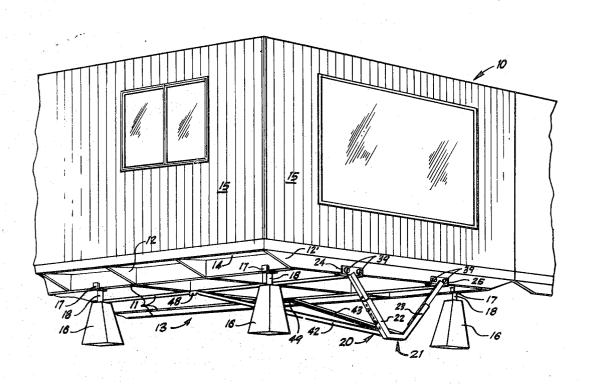
[54] EM	ERGENC	Y SUPPORT			
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[22] File	iled: Aug. 16, 1971				
[21] App	l. No.: 17	2,024			
[51] Int. [58] Field	Cld of Searc	h	8/352, 248/354 P <b>E04g 25/00</b> . 248/352, 354 P; , 475, 150 R, 400		
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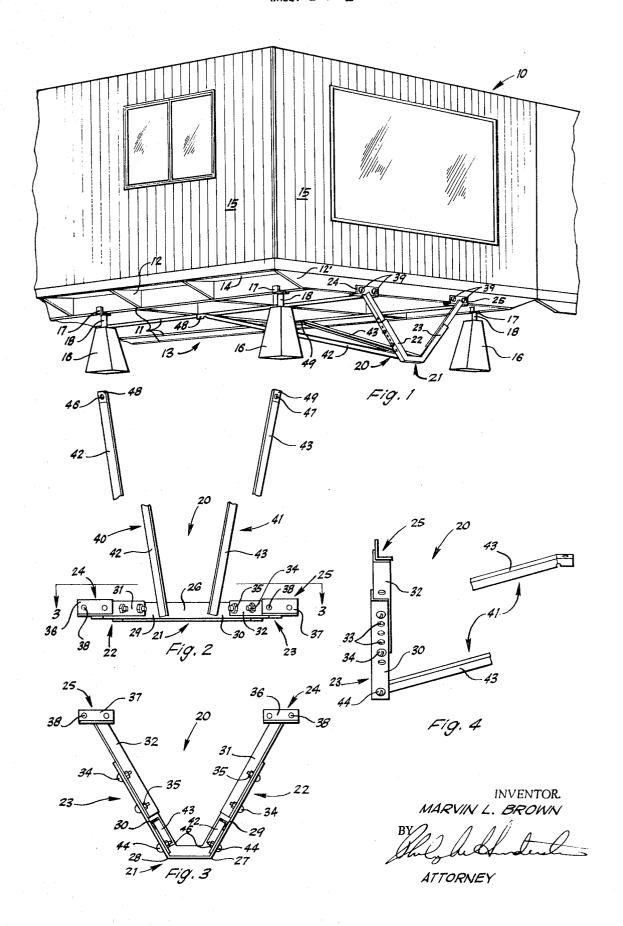
# [57] ABSTRACT

There is disclosed an emergency support for a structure such as a mobile home of the type normally having wheels on opposite sides thereof, adjacent the back thereof, and a structural frame on the bottom thereof, which frame normally rests on piers which support the mobile home above the ground. The present emergency support includes a base member adapted to contact the ground, at least one leg connected to the base member and extending upwardly for attachment to the structural frame of the mobile home, adjacent the front thereof, at spaced points on opposite sides of the longitudinal centerline thereof, and a pair of legs connected to the base member and extending upwardly at an acute angle relative to the ground for attachment to the structural frame of the mobile home, intermediate the front and back thereof, whereby the emergency support provides a third support point, together with the beforementioned wheels, in the event the mobile home falls from the piers.

