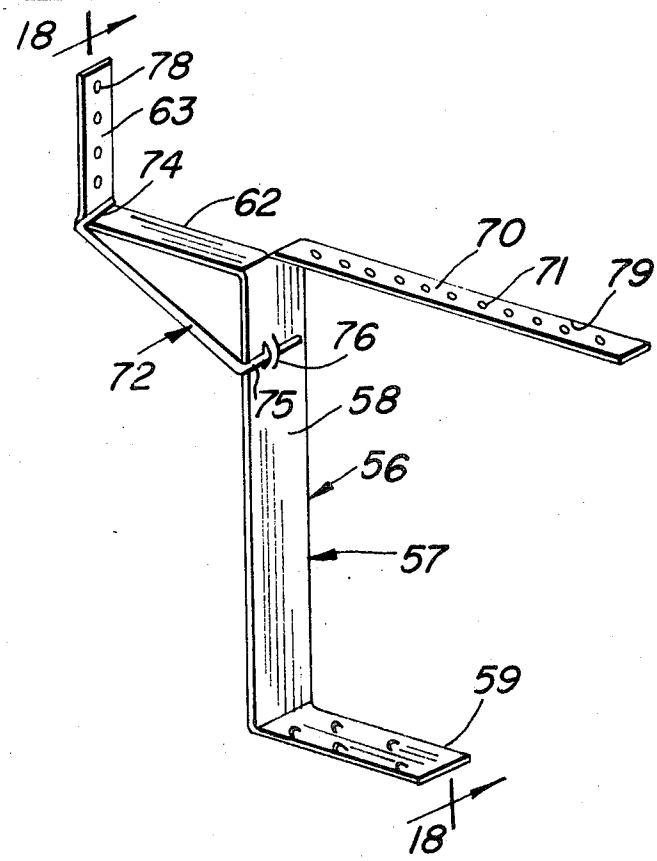


FIG - 2

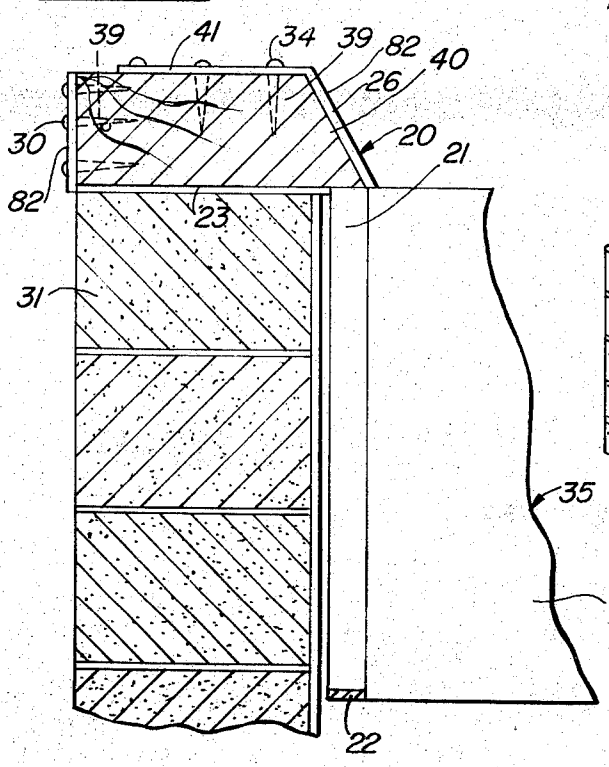


FIG - 1

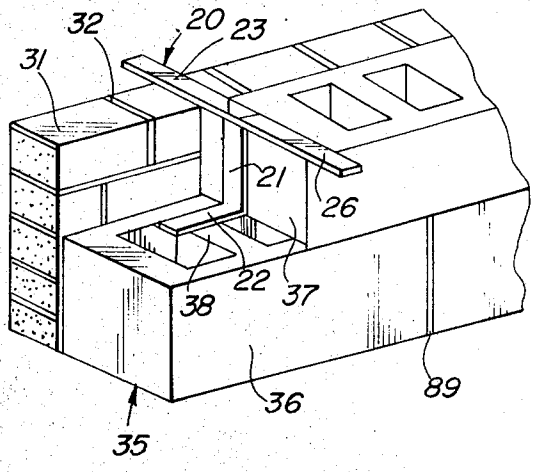


FIG - 4

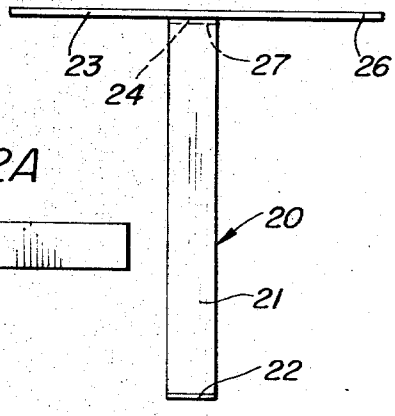


FIG - 3

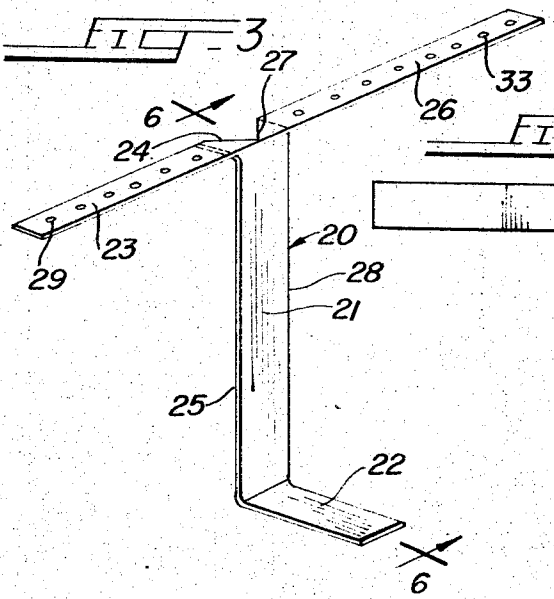


FIG - 2A

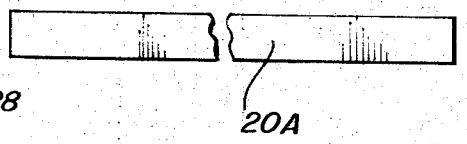


FIG - 6

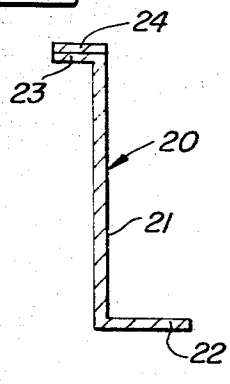


FIG - 5

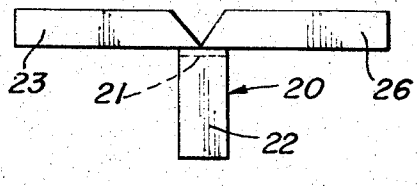


FIG. 7

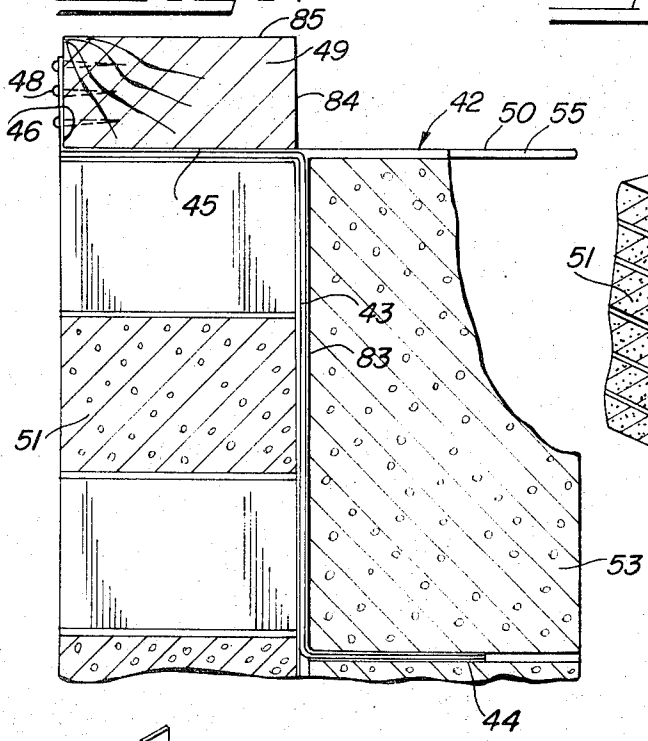


FIG. 8

