Oct. 21, 1958 W. D. HALL 2,856,866

BINDING STRAP ANCHOR MEANS

Filed Oct. 7, 1954 2 Sheets-Sheet 1

Fig. 1.

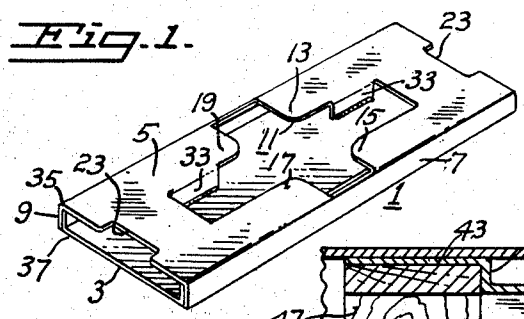


Fig. 2.

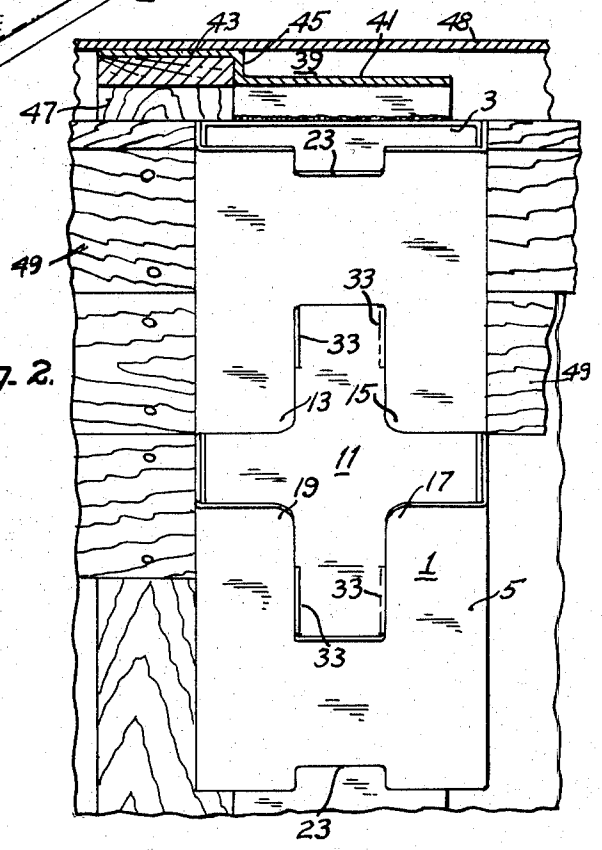
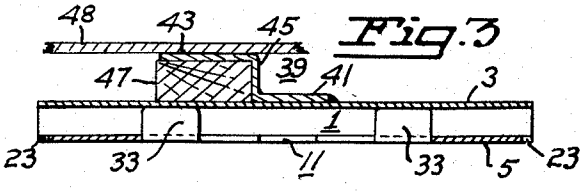


