ANCHOR DEVICE FOR TRAILERS

Inventor: Ray A. Barnes, Cape Girardeau, Mo. 63701

Assignee: Barnes Anchor Incorporated, Jackson, Mo.

Filed: Oct. 23, 1970

Appl. No.: 83,309

U.S. Cl. 52/23, 24/31 W, 52/157, 52/173, 280/179

Int. Cl. E04b 7/00

Field of Search 52/23, 173, 157, 295, 86; 248/361 R; 135/1; 160/368.5; 280/179 A; 206/46 M, 62; 220/1.5; 150/52 K; 24/31 W

References Cited

UNITED STATES PATENTS
2,449,950 9/1948 Nassimbene..................24/31 W
3,327,359 6/1967 Wiese........................24/31 W
3,510,142 5/1970 Erke...........................248/361
777,441 12/1904 Small.........................52/23
3,335,531 8/1967 Grimelli......................52/23
2,187,436 1/1940 Thofehrn et al..............52/23
3,316,012 4/1967 Thier..........................150/52 K
1,644,278 10/1927 Romine.....................280/179 A
2,056,178 10/1936 Fitch.......................220/1.5
2,559,732 7/1951 Padgett......................52/157
2,828,841 4/1958 Weeks.......................52/637

FOREIGN PATENTS OR APPLICATIONS
45,602 9/1935 France..........................24/31 W

Primary Examiner—Henry C. Sutherland
Attorney—Jones and Lockwood

ABSTRACT

An anchor device for securing trailers such as mobile homes, travel trailers, and the like or for securing other such vehicles to ground is disclosed. The anchor device consists of a multiple bar vertical support on each side of the trailer, abutting corresponding walls. The vertical support bars pass over the roof of the trailer and are adjustably secured there, while the lower ends of the support bars are connected to suitable ground anchors. The multiple bar arrangement is generally triangular in cross-section so as to provide lateral strength and support. In another embodiment of the anchor device, a reinforced belt is secured inside the exterior walls of the trailer during its manufacture, with buckle means being provided for securing the belt at its ends to appropriate ground anchors.

5 Claims, 6 Drawing Figures
ANCHOR DEVICE FOR TRAILERS

BACKGROUND OF THE INVENTION

The present invention relates, in general, to improvements in anchoring devices for trailers, and, more particularly, to a novel arrangement for lashing a mobile home, travel trailer, or the like in a manner to prevent it from being rocked, moved, or otherwise disturbed under severe weather conditions involving high velocity winds.

With the increasing mobility of people in this country, due in part to the proliferation of highways, and in part in increased leisure time, the use of travel trailers and mobile homes has greatly increased. A further increase in the use of mobile homes is due to the rapidly increasing costs of building and owning a home, and many have found it economically advantageous to utilize mobile homes for their permanent residence. A general complaint about such arrangements, however, is that such trailers, being mounted on spring supported axles and wheels, are subject to a considerable amount of rocking and moving about during windy conditions, making these living arrangements somewhat uncomfortable.

Where a mobile home is to be used in a permanent location, some of the foregoing difficulty can be overcome by placing the home on a permanent foundation, but even in such a case, the relatively light weight of these trailers can result in severe damage in a high wind.

Although many trailer parks and camping sites where mobile homes and travel trailers may be parked have provided concrete bases or aprons on which to locate the trailers, in order to level and stabilize the trailer, and while the weight of the trailer is sufficient to permit it to remain in its parking place when blocks are placed around the wheels, such arrangements do not secure the trailer to the ground. Thus, in order to prevent such trailers from being damaged or destroyed by weather conditions, means must be provided to provide a secure anchorage. Various attempts have been made to accomplish this purpose in the prior art; however, these prior devices have been found to be difficult to use and install because of their complexity. Other devices fail to provide the required support, and in order to obtain sufficient stability, must extend a considerable distance from the base of the trailer. These assortments of rods and straps spaced away from the trailer not only are unsightly, but are dangerous, for they generally extend into areas around doors and pathways where people must walk, presenting serious hazards not only to children, but to adults. Further, these arrangements are unsatisfactory because they generally provide only a limited number of contact points between the support members and the trailer, and in severe conditions these contact points can bend the trailer wall, thus loosening the trailer in its anchor, and allowing damaging movement. The rods or bars used in such prior devices then may be brought forcefully into contact with the trailer wall, and the narrow contact area thus presented can permit the bars to cut through the wall, severely damaging the trailer and its contents.

SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a simple and inexpensive way of protecting and stabilizing parked trailers such as mobile homes or travel trailers from damage due to high winds and other serious weather conditions.

Another object of the invention is to provide an anchor device for a mobile home which permits the trailer to be secured to a concrete base or apron or to other suitable ground anchors.

Another object of the present invention is to provide a mobile home anchor which is unobtrusive, easy to handle and install, and which provides firm lateral support to the trailer while eliminating the hazards of prior devices.

In accordance with the present invention, a trailer anchoring device is provided which consists of a multi-bar support column which in a preferred form consists of three spaced parallel bars in a triangular configuration. The bars are interconnected by suitable braces, or cross members, with the upper and lower ends of the bars being connected to corresponding face plates. In its preferred form, the vertical support column extends from the ground to the roof level of the trailer, and then extends transversely at least part way across the roof of the trailer. The second similar support column extends up the opposite side of the trailer and across the roof toward the first column, with the upper face plates of the two columns being adjustably connected to each other, as by a turnbuckle arrangement. By fastening the lower face plates of each column to suitable ground anchors adjacent the corresponding sides of the trailer, the support columns may then be drawn up tightly against the trailer by means of the turnbuckle to hold the trailer firmly in place. One or more such columns may be provided for a trailer, depending upon the size and strength requirements. The columns are covered by a suitable housing to provide a pleasing appearance and a broad surface of contact, and each anchoring device may be installed by means of only three fasteners, one at the bottom of each column, and the interconnecting adjustable fastener at the top.

In another embodiment of the invention, which may supplement or in some cases replace the above-described anchoring devices, a reinforced web is provided as a part of the structure of the trailer. This anchoring device is located within the wall of the trailer, and preferably is secured to the entire upper frame structure of the unit. The ends of the web extend down below the trailer, and are provided with suitable anchor rings for connection to the ground anchors provided in the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and additional objects, features and advantages of the invention will be apparent from the following description, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a diagrammatic illustration of a mobile home supported by the anchoring devices of the present invention;

FIG. 2 is an end view of the trailer of FIG. 1, illustrating in enlarged detail the multi-bar anchoring device of the present invention;

FIG. 3 is a partial isometric view of the anchor device of FIG. 2,
FIG. 4 is a partial cross-section of the anchor device of FIG. 3, illustrating an alternative form of ground anchor;

FIG. 5 is a front elevation view of another form of anchor device in accordance with the present invention;

and

FIG. 6 is a cross-sectional view of the belt type anchor device of FIG. 5, taken along line 6—6 thereof.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the drawings, wherein like numerals represent similar parts in each figure, and more particularly to the diagrammatic showing of FIG. 1, the numeral 2 indicates in general a mobile home, travel trailer, or other similar vehicle which is mounted on spring supported wheels and which thus requires an anchoring device to provide stability. The trailer is shown as being parked on a concrete base or apron 4 in which is embedded a plurality of ground anchors 6, 8, 10 and 12 which are adapted to receive the trailer support devices, as will be described. These anchors are embedded at preselected locations on the concrete slab, so that the trailer need only be properly positioned on the slab and the anchoring devices connected to provide the desired stable and safe securing of the trailer to the ground. It will be apparent that the ground anchors 6, 8, 10 and 12 and the corresponding anchors (not shown) on the other side of the trailer, will be so positioned as to accommodate a particular trailer or the anchors may be so placed as to accommodate a variety of trailer sizes and dimensions. In this latter event, more anchors may be provided than are required for a given trailer, in which case it will be desirable to place the anchors in recesses or provide them with suitable covers so that they do not present a hazard.