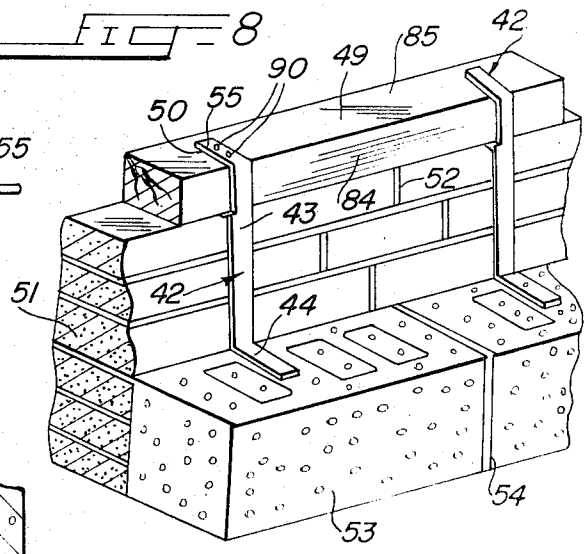


FIG. 9

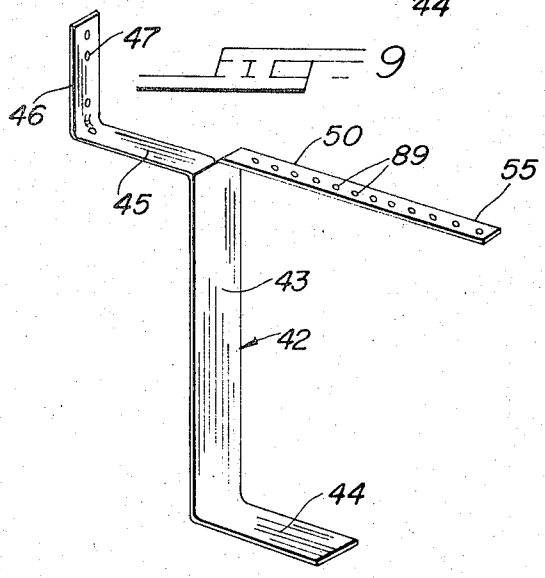


FIG. 12

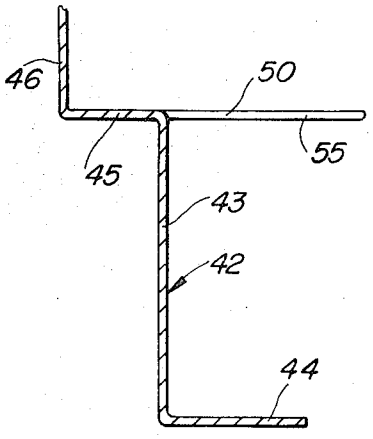


FIG. 10

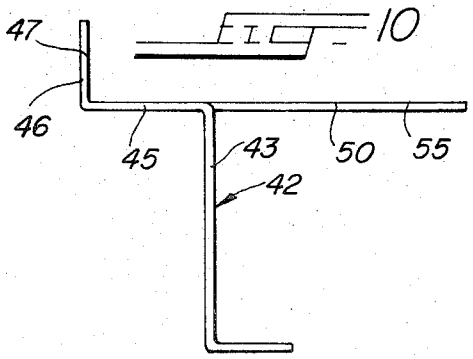


FIG. 11

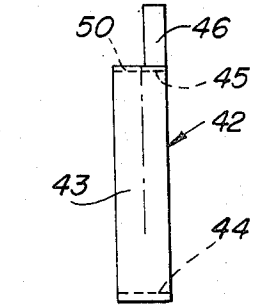


FIG. 13

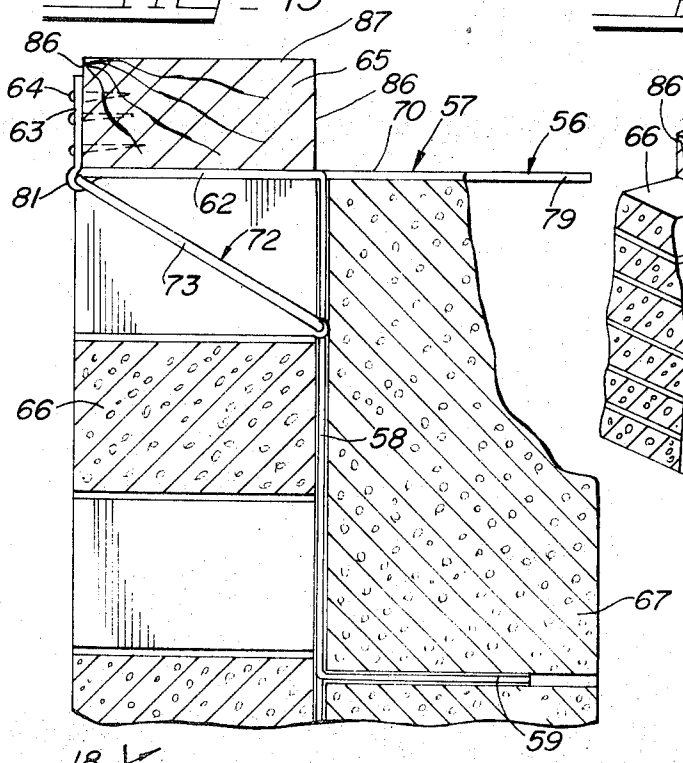


FIG. 14

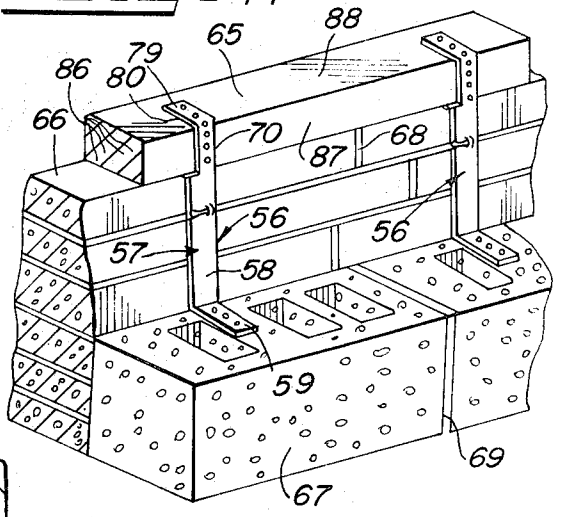


FIG. 15

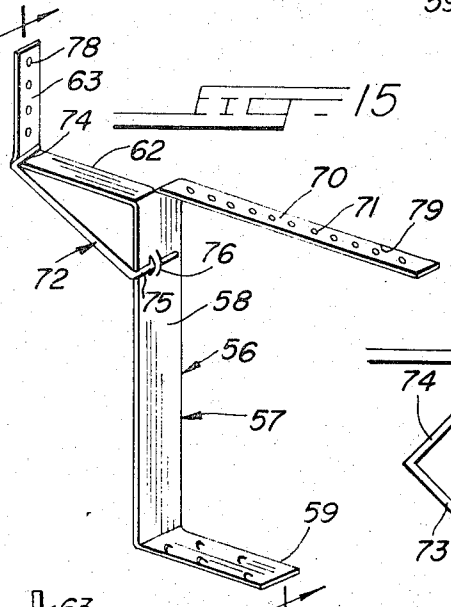


FIG. 18

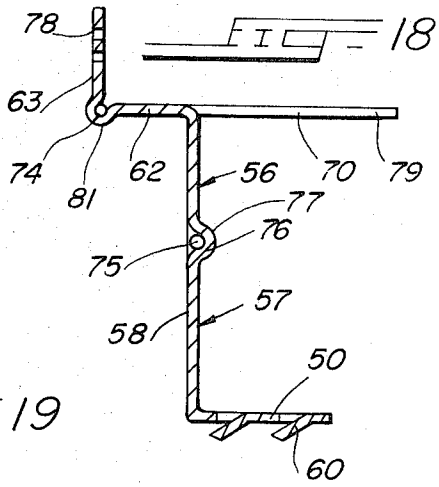


FIG. 19