Fig. 3



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BINDING STRAP ANCHOR MEANS

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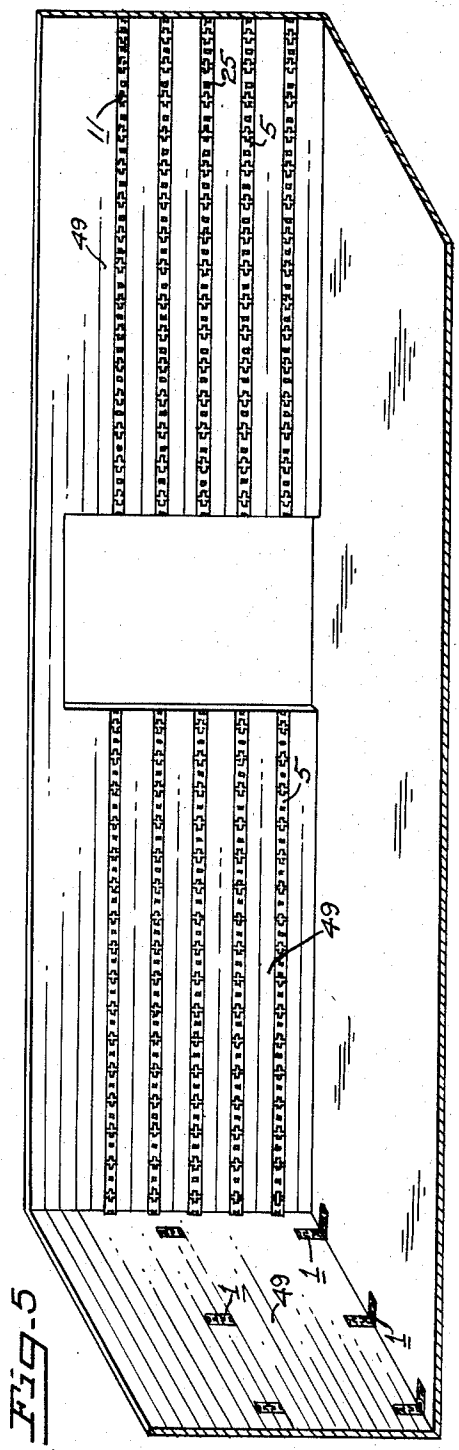


Fig. 5

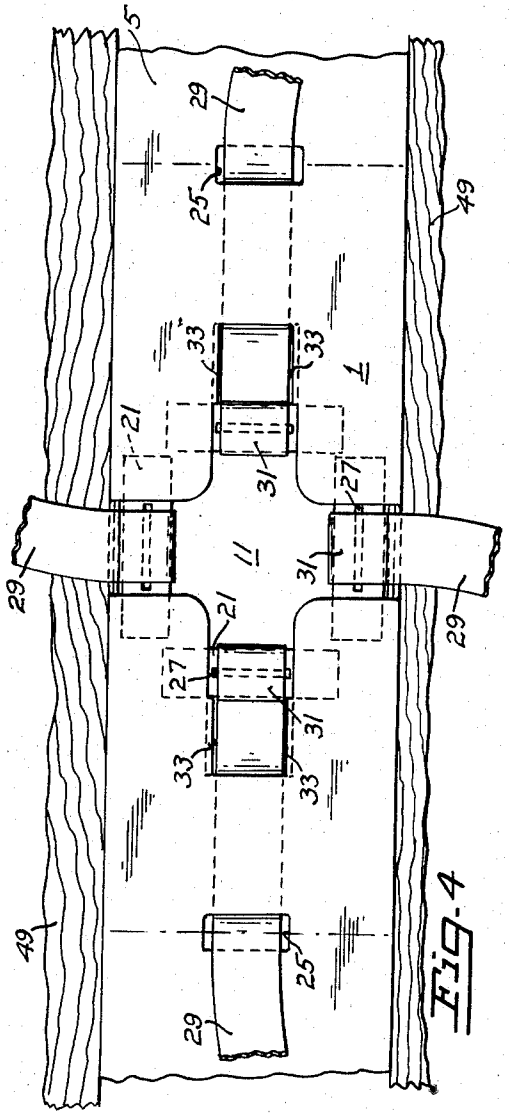


Fig. 4

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2,856,866

BINDING STRAP ANCHOR MEANS

Warren D. Hall, Oakland, Calif.

Application October 7, 1954, Serial No. 460,998

15 Claims. (Cl. 105—369)

My invention relates to freight loading, and more particularly to a freight vehicle wall construction and binding strap anchor means for inclusion therein as part of such wall construction.

The matter of transporting freight in freight vehicles such as freight cars, trucks, planes or ships has become a major problem, for despite the major efforts and large sums of money expended in attempts to solve such problems, damages to freight still continue to run in the millions of dollars annually.