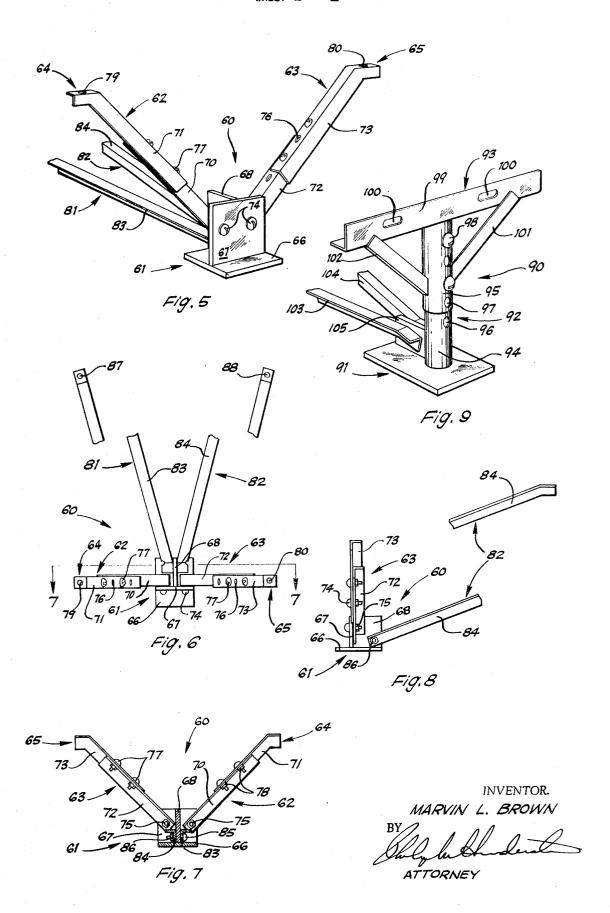
5 Claims, 9 Drawing Figures



SHEET 1 OF 2



# SHEET 2 OF 2



# EMERGENCY SUPPORT

### **BACKGROUND OF THE INVENTION**

#### 1. Field of the Invention

The present invention relates to an emergency support and, more particularly, to an apparatus for preventing substantial damage to a mobile home in the event it falls from its normal support piers.

# 2. Description of the Prior Art

A mobile home of the type most commonly seen in- 10 cludes at least two longitudinal support members, which are typically steel "I" or "T" beams, and a plurality of transverse support members. These support members comprise a structural frame upon which is usually mounted plywood flooring. The remainder of 15 the trailer is then built above this plywood flooring. In order to move such a mobile home from one site to another, it generally includes one or more rear axles which support wheels on opposite sides of the mobile bile home includes a coupling for attachment to a truck or other vehicle which pulls the mobile home.

When positioning such a mobile home on a mobile home site, it is typical to use a plurality of pyramidalshaped support piers, which may be made of steel or 25 concrete. These support piers have their bases positioned on the ground, along a line beneath each of the longitudinal beams. Each support pier includes a moveable plate at the apex thereof, the height of which is adjusted to level the mobile home and to insure that each 30 support pier receives an approximately equal share of the overall weight of the mobile home.

Such pyramidal-like support piers support the mobile home above the ground in a manner which, while normally secure, is basically unstable. If a sufficient lateral 35 force were to be applied to the mobile home, it would be a relatively easy matter to cause the mobile home to slip from the piers. While this may seem an unlikely situation, as a matter of fact, it is not. An earthquake generates exactly the type of lateral forces that could cause a mobile home to slip from its piers. One example of this potentially hazardous situation occurred on Feb. 9, 1971, when a relatively large earthquake shook the Sylmar area of the San Fernando Valley in the city of Los Angeles, California. As a result of that earthquake, practically every mobile home in the immediate area was shaken from its piers and severly damaged. In addition to the damage that naturally occurred when the mobile homes crashed to the ground, still further damage was caused by the piers being thrust through the 50 floors of the mobile homes, into the living areas thereof. In addition to severely damaging the floors of the mobile homes, substantial damage was done to lives and property within the homes.

# SUMMARY OF THE INVENTION

According to the present invention, the hazardous situation created by the forces generated by an earthquake and the resulting destruction may be eliminated by providing an emergency support for a structure such as a mobile home. The present invention recognizes that although not normally used to support a mobile home, the wheels thereof usually remain attached thereto providing two points of support, on opposite 65 sides thereof, adjacent the back thereof. The present emergency support provides a third leg, which while not providing a highly stable support for a structure

such as a mobile home, provides a relatively stable, emergency support therefor, preventing damage thereto until the normal supports may be restored.

Briefly, the present emergency support is designed primarily for use with a structure such as a mobile home of the type normally having wheels on opposite sides thereof, adjacent the back thereof, and a structural frame on the bottom thereof, which frame normally rests on piers which support the mobile home above the ground. The present emergency support includes a base member adapted to contact the ground, at least one leg connected to the base member and extending upwardly for attachment to the structural frame of the mobile home, adjacent the front thereof, at spaced points on opposite sides of the longitudinal centerline thereof, and at least one other leg connected to the base member and extending upwardly at an acute angle relative to the ground for attachment to the structural frame of the mobile home, intermediate the home, adajcent the back thereof. The front of the mo- 20 front and back thereof, whereby the emergency support provides a third support point, together with the beforementioned wheels, in the event the mobile home falls from the piers.

> It is therefore an object of the present invention to provide a novel emergency support.