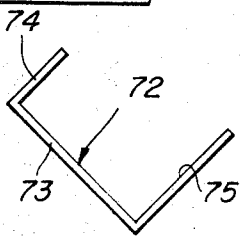


FIG. 16

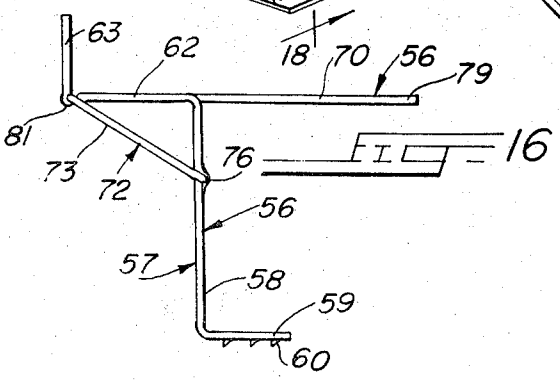
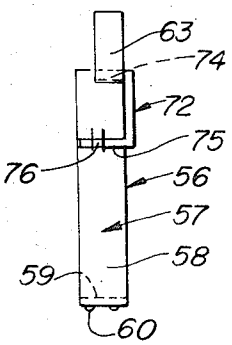


FIG. 17



TYING DEVICES FOR TYING WOODEN MEMBERS TO COMPOSITE BRICK AND MASONRY WALLS

OBJECTS

An object of the invention is to provide a new and improved tying device for tying a wooden board, or so-called "plate" to a tier of face bricks in a composite face brick and concrete block or like composite masonry building wall.