Among the objects of the present invention are

(1) To provide a novel and improved freight vehicle wall construction for simplifying the handling of freight in transit;

(2) To provide a novel and improved freight vehicle wall construction with included binding strap anchor means for use in stabilizing freight in transit;

(3) To provide a novel and improved freight vehicle wall construction with included binding strap anchor means providing multiple points of anchorage for binding straps employable in stabilizing freight against shifting during transit;

(4) To provide a novel and improved freight vehicle wall construction with included binding strap anchor means which, in addition to providing for the strapping of freight in horizontal planes, also permits of the strapping of such freight in vertical planes;

(5) To provide a novel and improved freight vehicle wall construction with included binding strap anchor means which enables use of binding straps of standardized lengths;

(6) To provide a novel and improved freight vehicle wall construction with included binding strap anchor means which permits of the ready anchorage of a binding strap thereto and without the necessity of reliance upon tools;

(7) To provide a novel and improved freight vehicle wall construction with included binding strap anchor means which will tolerate bulk shipments without loss;

(8) To provide a novel and improved freight vehicle wall construction with included binding strap anchor means which will not impose any interference with the stowing of freight for shipment;

(9) To provide a novel and improved binding strap anchor means for application to the wall construction of a freight vehicle;

(10) To provide a novel and improved binding strap anchor means having a series of selective anchor points;

(11) To provide a novel and improved binding strap anchor means enabling the take off of a binding strap in any of four different directions, singly or simultaneously.

(12) To provide a novel and improved binding strap anchor means requiring no tools in anchoring a binding strap thereto;

(13) To provide a novel and improved binding strap anchor means capable of being readily cleaned;

(14) To provide a novel and improved binding strap anchor means of simple but rugged construction, and adapted for installation as original equipment or in the modernization of old equipment;

(15) To provide a novel and improved binding strap anchor means which may be installed flush with the surrounding wall surface.

Additional objects of my invention will be brought out in the following description of a preferred embodiment of the same taken in conjunction with the accompanying drawings, wherein

Figure 1 is a three dimensional view of a single section binding strap anchor means embodying the features of the present invention;

Figure 2 is a view in section through a wall of a freight car, as viewed on substantially a 45° angle, and depicting one manner of installation of the device of Figure 1;

Figure 3 is a view in section taken in the horizontal plane through the horizontal center line of the cross-shaped cut-out of Figure 4;

Figure 4 is a view depicting the manner in which binding straps may be anchored;

Figure 5 is a schematic view of the interior of a freight car to illustrate a suggested arrangement of binding strap anchor means of the present invention into the wall construction of such a car.

Referring to the drawings for details of my invention in its preferred form, the binding strap anchor means may comprise one or more hollow sections **1** of shallow rectangular cross-section, and preferably formed of sheet metal of a gauge sufficiently heavy to withstand the stresses to which the anchor means will be subjected in use. In such form, the anchor means involves a base strip **3**, a face strip **5**, both joined in spaced relationship to each other by side walls **7** and **9**.

Each such face strip has at least one cut-out **11**, preferably of cross-shape located intermediate the ends of such section, to form four anchor tabs **13**, **15**, **17** and **19** behind any successive pair of which, one might slip a substantially rectangular conventional anchor plate **21**, such, for example, as is disclosed in my patent for Binding Strap Anchor Means, No. 2,581,529 of January 8, 1952. The cross-shaped cutout is preferably disposed so that one arm extends transversely of the face strip, preferably from one side wall to the other, with the other arm extending longitudinally of the section. When so disposed, there results two longitudinal pairs of anchor tabs and two transverse pairs.

When the anchor means comprises but a single section, the face strip is provided at each end with a notch **23** of width sufficient to permit of the withdrawal of a binding strap. When the anchor means, however, comprises two or more of such sections in series, such end notches will match up with adjacent end notches of adjacent sections to form rectangular cut-outs **25** intermediate the cross-shaped cut-outs in the face strip.