As shown in FIG. 1, the trailer is carried by a set of wheels 13, and is supported at the front end by a suitable jack means 14. Two support columns 16 and 18 are shown, it being understood that corresponding columns 16' and 18' are provided on the far side (not shown) of the trailer and meets columns 16 and 18 at the roof, where they are adjacently connected. The support columns 16 and 18 are shown with the sheet metal housing removed so as to illustrate the construction of the devices; however, it should be understood that in normal practice the vertical bars and the cross members shown in these two columns would be covered so as to provide an attractive and unobtrusive appearance. Preferably, the covering for the support columns would be of the same material from which the outer skin of the trailer is made so that the color and texture would match.

Also illustrated in FIG. 1 are flexible webs 20 and 22 which may be used in addition to, or in some cases in the place of the support columns 16 and 18. These reinforced flexible webs preferably are placed in the trailer during its manufacture so that they are a permanent part of the trailer. These webs extend inside the exterior wall of the trailer and preferably pass up one side, across the roof, and down the other side to provide firm overall support for the trailer, so as to provide a secure support for the trailer. The lower ends of the webs extend out of the trailer body at the exterior walls thereof and carry suitable anchor rings, as will be described, which may be attached to corresponding ground anchors. Preferably, at least one end of each web is adjustably attached to an anchor so that the trailer may be firmly tied down.

Turning now to FIG. 2, the trailer 2 is shown in an end view, with portions removed in both the vertical and horizontal directions to reduce the size of the illustration, while showing the support columns 16 and 16' in detail. As may be seen from FIGS. 1 and 2, the support column 16 consists of three parallel, spaced, and vertically extending rods or bars 24, 26 and 28, the three bars forming a column that is generally triangular in cross-section. It will be apparent that by using additional bars, columns of various cross-sectional configurations may be provided, but it has been found that the triangular configuration illustrated and described herein provides the required amount of support and strength. Bars 26 and 28 are adjacent the wall 29 of the trailer, with bar 24 being spaced therefrom, whereby bars 26 and 28 define a wide surface area for supporting the trailer without damaging it, while bar 24 is spaced therefrom to provide lateral strength to the structure. In a preferred embodiment, bar 26 is spaced about 5 inches from bar 28, thereby providing the width required to prevent damage to the walls of the vehicle. As illustrated in FIG. 2, the column extends from the ground level, where the three bars are connected to a common face plate 30, up along the side of the trailer to the roof edge 32. There, the column is bent or otherwise deformed to extend in a generally horizontal direction transversely of the trailer, across and adjacent to the roof 34. Although the column is shown as being bent over at the corner 32, it will be understood that this bend could be made by welding the upper, or horizontally extending, bars at an angle to corresponding vertically extending bars, thereby forming the required angle. It will also be understood that the specific angle between the vertically extending portion of the support column and the generally horizontally extending portion will depend upon the slope of the roof 34, the support column being adapted to follow the contours of the trailer so as to be in contact throughout its length and thereby provide the maximum amount of support.

To provide the required lateral strength for the support column 16, a plurality of braces or cross members 38 are provided between vertical bar 24 and vertical bar 26; similarly, cross braces 40 extend between vertical bar 24 and vertical bar 28. Finally, cross braces 42 are provided between bars 26 and 28 (see FIG. 3) to further strengthen and stabilize the structure. Again, the number and size of these cross braces will depend upon the strength characteristics required for the column.

In order to improve the appearance of the support columns, to provide additional strength, and to provide a wide flat surface of contact between the support column and the trailer wall, the column is encased in a suitable housing or covering 44 which is shown in partial section in FIGS. 2 and 3. As was noted above, this exterior covering or housing 44 preferably is a sheet metal of sufficient thickness to provide an effective continuous surface between the vertical support bars 26 and 28, where the column is in contact with the exterior surface of the trailer. This column surface provides additional support for the trailer walls and
eliminates the problems encountered in prior art devices which utilized a single bar that would tend to cut through the outer wall of the trailer. This housing preferably completely encaques the column, although it is broken away in FIG. 3 to reveal the structure of the cross members 38, 40 and 42.

Interposed between the support columns 16 and the side wall 22 and between the column 16 and the roof 34 of the trailer is a flexible resilient pad 46 which may be of rubber, soft plastic, or the like. This resilient pad serves to protect the exterior finish of the trailer, by preventing the support column from directly contacting the trailer wall and roof during assembly of the support columns, during normal use of the anchor device, or under conditions of high wind.