An additional object of the invention is to provide a new and improved tying device for tying a wooden member, or so-called "plate" to a back-up course or tier of face bricks in a composite face brick and concrete block or like composite masonry building wall construction and which is formed, as by stamping, from a single sheet or strip of relatively thin flat metal stock without welds, rivets, or attachments, and is so designed and constructed that it may be installed at any desired point between the butt joints of a concrete or like masonry building block in a so-called back-up course of such concrete or like blocks and is not confined to use at the butt joints of the concrete or like masonry building blocks; and which may be readily adapted and adjusted for use with back-up courses of face bricks and concrete or like masonry blocks of varying vertical heights.

A further object of the invention is to provide, in a preferred embodiment of the invention, a tying device having the characteristics set forth in the immediately preceding object and which does not embody or require the use of a diagonally extending or other brace member to provide support for the outer edge portion of the wooden member or so-called plate.

Another object of the invention is to provide in one form thereof a tying device which is formed, as by stamping, from a single sheet or strip of relatively thin flat metal stock without welds, rivets, or attachments, and which may be installed at any desired position of use between the butt joints of the face bricks in a so-called back-up course of such face bricks and the butt joints of the concrete or like masonry building blocks in a composite face brick and concrete block or like composite masonry building wall construction and is not confined to installation at the butt joints of either the face bricks or the concrete or like masonry blocks in such a composite building wall construction.

A further object of the invention is to provide in one form thereof a tying device for tying a wooden member or so-called "plate" to a composite face brick and concrete or like masonry building wall construction and which may be installed at any desired point between the butt joints of the face bricks and the butt joints of the concrete or like blocks, and which is not confined to installation at such butt joints; and which embodies as the main component a tying member which may be formed, as by stamping, from a single sheet of relatively thin, flat sheet metal stock; and which includes as a second component a brace member which is formed as a separate unit relative to the main tying member but is adapted to be mounted on the main tying member at the time of installation and use but may be readily packed and shipped with the main tying member in a compact package.

An additional object of the invention is to provide new and improved tying devices in the use of which wooden members or plates of various sizes and shapes may be fastened to the masonry construction even though the position of the tying device on the masonry construction may require that the tying device be fastened in various positions on and relative to the external surfaces of the wooden members or plates or at an intersection where the wooden member or plate crosses the wall at a right-angle to the vertically extending portion of the tying device or at other angular relationships relative thereto.

Still another object of the invention is to provide new and improved tying devices which may be used with wooden members or plates which are installed with either their outer edges or their inner edges arranged in varying relationships or at various distances relative to the face of the masonry wall to which the wooden members or plates are tied by means of the tying devices.

Other objects will appear hereinafter.

DESCRIPTION OF FIGURES IN THE DRAWINGS

FIG. 1 is a fragmentary perspective view of a composite brick and concrete block masonry wall with an overlying wooden board member or so-called "plate" thereon and showing a typical and preferred embodiment of the new tying device being installed thereon;

FIG. 2 is a fragmentary view, partly in vertical section and partly in elevation, of the composite wall structure shown in FIG. 1 but showing the form of tying device illustrated in FIG. 1 installed in position of use thereon.

FIG. 2A is a plan view of the strip of sheet metal from which the tying device shown in FIGS. 1 to 6, inclusive, is made, a part thereof being broken away;

FIG. 3 is a perspective view of the tying device illustrated in FIGS. 1 and 2;

FIG. 4 is an elevational view of the new tying device shown in FIGS. 1, 2 and 3, as seen from the right hand side in FIG. 3;

FIG. 5 is a top plan view of the tying device shown in FIGS. 1 to 4, inclusive;

FIG. 6 is a central vertical sectional view on line 6—6 in FIG. 3;

FIG. 7 is a fragmentary vertical sectional view of a composite brick and concrete block masonry wall construction showing a modification of the invention partially installed thereon;

FIG. 8 is a fragmentary perspective view, partly in section, of the composite brick and concrete block masonry wall construction shown in FIG. 7 but showing the modification of the tying device illustrated in FIG. 7 installed thereon, and with one tier of concrete or like masonry blocks removed to show the mounting and arrangement of the tying device;

FIG. 9 is a perspective view of the modified form of the tying device shown in FIGS. 7 and 8;

FIG. 10 is a side elevational view of the tying device shown in FIGS. 7, 8 and 9;

FIG. 11 is a rear elevational view of the tying device shown in FIGS. 6 to 10, inclusive, as seen from the left hand side in FIGS. 9 and 10;

FIG. 12 is a vertical sectional view of the modified form of tying device illustrated in FIGS. 7 to 11, inclusive;

FIG. 13 is a fragmentary vertical sectional view of a composite brick and masonry wall showing another modification of the invention in the process of being installed thereon;

FIG. 14 is a fragmentary perspective view, partly in section, of part of the composite brick and masonry wall construction shown in FIG. 13, but showing the modified form of tying device illustrated in FIG. 13 installed thereon;

FIG. 15 is a perspective view of the modified form of tying device illustrated in FIGS. 13 and 14;

FIG. 16 is a side elevational view of the modified form of tying device illustrated in FIGS. 13, 14 and 15;

FIG. 17 is a rear elevational view of the modified form of tying device illustrated in FIGS. 13 to 16, inclusive, as seen from the left hand side in FIG. 16;

FIG. 18 is a vertical sectional view on line 18-18 in FIG. 15; and

FIG. 19 is a perspective view illustrating the bracing member embodied in the modified form of the invention illustrated in FIGS. 13 to 18, inclusive.