The conventional anchor plate is a flat rectangular piece of metal having a rectangular slot **27** therein through which to thread one end of a binding strap **29** to form a loop **31**, which when folded about the anchor plate, will result in the loose end of the strap loop being snubbed against the plate and security held against slipping when tension is placed on the strap.

In utilizing such anchor plate in connection with the anchor means of the present invention, the plate, after the strap has been threaded therethrough and snubbed in the manner indicated, is slipped into position behind any pair of adjacent anchor tabs, the particular pair of tabs selected depending upon which direction it is desired to lead the strap. If the anchor plate is to be disposed behind a longitudinal pair of tabs in order to lead the strap off in a lateral direction with respect to the anchor means, the proximate side wall will act as a stop or abutment

for the anchor plate when tension is placed upon the strap.

When the strap is to be taken off in a direction longitudinally of the anchor means by disposing the anchor plate behind a transverse pair of tabs, the free end of the strap is first preferably passed through the cross-shaped cut-out and snaked longitudinally of the interior passage of the anchor means until such free end appears at one or another of the cut-outs along the face strip, through any desired one of which the strap may be withdrawn until the anchor plate can be conveniently inserted behind the appropriate pair of anchor tabs.

To preclude such anchor plate from being pulled into the anchor means passage and out of reach, stop means are provided which will not interfere with movement or positioning of the binding strap. Such stop means may take the form of one or more tabs **33** upset in a downward direction from the face strip at appropriate points therein, though preferably such tabs are located adjacent the ends of the longitudinal arms of each cross-shaped cut-out, to form longitudinal wall sections depending from the edges of such arms adjacent the ends thereof, and extending to the back strip. Such wall sections being then disposed edgewise to the anchor plate, they offer maximum resistance to bending or tearing under the conditions to which they will be exposed in use. By joining such wall sections to the backing plate, preferably as by welding, the strength thereof is not only enhanced, but the anchor means in general becomes strategically reinforced.

The anchor means is preferably fabricated from a pair of interfitting channels **35**, **37** welded along exposed contiguous edges, thus creating side walls of double thickness.

The binding strap anchor means of the present invention may be built as original equipment or may be utilized in the modernization of old equipment, and has particular application to freight vehicles such as railroad freight cars. In connection with one type of such freight car, such wall construction may involve a plurality of horizontally spaced, vertically disposed wall ribs or stanchions **39**, each of a section involving an inner flange **41** and an outer flange **43** lying in substantially parallel planes, but laterally displaced with respect to each other and connected by a web **45** at substantially right angles thereto. Within the angle formed by the outer flange and web, a wood insert **47** is disposed and maintained in such position by suitable bolts or other fastening means through the web of the rib. The outer wall **48** of the vehicle which may be of heavy gauge sheet metal such as aluminum or steel which is applied to and supported on the outer flanges of the ribs, while the inner wall is affixed to the surfaces provided by the inner flanges and the wood inserts.

In incorporating the present invention into the wall construction of such vehicle, a plurality of multiple binding strap anchor means are disposed horizontally in vertically spaced relationship across the inner flanges of the side wall ribs from each end of the car to the doorway of each side wall and welded to such flanges, following which the intermediate spaces between such multiple binding strap anchor means may be filled in preferably by boards or siding **49** of thickness comparable to the height of the anchor means side walls, so as to present a flush surface in conjunction with the face strips of the binding strap anchor means. Such boards or siding may be fastened into position by nailing them to the wood inserts previously referred to.

The end walls of the car may be similarly constructed, with the anchor means arrangement on one end wall preferably matching the arrangement of the anchor means on the opposite end wall of the car.

In lieu, however, of applying multiple binding strap anchor means to the end walls, it is contemplated that in some instances it would be preferable to utilize single section anchor means, and when such are used, each will be disposed vertically along a rib and welded thereto at each end, thus strongly securing the same into the wall construction. The number and location of such single section anchor means in the end walls of the vehicle is determined with the view of obtaining maximum utilization and efficiency. In fact, it may even be desirable to incorporate a number of such single section anchor means in the floor of the car, preferably adjacent the end walls thereof.