The lower face plate 30, to which the lower ends of the vertical support bars 24, 26 and 28 are fastened, as by welding, provides the means by which the support column may be secured to the ground. As illustrated in FIGS. 2 and 3, the support plate may be generally triangular in shape, and preferably is provided with a centrally located aperture adapted to receive a ground anchor 10. In the embodiment of FIGS. 2 and 3, the ground anchor is shown as being a toggle bolt having a threaded shaft 48 carrying a pair of spreadable arms 50. The toggle bolt may be inserted through the concrete pad 4 in known manner, by drilling a hole therethrough, folding the arms 50 and inserting the assembly through the drilled hole. The arms then open up, and may be drawn up against the bottom of the pad to hold the threaded bolt 48 in position. The upper end of the bolt may then be secured by a nut 52, with bolt 48 extending above the surface of the concrete pad. The face plate 30 may then be placed over the bolt so that the bolt extends through the centrally located aperture, and the plate held in place by a washer 54 and nut 56.

An alternative form of ground anchor is illustrated in FIG. 4, where the threaded bolt 48 is fastened to, or forms a part of a spiral auger 60 which may be twisted into the ground to a depth sufficient to provide the required holding power for the support columns. Again, the bolt 48 extends above the surface of the ground 62 and the face plate 30 is secured thereto by means of a washer and nut 54 and 56. This arrangement permits the support columns to be used when the trailer is parked in areas not provided with a concrete pad.

Returning to FIG. 2, it will be seen that the anchor device 16 extends transversely over approximately one-half of the trailer; a corresponding support column 16' is located on the opposite wall 22' of the trailer and extends up the wall and transversely across the trailer roof toward the first support 16. The two uppermost ends of the support columns are then connected together, as by a turnbuckle 64 which is adjustable so that the two support columns may be drawn together so as to fit snugly against the opposing sides of the trailer and hold the trailer firmly in position. As illustrated, the turnbuckle may conveniently be connected to the upper face plates 36 and 36' by means of bolts 66 and 68 passing through the centrally located apertures in the corresponding face plates. As is well known, the bolts 66 and 68 are oppositely threaded so that the buckle 70, when rotated, will draw in both bolts and thus draw the face plates toward each other.

Although in the preferred embodiment the support columns 16 and 16' are substantially identical and thus meet at approximately the center of the trailer, it will be apparent that one of the columns can be made sufficiently long to reach completely across the trailer, so that the turnbuckle would be located at one of the corners of the trailer for easier access. Another alternative would provide a continuous support column reaching from the ground on one side of the trailer up the wall of the trailer, across the roof, and down the other side to a point near the ground, with this end of the support member being fastened by means of a turnbuckle to the ground anchor. In any of these alternatives, the support columns form a generally U-shaped support which is adjustably fastened at some point to permit adjustment of the device whereby a tight fit is provided.

As indicated in FIG. 1, a plurality of the anchoring devices formed of the vertical support columns 16 and 16' may be used for single or multiple trailer units being spaced along the length of the trailer as needed. However, where a trailer is to be moved often, the storage and installation of the support columns may become somewhat inconvenient, and in this event support devices such as the reinforced webs 20 and 22 may be used. A partial front elevation of such a web is illustrated in FIG. 5, and is shown in cross-section in FIG. 6.

The web 20 may take several forms, but in its preferred form comprises a plurality of steel straps illustrated, for example, in FIG. 5 at 80, 82, and 84 connected between two anchor plates 86 and 88. These steel straps preferably are encased in a plastic, fabric, or other suitable covering 90 which serves to facilitate the handling of the strap, to hold the bands in the proper relationship, and to protect the trailer from damage by the steel bands. In addition, the covering provides a surface for the web which permits it to be used exterio氺y of the trailer, as desired, without marring or damaging the trailer surface.