CONSTRUCTION OF THE FORM OF TYING DEVICE SHOWN IN FIGS. 1, 2, 2A AND 3 TO 6, INCLUSIVE

A preferred and typical embodiment of the new tying device of the present invention is illustrated in FIGS. 1, 2, 2A and 3 to 6, inclusive, of the drawings, wherein it is generally indicated at 20 and comprises a body preferably formed, as by stamping, from a single flat sheet or strip 20A of relatively thin, bendable sheet metal, such as steel or aluminum, and which is cut, bent and formed to provide an upright generally rectangular-shaped body portion or member 21 having an anchoring foot or lower end or base portion 22 integrally attached thereto; the anchoring foot or base portion 22 extending at right angles relative to and from the upright body portion 21 at one side or face thereof (FIGS. 1 and 3). A pair of fastening or tying arm portions or members 23 and 26 are formed integrally with the upright body portion 21 at the upper end thereof and each of these fastening arm portions or members 23 and 26 is approximately one-half the width of the strip 20A from and in which they are formed by cutting the strip 20A centrally thereof from a point corresponding to the top of the upright body portion 21 to one outer end thereof and then bending the fastening arm portions or members 23 and 26 at right angles to the body of the strip 20A, with a 45° diagonal bend from a point corresponding to the upper center portion of the upright body member 21 to the outer edges of each of the upper fastening arm portions or members 23 and 26. In this manner, the first fastening arm portion or member 23 is integrally connected to the upper end portion of the upright body member 21 by a web portion 24, and the fastening arm portion or member 23 extends laterally at right angles from one marginal side edge 25 of the upright body portion or member 21. Similarly, the second fastening arm portion or member 26 is integrally connected to the upper end portion of the upright body portion or member 21 by means of a web 27 and extends right-angularly from the other marginal side edge 28 of the upright body portion or member 21 parallel to and in coplanar relationship with the oppositely extending first fastening arm portion or member 23. In this manner the two upper fastening arm portions or members 23 and 26 are formed integrally with the upright body member and so that they extend at an angle of 90° to the anchoring lower end or base portion 22 and so that the entire tying device 20 may be installed in the butt joint of the concrete block portion of a masonry wall.

As shown in the drawings (FIG. 3) the first fastening arm portion or member 23 has a plurality of holes 29 therein for the reception of fastening elements, such as nails 30 (FIG. 2), by which the first fastening arm portion or member 23 may be attached to a wooden board or so-called "plate" 39 which is arranged on the upper surface of the top tier or course of back-up course of bricks 31, between the butt joints 32 therein, and provides a base for the attachment of the superstructure of the building thereto. Similarly, the other and second fastening arm portion or member 26 has a plurality of holes 33 formed therein for the reception of fastening elements, such as nails 34 (FIG. 2), for attaching the second fastening arm portion or member 26 to the wooden board, member or "plate" 29 (FIG. 2).

As shown in FIGS. 1 and 2, the composite wall construction 35 therein illustrated includes the back-up course of bricks 21 and a back-up course of concrete blocks 36 or like masonry units.

INSTALLATION AND USE OF THE FORM OF THE INVENTION ILLUSTRATED IN FIGS. 1, 2, 2A AND 3 TO 6, INCLUSIVE

In the installation and use of the form of the invention illustrated in FIGS. 1, 2, 2A and 3 to 6, inclusive, the tying device 20 is arranged in position of use, as shown in FIG. 1, with the upright body portion 21 thereof disposed flush against the vertical wall surface 37 of one of the concrete blocks or like masonry units 36 in the uppermost row or back-up course thereof, between the butt joints as 37, between two adjacent concrete block or like masonry units 36 in the same tier or back-up course thereof (FIG. 1), and with the anchoring base portion 22 being disposed upon and extending across the transverse wall 38 in one of the concrete blocks or like masonry units 36 in the lower tier or course thereof.

With the tying device 20 thus arranged, the wooden board or so-called "plate" 39 is arranged over the uppermost back-up course of face bricks 31 and over the first fastening arm portion or member 23, and one of the concrete block or like masonry units 36, in a so-called back-up course of such blocks, is arranged in position over the anchoring base portion or member 22, whereupon the outer end portion 82 of the first fastening arm portion or member 23 is bent upwardly at right angles to the main body portion of the fastening arm portion or member 23 and is attached to the wooden member or "plate" 39 by inserting the fastening elements in the form of nails 30 through the holes 29 into the body of the wooden member or plate 39. A portion 82 of the other and second fastening arm portion or member 26 is then bent upwardly at an acute angle along a beveled edge portion 40 of the wooden member or plate 39, whereupon the outer end portion 41 of the second fastening arm portion or member 26 is bent over the upper surface of the wooden member or plate 39 and is attached thereto by means of the fastening elements or nails 34 inserted through the holes 33 in the second fastening arm portion or member 26, thereby completing the installation of the tying device 20, as shown in FIG. 2.

The preferred form of the new tying device 20, as shown in FIGS. 1, 2, 2A, and 3 to 6, inclusive, has a number of advantages over comparable prior art tying

devices, such as are exemplified by applicant's prior U.S. Pat. Nos. 3,471,988 and 3,494,090, and among these are the following: (1) It can be readily and inexpensively made from a single piece of flat and relatively thin sheet metal stock, as by stamping, without the need or necessity for welds, rivets or attachments; (2) it is designed so as to lie between the butt joints of the back-up courses or face bricks or masonry blocks in a composite face brick and concrete block construction, and does not require mounting at the butt joints of the face bricks or masonry block, and is therefore, adaptable to lie at any point between the inside face and the outside face of the concrete or like masonry blocks; (3) it does not embody or require any diagonally extending or other brace member to provide support for the outer marginal edge portion of the wooden board or "plate;" (4) it is so designed, formed and shaped that the fastening arm portions or members **23** and **26** are fastened to the wooden member or "plate" **39** in such a position that they lie perpendicular or at right angles to, but in coplanar relationship with, the anchoring base portion **22** of the tying device, thereby enabling the tying device to be moved laterally during installation so that it may be anchored at any desired and selected point throughout the entire width of a masonry block **36** between the butt joints **37** therefor; and (5) it may be readily adapted and adjusted for use with back-up courses of face bricks **31** and concrete or like masonry blocks **36** of varying vertical heights by varying the length of the anchoring base portion **22** and thereby vary accordingly the overall vertical heighth of the upright member **21** and the upper fastening arm portions or members **23** and **26.**