It will be apparent, in view of the fact that the binding straps may be taken off in any of four different directions from each cross-shaped cut-out, that the anchor means of the present invention, when installed in the side and end walls of a freight car or similar vehicle, provide facilities for binding freight in one or more horizontal planes throughout the height of the car, as well as one or more vertical planes either transversely of the car or longitudinally thereof, thus making it possible to securely bind such freight against shifting in any direction.

The multiple binding strap anchor means, with its successive cross-shaped cut-outs, makes it possible to anchor the binding straps at regularly occurring selected points along the car walls, and by spacing such take off points at frequent intervals, say of the order of twelve inches, the binding straps may be standardized as to length. The importance of this lies in the fact that no longer will it be necessary to follow the prior practice of fixing the binding strap to a point on a side wall of the car and then run the strap out through the door of the vehicle to a length which the operator would have to estimate as sufficient to meet the requirements of a particular cargo or shipment of freight to be stowed in that particular car.

Aside from the manner of use just described for the anchoring of freight in a car or the like, the anchor means of the present invention offers facilities for suspending freight in air, that is at an elevation above the floor of the vehicle should the nature of the freight call for the suspension thereof in transit. This can be readily visualized by extending supporting straps from anchor means on one side wall of the vehicle to the corresponding anchor means on the opposing side wall to form a bed or sling on which to dispose the freight or cargo, which may thereafter be retained thereon, if necessary, by binding straps across the top thereof.

Straps anchored to binding means on the end walls might conceivably be interwoven with the transverse straps and crimped at their free ends to the transverse strap nearest the middle of the car, to form a reticulated network which would be much stronger and more efficient. Such flexible suspension of freight or cargo serves to point up the flexible character of the present system of anchoring freight.

A feature of the construction of the binding strap anchor means of the present invention, lies in the fact that it is totally enclosed on three sides by the rear strip and the side walls, leaving the interior exposed only through the cut-outs in the face strip. The significance of this lies in the fact that in shipping bulk freight such as grain, the face strip, if desired, may be readily masked, but even if not masked, no such bulk material can gain access to interior of the car walls. Any such bulk material gaining access to the interior of the anchoring means, will for the most part, automatically flow out through the cross-shaped cut-outs since the transverse arms of such cut-outs extend to the side walls of the anchor means. Any material remaining within the anchor means upon unloading of a car, will be insignificant, and even this may be readily blown out with an air hose.

It will be apparent from the foregoing description of my invention in its preferred form that the same is subject to alteration and modification without departing from the underlying principles involved, and while I have illustrated and described my invention in its pre-

ferred form and in considerable detail, I do not desire to be limited in my protection to such details as I have illustrated and described except as may be necessitated by the appended claims.

I claim:

1. Multiple binding strap anchor means comprising a hollow sheet metal body of shallow substantially rectangular cross section comprising back strip means and a face strip joined in spaced relationship by side walls, said face strip having a series of cross-shaped cut-outs spaced longitudinally thereof to form successive groups of four anchor tabs behind any pair of which one might slip a substantially rectangular anchor plate, each of said cross-shaped cut-outs extending in one direction from one side wall to the other and in another direction, longitudinally of said body, to provide two longitudinal pairs and two transverse pairs of anchor tabs, said face strip also having a substantially rectangular cut-out intermediate successive cross-shaped cut-outs through which to withdraw a strap when secured to an anchor plate disposed behind a transverse pair of said tabs, and stop means for such an anchor plate when utilizing one of said rectangular cut-outs for the withdrawal of a strap anchored to such plate to retain such anchor plate behind such tabs when such binding strap is placed under tension.