Although the steel straps may be connected to the anchor plates in numerous ways, a preferred method is to provide loops at each end of each strap, as by folding over the end of the strap on itself and securing it with a clamp 91, the loops passing around a pin 92 in anchor plate 86, and a pin 94 carried by anchor plate 88. These pins pass through corresponding loops formed in the anchor plates, and thereby fasten the straps to the corresponding anchor plates in a hinge-like fashion. The anchor plates 86 and 88 preferably are provided with apertures 96 and 98, respectively, which are adapted to receive an anchor bolt or the like so that the end of the strap may be securely fastened to the ground. Alternatively, one or both of the anchor plates may be fastened to corresponding anchor bolts on opposite sides of the trailer by a turnbuckle or other suitable adjustable fastener so that the straps can be pulled tight to hold the trailer securely in place. Such a turnbuckle may simply thread onto the threaded bolt 48 of the ground anchor, with the opposite end of the turnbuckle carrying a threaded hook-shaped bolt, the hook extending through one of the apertures in the anchor plate, whereby the anchor plate may be pulled down tightly as the turnbuckle is rotated. Other arrangements will be apparent to those skilled in the art.

FIG. 6 is a cross sectional view of the web of FIG. 5, illustrating the manner in which the steel straps 80, 82 and 84 may be embedded in a webbing 90. Various and
alternative arrangements may, of course, be used; however, it has been found that the steel strap and the hinge-like connection to the anchor plates provides a most satisfactory arrangement.

As has been explained, the web 20 preferably is arranged to pass around three sides of a trailer to form an inverted U-shaped anchor, with the anchor plates 86 and 88 hanging below the side walls of the trailer on each side thereof. By locating the web within the walls of the trailer, it may be securely connected to the superstructure of the trailer and thus provide a more secure fastening. It will be apparent, however, that this arrangement may be varied, as by utilizing two straps which meet at the center of the roof of the trailer, much in the manner of the support columns described above, the straps being interconnected by an adjustable fastener at that point. The number of steel bands used in a given web, and the number of webs provided for a trailer will be dependent upon the required strength characteristics, and can be varied according to the size and weight of the trailer, its exposure to the weather, and like factors.

Thus, there has been illustrated an improved anchoring device for trailers such as mobile homes, travel trailers, tent trailers and like vehicles, which will firmly hold the vehicle in place even in the face of severe weather conditions. Although specific embodiments of the invention have been shown and described in detail, it will be apparent to those of ordinary skill in the art that numerous changes and modifications in the described arrangements will be possible without departing from the true spirit and scope of the invention as described in the following claims.

What is claimed is:

1. An anchoring system for securing a trailer against damage by severe wind conditions comprising:
a plurality of support columns, said columns being arranged in pairs spaced along the length of a trailer parking space, the columns of each said pair including a vertically disposed section extending up along opposite sides of said trailer and a generally horizontally disposed section extending across the roof thereof to form a generally inverted U-shaped support, the contiguous ends of the horizontal sections being spaced apart, each of said columns being formed of at least two spaced, parallel bars joined by a plurality of cross-members, said bars defining a vertical and a horizontal surface which is shaped to follow the contours and to contact the exterior wall and roof surfaces of said trailer along substantially the entire length of said column to provide maximum support for said trailer;
a face plate for each said column, each said face plate being affixed to the bottom ends of the bars of a corresponding column;
ground anchors means for each said column;
means securing each said face plate to a corresponding ground anchor; and
adjustable means connecting together the spaced apart contiguous ends of the horizontal sections of each pair of columns and clamping said trailer therebetween, whereby said trailer is securely held by said columns.

2. The anchoring system of claim 1, further including cover means for each said column, said cover means forming a flat continuous surface between said two spaced bars to provide additional support for said trailer.

3. The anchoring system of claim 2, each said column including a third bar spaced from and parallel to said two bars and joined thereto by additional cross-members, whereby said column is generally triangular in cross-section.

4. The anchoring system of claim 3, wherein said cover means encases said column to form a housing therefor.

5. The anchoring system of claim 4, wherein said means for connecting the spaced contiguous ends of the horizontal sections of each said pair of columns includes a second face plate for each column, each second face plate being affixed to the ends of the bars of the horizontal section of its corresponding column, said adjustable means joining said second face plates.

* * * * *