THE CONSTRUCTION OF THE MODIFIED FORM OF TYING DEVICE SHOWN IN FIGS. 7 TO 12, INCLUSIVE

A modification of the invention is illustrated in FIGS. **7** to **12,** inclusive, of the drawings, wherein it is generally indicated at **42,** and like the preferred form of the invention illustrated in FIGS. **1, 2, 2A** and **3** to **6,** inclusive, is adapted to be formed, as by stamping, from a single sheet of relatively thin, flat metal stock, such as steel, aluminum, or the like, such as the strip **20A** (FIG. 2A), which is cut, bent and formed to provide an upright and generally rectangular-shaped main body portion **43** and an anchoring foot or base portion **44** which is formed integrally with the body portion **43** at the lower end of the latter and extends right-angularly therefrom. The tying device **42** includes a first fastening arm portion or member **45** which is formed integrally with and at the upper end of the main body portion **43** and extends right-angularly therefrom at one side of the main body portion **43** in coplanar relationship with the anchoring base portion **44.** The first fastening arm portion or member **45** has an outer and upwardly extending end portion **46** which extends right-angularly upwardly from the body of the fastening arm portion or member **45** at the outer end thereof in coplanar relationship with the anchoring base portion or member **44** but on the opposite side of the upright body member **43** from the side thereof on which the anchoring base portion **44** is arranged. The upwardly extending arm portion **46** has a plurality of holes **47** formed therein for the reception of fastening elements, in the form of nails **48,** by which the fastening arm portion or member **45-46** may be attached to the outer side edge of a wooden board or "plate" **49,** as in FIG. **7.**

The tying device **42** has a second fastening arm portion or member **50** which is formed integrally with the upright body member **43** at the upper end thereof. This second fastening arm portion or member **50** extends right-angularly from the main upright body portion **43** on the opposite side thereof from the side of the upright main body portion **43** on which the first fastening arm portion or member **45** is arranged, and extends in parallel and coplanar relationship with the first fastening arm portion or member **45** and in parallel and coplanar relationship with and above the anchoring base portion **44.** Holes **89** are formed in the second fastening arm portion or member **50** (FIG. **9**).

The width of the upper fastening arm portions or members **45** and **50** is equal to approximately one-half the width of the strip of metal from and in which they are formed by cutting one end portion centrally thereof to provide the two upper fastening arm portions of members **45** and **50.**

As shown in FIGS. **7** and **8,** the composite wall construction therein illustrated includes an outer course of face bricks **51** having butt joints **52** therebetween and a back-up course of concrete blocks **53** having butt joints **54** therebetween.

INSTALLATION AND USE OF THE MODIFIED FORM OF TYING DEVICE SHOWN IN FIGS. 7 TO 12, INCLUSIVE

The installation and use of the modified form of tying device illustrated in FIGS. **7** to **12,** inclusive, are as follows: The tying device **42** is arranged with the anchoring base portion **44** thereof disposed at a selected point over the upper surface of one of the concrete or like masonry blocks **53,** between the butt joints **54** between the concrete or like masonry blocks **53,** and with the main body portion **43** of the tying device **42** extending vertically upwardly in the cavity **83** between the outer course of bricks **51** and the back-up course of concrete blocks **53** (FIG. **7**) and with the main body portion **43** of the tying device **42** extending parallel to and flush against the inner surfaces of the back-up course of bricks **51** at any desired and selected point between the butt joints **52** between the face bricks **51** (FIG. **8**). The wooden board or "plate" **49** is then laid in position of use over the upper surface of the top tier of bricks **51** and across the body of the first fastening arm portion or member **45,** and against the upwardly extending arm **46** thereof, whereupon the upwardly extending arm **46** of the first fastening arm portion or member **45** is secured to the outer edge of the wooden member or "plate" **49** by means of fastening elements in the form of nails **48** inserted through the holes **47** in the first fastening arm **45–46** into the body of the wooden member or "plate" **49.** The outer end portion **55** of the second fastening arm portion or member **50** is then bent angularly from the body of the second fastening arm portion or member **50,** over and so as to conform to the shape of the inner side **84** and the upper surface **85** of the wooden member or "plate" **49** (FIGS. **7** and **8**), and is fastened to the wooden member or "plate" **49** by means of fastening elements in the form of nails **90** (FIG. **8**) inserted through the holes **89** in the fastening arm portion or member **50–55** into the body of the wooden member or "plate" **49,** thereby completing the installation of the tying device **42.**

The modified form of tying device **42** shown in FIGS. **7** to **12**, inclusive, has a number of advantages over comparable prior art tying devices and among these are the following: (1) It enables the vertically extending upright body portion of the tying device to be positioned at any desired and selected point along the face brick or concrete or like masonry blocks between the butt joints between the masonry unit or over the butt joints, as desired, and without the necessity for adapting the tying device to the butt joints between the face bricks or the butt joints between the concrete or like masonry blocks, as in certain of the prior art anchoring devices, such as those disclosed in applicant's earlier U.S. Pat. Nos. 3,471,988 and 3,494,090, referred to above; (2) it does not require the use of a diagonal or other brace member; (3) it is readily formed, as by stamping, from flat, thin sheet metal stock, without the need for any welds, attachments, rivets or other fastening means and, like the preferred form of the invention illustrated in FIGS. **1** to **6**, inclusive, it may be readily adapted and adjusted for use with coursings of bricks **51** and coursings of concrete blocks **53** by varying the length of the anchoring base portion or member **44** so as to vary correspondingly the overall vertical heighth of the upright body member **43** and the two fastening arm portions or members **45** and **50**.

THE CONSTRUCTION OF THE SECOND MODIFIED FORM OF TYING DEVICE SHOWN IN FIGS. 13 TO 19, INCLUSIVE

A second modification of the invention is illustrated in FIGS. **13** to **19**, inclusive, of the drawings wherein it is generally indicated at **56** and comprises a main body or component **57** which is adapted to be formed in any suitable manner, as by stamping, from a single strip or sheet of flat, relatively thin sheet metal stock, such as the strip **20A** of thin sheet steel, aluminum, or the like, shown in FIG. **2A**, which is cut, bent and formed to provide an upright vertically extending member **58** and an anchoring base portion **59** is formed integrally with the main upright body member **57** at the lower end thereof and extends right-angularly from the main upright body member **58**, and has anchoring teeth or spurs **60** struck therefrom and extending downwardly therefrom to facilitate anchoring the tying device **56**. A first fastening arm portion or member **62** is formed integrally with the main upright body member **58** at the upper end thereof and projects laterally therefrom at one side thereof and in coplanar relationship with the anchoring base portion or member **59** but on the opposite side of the main upright body member **58** from the side thereof on which the anchoring base portion or member **59** is formed. The first fastening arm portion or member **62** has an upwardly extending outer end portion **63** which extends angularly upwardly therefrom in coplanar relationship with the main upright body member **58**, and this first fastening arm portion or member **62–63** has holes **78** formed therein for the reception of fastening elements, such as nails **64**, by which the fastening arm portion or member **62–63** may be attached to a wooden board, or "plate" member **65** which is mounted on the uppermost tier of face bricks **66** in the composite wall construction which includes concrete or like masonry blocks **67**; the face bricks **66** being separated by butt joints **68** and the concrete blocks **67** being separated by butt joints **69** (FIGS. **13** and **14**).