2. Multiple binding strap anchor means comprising a hollow sheet metal body of shallow substantially rectangular cross section comprising back strip means and a face strip joined in spaced relationship by side walls, said face strip having a series of cross-shaped cut-outs spaced longitudinally thereof to form successive groups of four anchor tabs behind any pair of which one might slip a substantially rectangular anchor plate, each of said cross-shaped cut-outs extending in one direction from one side wall to the other and in another direction longitudinally of said body, to provide two longitudinal pairs and two transverse pairs of anchor tabs, said face strip also having at least one substantially rectangular cut-out intermediate successive cross-shaped cut-outs through which to withdraw a strap when secured to an anchor plate disposed behind a transverse pair of said tabs, and stop means for such an anchor plate when utilizing one of said rectangular cut-outs for the withdrawal of a strap anchored to such plate, to retain such anchor plate behind such tabs when such binding strap is placed under tension, said stop means extending between said face strip means and said back strip alongside the path occupied by such strap when in use.

3. Multiple binding strap anchor means comprising a hollow sheet metal body of shallow substantially rectangular cross section comprising back strip means and a face strip joined in spaced relationship by side walls, said face strip having a series of cross-shaped cut-outs spaced longitudinally thereof to form successive groups of four anchor tabs behind any pair of which one might slip a substantially rectangular anchor plate, each of said cross-shaped cut-outs extending in one direction from one side wall to the other and in another direction, longitudinally of said body, to provide two longitudinal pairs and two transverse pairs of anchor tabs, said face strip also having at least one substantially rectangular cut-out intermediate successive cross-shaped cut-outs through which to withdraw a strap when secured to an anchor plate disposed behind a transverse pair of said tabs, and stop means for such an anchor plate when utilizing one of said rectangular cut-outs for the withdrawal of a strap anchored to such plate to retain such anchor plate behind such tabs when such binding strap is placed under tension, said stop means including a wall section extending between said face strip means and said back strip along a portion of each longitudinal edge of the longitudinal portion of each of said cross-shaped cut-outs, said wall sections being united to both said face strip means and said back strip to reinforce said hollow sheet metal body intermediate the side walls thereof.

4. Multiple binding strap anchor means comprising a unitary combination of a plurality of successive sheet metal anchor sections, each section being hollow and of shallow substantially rectangular cross section to provide base strip means and a face strip joined in spaced relationship by side walls, said face strip having a cut-out intermediate the ends of such section to form anchor tabs behind which one might slip a substantially rectangular anchor plate, said cut-out, in one direction, extending transversely of the face strip from one side wall to the other and in the other direction extending longitudinally of such section to provide at least one transverse pair of tabs, said section face strip also having a notch at an end through which to withdraw a strap when secured to an anchor plate behind said transverse pair of tabs, and stop means for such anchor plate when disposed behind said transverse pair of tabs.

5. Multiple binding strap anchor means comprising a unitary combination of a plurality of successive sheet metal anchor sections, each section being hollow and of shallow substantially rectangular cross section to provide base strip means and a face strip joined in spaced relationship by side walls, said face strip having a cut-out intermediate the ends of such section to form anchor tabs behind which one might slip a substantially rectangular anchor plate, said cut-out, in one direction, extending transversely of the face strip from one side wall to the other and in the other direction extending longitudinally of such section to provide at least one transverse pair of tabs, said section face strip also having a notch at an end through which to withdraw a strap when secured to an anchor plate behind said transverse pair of tabs, and stop means for such anchor plate when disposed behind said transverse pair of tabs, said stop means including a wall section extending between said face strip means and back strip along a portion of each longitudinal edge of the longitudinal portion of said cut-out, said stop tabs being united to both said face strip and said back strip to reinforce said section intermediate the side walls thereof.

6. Multiple binding strap anchor means comprising a unitary combination of a plurality of successive sheet metal anchor sections, each section being hollow and of shallow substantially rectangular cross section to provide base strip means and a face strip joined in spaced relationship by side walls, said face strip having a cross-shaped cut-out intermediate the ends of such section to form four anchor tabs behind any pair of which one might slip a substantially rectangular anchor plate, said cross-shaped cut-out, in one direction, extending transversely of the face strip from one side wall to the other and in the other direction extending longitudinally of such section to provide two longitudinal pairs of two transverse pairs of anchor tabs, said section face strip also having a notch at each end through which to withdraw a strap when secured to an anchor plate behind a transverse pair of tabs, each of said section end notches forming with the adjacent end notch of an adjacent section, a substantially rectangular cut-out, and stop means for such anchor plate when disposed behind a transverse pair of tabs.

7. Multiple binding strap anchor means comprising a unitary combination of a plurality of successive sheet metal anchor sections, each section being hollow and of shallow substantially rectangular cross section to provide base strip means and a face strip joined in spaced relationship by side walls, said face strip having a cross-shaped cut-out intermediate the ends of such section to form four anchor tabs behind any pair of which one might slip a substantially rectangular anchor plate, said cross-shaped cut-out, in one direction, extending transversely of the face strip from one side wall to the other and in the other direction extending longitudinally of

such section to provide two longitudinal pairs of two transverse pairs of anchor tabs, said section face strip also having a notch at each end through which to withdraw a strap when secured to an anchor plate behind a transverse pair of tabs, each of said section end notches forming with the adjacent end notch of an adjacent section, a substantially rectangular cut-out, and stop means for such anchor plate when disposed behind a transverse pair of tabs, said stop means including a wall section extending between said face strip means and back strip along a portion of each longitudinal edge of the longitudinal portion of said cross-shaped cut-out.

8. Binding strap anchor means comprising a hollow shallow sheet metal section of substantially rectangular cross section to provide base strip means and a face strip joined in spaced relationship by side walls, said face strip having a cut-out intermediate the ends of said section to form anchor tabs behind a pair of which one might slip a substantially rectangular anchor plate, said cut-out, in one direction extending transversely from one side wall to the other and in the other direction extending longitudinally of said section to provide at least a transverse pair of anchor tabs, said face strip also having a notch at an end through which to withdraw a strap when secured to an anchor plate disposed behind such transverse pair of said tabs, and stop means for such anchor plate when installed behind such transverse pair of said tabs, said stop means extending between said face strip and said back strip means to either side of the path occupied by such binding strap when secured to such plate and withdrawn through an end notch, and including a wall section along a portion of each longitudinal edge of the longitudinal portion of said cut-out, said wall sections being united to both said face strip and said back strip means to reinforce said section intermediate the side walls thereof.

9. Binding strap anchor means comprising a hollow shallow sheet metal section of substantially rectangular cross section to provide base strip means and a face strip joined in spaced relationship by side walls, said face strip having a cross-shaped cut-out intermediate the ends of said section to form four anchor tabs behind selected pairs of which one might slip a substantially rectangular anchor plate, said cross-shaped cut-out, in one direction extending transversely of said section and in the other direction extending longitudinally of said section to provide two longitudinal pairs and two transverse pairs of anchor tabs, said face strip also having a notch at each end through which to withdraw a strap when secured to an anchor plate disposed behind a transverse pair of said tabs, and stop means for such anchor plate when installed behind a transverse pair of said tabs, said stop means extending between said face strip means and said back strip to either side of the path occupied by such binding strap when fixed to such plate and withdrawn through an end notch, and including a wall section along a portion of each longitudinal edge of the longitudinal portion of said cross-shaped cut-out.