The tying device **56** includes a second fastening arm portion of member **70** which is formed integrally with the upright body member **58** at the upper end thereof and extends angularly therefrom parallel to and in coplanar relationship with the first fastening arm portion or member **62** but on the opposite side of the main upright body member **58** from the side thereof on which the first fastening arm portion or member **62** is arranged; the second fastening arm portion or member **70** being disposed above and extending parallel to and in coplanar relationship with the anchoring base member **59**. The outer end portion **79** of the second fastening arm portion or member **70** has holes **71** formed therein for the reception of fastening elements, such as the nails **80**, by which the second fastening arm portion or member **70–79** may be attached to the upper surface of the wooden member or "plate" **65** (FIG. **14**).

The tying device **56** includes a second component in the form of a brace member **72** which is formed as a separate part relative to the main tying member component **57** and may be made from suitable material such as metal wire stock. The brace member **72** is generally U-shaped in form and includes a main body portion **73** having formed integrally therewith at one end thereof a first arm **74**, which extends right-angularly from the main body portion **73** and has formed integrally therewith at its opposite end a second arm **75** which also extends right-angularly from the main body portion **73** parallel to and in coplanar relationship with the first arm **74** (FIG. **19**).

As best shown in FIGS. **15** and **18**, the upright body member **58** of the main body **57** of the tying device **56** has an outwardly swedged boss portion **76** formed therein at one side thereof and a passage **77** is formed between the front face of the main upright body member **58** and the boss portion **76** for the passage of the arm **75** of the brace member **72**, thus providing a socket or pivotal mounting for the lower arm portion **75** of the brace member **72**. An outwardly and downwardly swedged boss portion **81** is formed at the junction of the main body of the first fastening arm portion or member **62** and the upwardly extending outer arm **63** thereof and this boss portion **81** provides a mounting groove or socket for the reception of the upper arm **74** of the brace member **72** (FIG. **18**).

INSTALLATION AND USE OF THE MODIFIED FORM OF THE INVENTION ILLUSTRATED IN FIGS. 13 TO 19, INCLUSIVE

As described above, the main component or body **57** of the modified form of the invention illustrated in FIGS. **13** to **19**, inclusive, may be made in flat form, as by stamping, from a sheet or strip of relatively thin flat metal stock, such as thin sheet steel, or aluminum, or the like, and may be packaged and shipped with the brace member **72** and assembled on the job.

In installing the modified form of tying device **56**, shown in FIGS. **13** to **19**, inclusive, the main tying member component **57** may be assembled on the job with the brace member **72** by inserting the then upper arm **74** of the brace member **72** into the groove or socket **81** and by inserting the then lower arm **75** of the brace member **72** into the passage **77** between the boss **76** and the body of the main upright member **58** (FIGS. **15** and **18**), whereupon the thus assembled tying device **56** is ready for installation and use.

The assembled tying device **56** may then be installed, as shown in FIGS. **13** and **14**, at any desired point between the butt joints **69** of the so-called back-up course of concrete or like masonry blocks (or a concrete wall) and at any desired one of the butt joints **68** in the face bricks **66** with the first fastening arm portion **62** extending over the upper surface of the uppermost tier of face bricks **66**. The wooden member or "plate" **65** may be arranged in position of use over the uppermost tier of face bricks **66** with the upwardly extending fastening arm portion **63** thereof extending upwardly along and in engagement with the outer edge portion **86** of the wooden member or "plate" **65** (FIG. **13**). The upwardly extending portion **63** of the first fastening arm or member **62** may be attached to the wooden member or "plate" **65** by inserting fastening elements, such as the nails **64**, inserted through the holes **78** in the upwardly extending fastening portion **63** of the first fastening arm or member **62** into the wooden member or "plate" **65**, as shown in FIG. **13**. The second fastening arm or member **70** may then be bent inwardly, from the position in which it is shown in FIG. **13**, into the position in which it is shown in FIG. **14**, with a portion thereof extending upwardly along the side edge **87** of the wooden member or "plate" **65** and in engagement therewith and with the outer end portion **79** thereof bent over and in engagement with the upper surface **88** of the wooden member or "plate" **65**. The outer end portion **79** of the second fastening arm portion or member **70** may then be attached to the wooden member or "plate" **65** by inserting fastening elements, such as nails **80** (FIG. **14**) through the holes **71** in the outer end portion **79** of the second fastening arm portion or member **70** into the wooden member or "plate" **65**, thereby completing the installation of the tying device **56**.

When the tying device **56** is thus installed in position of use, it has a number of advantages over comparable prior art tying devices, including those which employ a diagonally extending brace member, including the following advantages: (1) it is not dependent upon being used in conjunction with or at either the butt joints between the concrete or like blocks in the back-up course of such blocks, nor is it dependent upon use in conjunction with or at the butt joints between the face bricks in the coursing of face bricks; (2) the two components **57** and **72** of the tying device may be packaged and shipped in compact form and assembled on the job by unskilled personnel; (3) it is readily adaptable for use in walls embodying poured concrete into which the teeth or spurs **60** on the anchoring base portion or member **59** may be readily embedded to enhance the anchoring of the tying device **56** to a composite masonry wall construction which embodies poured concrete; (4) it retains both edge portions of the wooden board or "plate" **65** securely in position; (5) the diagonally extending brace member **72** effectively braces the upper and outer edge portion **63** of the first fastening arm portion or member **62** and the outer edge portion of the wooden board or "plate" **65**; and (6) like the form of construction illustrated in FIGS. **1, 2, 2A** and **3** to **6**, inclusive, and the modified form of construction shown in FIGS. **7** to **12**, inclusive, the modified form of the invention shown in FIGS. **13** to **19**, inclusive, is readily adaptable and adjustable to variations in the vertical heights of the back-up course of face bricks **66** and the back-up course of concrete blocks **67** by varying the length of the anchoring base portion or member **59** so as to vary correspondingly the overall vertical heighth of the main upright body member **58** and the upper fastening arms or members **62–63** and **70–79**.

Additional advantages of all three forms of the new tying devices disclosed in the drawings and hereinbefore described are (1) that they may be used to tie wooden members or plates of various sizes and shapes to the masonry construction even though the position of the tying device on the masonry construction may require that it be fastened at varying angles or positions on the surface of the wooden member or plate or at an intersection where the wooden member or plate crosses the wall at either a right angle or other angle in relation to the vertically extending portion of the tying device; and (2) that the new tying devices may be used even though the wooden members or plates are installed with either their outer edges or their inner edges arranged at varying distances in relation to the face of the masonry wall in connection with which the new tying devices are used.

It will thus be seen from the foregoing description, considered in conjunction with the accompanying drawings, that the present invention provides new and improved tying devices for tying wooden members or "plates" to the back-up courses of face bricks and concrete blocks in composite masonry wall constructions and thus has the desirable advantages and characteristics and accomplishes its intended objects including those hereinbefore pointed out and others which are inherent in the invention.

I claim:

1. A tying device for tying a wooden plate to an upper surface of a composite wall structure including a plurality of tiers of concrete blocks or the like, and a plurality of tiers of bricks or the like in juxtaposition with the blocks or the like, said tying device comprising an elongate, flat, sheet metal body member having opposite flat faces and an upper end and a lower end, said lower end bent laterally outwardly defining a flat, rectangular, horizontal anchoring foot integral with said body member, and said upper end of said body member split longitudinally in half, defining a pair of oppositely horizontally extending, flat, rectangular tying arms struck from the upper end of the body member and extending perpendicularly in opposite directions from the body member in a plane parallel to the plane of the anchoring foot and terminating in free ends, each of said arms having a width substantially one half the width of the body member and each having a plurality of holes therein for receiving fastening means therethrough and into a plate, one of said arms, when in use, extending horizontally from the body member and beneath a plate and bent upwardly at the free end thereof against one side of the plate, and the other arm, when in use, extending upwardly from the body member and along one side of a plate and bent horizontally at the free end thereof across the top of the plate, to receive fastening means through the holes and into a plate to tie the plate to the wall.

2. A tying device for tying a wooden plate having top, bottom and side surfaces to the top of a composite brick and concrete block or like masonry unit wall construction, wherein a plurality of tiers of vertically stacked bricks or the like are in juxtaposition with a plurality of tiers of vertically stacked concrete blocks or the like, said tying device comprising an elongate, flat, rectangular, vertically extending body member

having upper and lower ends and front and rear faces, said body member positioned between the tiers of bricks or the like and the tiers of concrete blocks or the like with the plane of the body member parallel to the plane of the wall, the lower end of the body member bent horizontally defining a flat, rectangular anchoring foot extending perpendicular to the plane of the wall and positioned between upper and lower adjacent concrete blocks or the like, the upper end of the body member split longitudinally defining a pair of tying arms each having a width one half as great as the width of the body member, and each having a free end, one of said arms extending horizontally from one face of the body member and between the bottom surface of said wooden plate and the top of said tiers of bricks or the like and bent vertically upwardly at the free end thereof against one side surface of the wooden plate, the other of said arms extending upwardly from the body member and against the other side surface of said plate and bent horizontally at the free end thereof across the top surface of said plate, openings in said arms, and fastening means extended through said openings into said plate to tie said plate to said wall.

3. A tying device as in claim **2,** wherein a substantially U-shaped diagonal brace is connected at its opposite ends to said vertically extending body member intermediate the ends thereof and to said one tying arm at the point where said one tying arm is bent vertically upwardly.

4. A tying device as in claim **3,** wherein said brace comprises an elongate, substantially straight, bight portion and a pair of legs extending substantially perpendicularly from opposite ends of the bight portion, socket means integral with said body member on said one face thereof, one of said legs of said brace received in said socket means, a second socket means integrally formed on said one arm at the point where said one arm is bent and the other leg of said brace received in said second socket.

5. A tying device as in claim **4,** wherein a plurality of downwardly projecting anchoring teeth are stuck from said anchoring foot.

6. A tying device for tying a wooden plate having top, bottom and side surfaces to the top of a composite brick and concrete block or like masonry unit wall construction, wherein a plurality of tiers of vertically stacked bricks or the like are in juxtaposition with a plurality of tiers of vertically stacked concrete blocks or the like, said tying device comprising an elongate, flat, rectangular, vertically extending body member having upper and lower ends and front and rear faces, said body member positioned in the joint between adjacent confronting ends of a pair of the concrete blocks or the like with the plane of the body member extending substantially perpendicular to the plane of the wall, the lower end of the body member bent horizontally defining a flat, rectangular anchoring foot extending perpendicularly from one of said faces and positioned between adjacent upper and lower concrete blocks or the like, the upper end of the body member split longitudinally defining a pair of tying arms each having a width one half as great as the width of the body member and each having a free end, said arms integrally joined at their other ends to the body member by coplanar, triangular webs extending perpendicularly from the other face of said body member, one of said arms extending horizontally from one side edge of the body member at the upper end of the body member and between the bottom surface of said wooden plate and the top of said tiers of bricks or the like and bent upwardly at the free end thereof against one side surface of the wooden plate, the other of said arms extending upwardly from the other side edge of the body member at the upper end of the body member and against the other side surface of said plate and bent horizontally at the free end thereof across the top surface of said plate, openings in said arms, and fastening means extended through said openings into said plate to tie said plate to said wall.

7. A tying device as in claim **6,** wherein said plate has a width at its bottom surface greater than the horizontal length of said one tying arm and the other side surface of said plate is angularly inclined toward the one side surface, said plate extending over said webs and said other tying arm extending angularly upwardly against said inclined side surface of said plate.

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