10. Binding strap anchor means comprising a hollow shallow sheet metal section of substantially rectangular cross section to provide a base strip and a face strip joined in spaced relationship by side walls, said face strip having a cross-shaped cut-out intermediate the ends of said section to form four anchor tabs behind selected pairs of which one might slip a substantially rectangular anchor plate, said cross-shaped cut-out, in one direction extending transversely from one side wall to the other and in the other direction extending longitudinally of said section to provide two longitudinal pairs and two transverse pairs of anchor tabs, said face strip also having a notch at each end through which to withdraw a strap when secured to an anchor plate disposed behind a transverse pair of said tabs, and stop means for such anchor plate when installed behind a transverse pair of said tabs, said stop means extending between said face strip and said back strip to either side of the path occupied by such binding strap when secured to such plate and withdrawn through an end notch, and including a wall section along a portion of each longitudinal edge of the longitudinal portion of said cross-shaped cut-out, said wall sections being united to both said face strip and said back strip to reinforce said section intermediate the side walls thereof.

11. Binding strap anchor means comprising a section including a face strip, said face strip having a cross-shape opening intermediate the ends of said section, said cross-shape opening in one direction extending transversely of said section and in another direction extending longitudinally of said section to provide two horizontally disposed pairs of anchor tabs and two vertically disposed pair of anchor tabs, behind any of which pairs, one might insert an anchor plate, and means for precluding the sliding of such an anchor plate longitudinally of said section when disposed behind a vertically disposed pair of said tabs and when subjected to tension in such a strap.

12. Binding strap anchor means comprising a sheet metal section of shallow substantially rectangular cross section comprising a face strip and side walls, said face strip having an opening intermediate the ends of said section, said opening in one direction extending transversely of said section and in another direction extending longitudinally of said section to provide at least a transverse pair of anchor tabs, said face strip also having a notch at an end thereof through which to withdraw a strap secured to an anchor plate, when such anchor plate is disposed behind said transverse pair of anchor tabs, and means for precluding the sliding of such an anchor plate longitudinally of said section when disposed behind said tabs and when subjected to tension in such a strap, said means including a pair of wall sections extending from said face strip inwardly of said sheet metal section, one on each side of the path to be occupied by such a strap when used in said binding strap anchor means.

13. Multiple binding strap anchor means comprising a unitary combination of a plurality of successive anchor sections, each section including a face strip, said face strip having an opening intermediate the ends thereof, said opening in one direction extending transversely of said section and in another direction extending longitudinally of said section to provide at least a transverse pair of anchor tabs, said face strip also having a notch at each end through which to withdraw a strap secured to an anchor plate when such anchor plate is disposed behind said transverse pair of anchor tabs, each of said section end notches forming an opening with the adjacent end notch of an adjacent section, and means for precluding the sliding of such an anchor plate longitudinally of said section when disposed behind said tabs and when subjected to tension in such a strap.

14. Multiple binding strap anchor means comprising a unitary combination of a plurality of successive sheet metal anchor sections, each section comprising a face strip and side walls, said face strip having an opening intermediate the ends thereof, said opening in one direction extending transversely of said section and in another direction extending longitudinally of said section to provide at least a transverse pair of anchor tabs, said face strip also having a notch at each end through which to withdraw a strap secured to an anchor plate when such anchor plate is disposed behind said transverse pair of anchor tabs, each of said section end notches forming an opening with the adjacent end notch of an adjacent section, and means for precluding the sliding of such an anchor plate longitudinally of said section when disposed behind said tabs and when subjected to tension in such a strap, said means including a pair of wall sections extending from said face strip inwardly of said sheet metal anchor section, one on each side of the

path to be occupied by such a strap when used with said binding strap anchor means.

15. Binding strap anchor means comprising a section including a face strip, said face strip having a cross-shape opening intermediate the ends of said section, said cross-shape opening in one direction extending transversely of said section and in another direction extending longitudinally of said section, to provide two horizontally disposed pairs of anchor tabs and two vertically disposed pairs of anchor tabs, behind any of which pairs, one might insert an anchor plate, an anchor plate adapted for insertion behind any one of said pairs of anchor tabs, said anchor plate having an opening therethrough to permit of the removable attachment of an end of an anchor strap thereto, and means for precluding the sliding of said anchor plate longitudinally of said section when disposed behind a vertically disposed pair of said tabs and when subjected to tension in such a strap.

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