It is a further object of the present invention to provide an emergency support for a structure such as a mobile home.

It is a still further object of the present invention to provide apparatus for preventing substantial damage to a mobile home in the event it falls from its normal sup-

Still other objects, features and attendant advantages of the present invention will become apparent to those skilled in the art from a reading of the following detailed description of the preferred embodiments constructed in accordance therewith, taken in conjunction with the accompanying drawings wherein like numerals designate like parts in the several figures and wherein:

# BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the front end of a mobile home showing the structural frame on the bottom thereof, the usual manner of supporting such frame, and a first embodiment of emergency support constructed in accordance with the teachings of the present invention:

FIG. 2 is a top plan view thereof;

FIG. 3 is a sectional view thereof taken along the line 3-3 in FIG. 2;

FIG. 4 is a side elevation view thereof;

FIG. 5 is a perspective view of a second embodiment of emergency support constructed in accordance with 55 the teachings of the present invention;

FIG. 6 is a top plan view thereof;

FIG. 7 is a sectional view thereof taken along the line 7-7 in FIG. 6;

FIG. 8 is a side elevation view thereof; and

FIG. 9 is a perspective view of a third embodiment of emergency support constructed in accordance with the teachings of the present invention.

# **DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring now to the drawings and, more particularly, to FIG. 1 thereof, a mobile home of the type most commonly seen, generally designated 10, includes at

least two longitudinal support members 11, which are typically steel "I" or "T" beams, and a plurality of transverse support members 12. Support members 11 and 12 comprise a structural frame 13 upon which is usually mounted plywood flooring 14. The walls 15 of 5 mobile home 10 are then mounted above and on flooring 14.

In order to move mobile home 10 from one site to another, mobile home 10 generally includes one or more rear axles (not shown) which support wheels on oppo- 10 site sides of mobile home 10, adjacent the back thereof, The front of mobile home 10 includes a coupling (also not shown) for attachment to a truck or other vehicle which pulls mobile home 10. After location on the moposed of.

When positioning a mobile home, such as mobile home 10, on a site, it is typical to use a plurality of pyramidal-shaped support piers 16, which may be made of steel or concrete. As shown in FIG. 1, piers 16 are generally positioned on the ground along a line beneath each of longitudinal beams 11, for support thereof. Each pier 16 generally includes a plate 17 which is con-Accordingly, by rotating shaft 18 relative to pier 16, the height of plate 17 may be adjusted to level mobile home 10 and to insure that each support pier 16 receives an approximately equal share of the overall 30 weight thereof.

Because of the weight of mobile home 10, piers 16 support mobile home 10 above the ground in a manner which is normally secure. However, no attempt is made to secure mobile home 10 to piers 16 in order to with- 35 stand the type of lateral forces generated by an earthquake. In fact, with the types of piers presently used, it would not be possible to effectively prevent mobile home 10 from slipping from piers 16 in the presence of an earthquake.

With reference to FIGS. 1-4, there is shown a first embodiment of emergency support, generally designated 20, for a structure such as mobile home 10, which eliminates the hazardous situation created by the forces generated by an earthquake. Emergency support 45 20 is designed based upon a recognition of the fact that although not normally used to support mobile home 10, the wheels thereof usually remain attached thereto, providing two points of support, on opposite sides thereof, adjacent the back thereof. Emergency support 50 20 provides a third leg, which while not providing a highly stable support for mobile home 10, provides a relatively stable, emergency support therefor, preventing damage thereto until the normal supports may be restored.

More specifically, emergency support 10 includes a base member 21 which is adapted to contact the ground and a first pair of legs 22 and 23 which are connected to base member 21 and extend upwardly, in the same plane, in a generally "V" shape, for attachment to structural frame 13 of mobile home 10, on opposite sides of the longitudinal centerline thereof, adjacent the front thereof. Each of legs 22 and 23 is adjustable in length to adapt emergency support 20 for different sizes and heights of mobile homes 10. Also, each of legs 22 and 23 includes connecting means 24 and 25, respectively, at the upper ends thereof, for permitting

rigid attachment of legs 22 and 23, respectively, to structural frame 13 of mobile home 10.

According to the embodiment of FIGS. 1-4, base member 21 and first portions of legs 22 and 23 may be made from a first rigid angle 26. Angle 26 is adapted to be bent along spaced lines 27 and 28 whereby the area between lines 27 and 28 functions as base member 21. The sections 29 and 30 of angle 26 between lines 27 and 28 and the respective ends thereof form first portions of legs 22 and 23, respectively. The remainder of legs 22 and 23 may consist of similar angles 31 and 32, respectively, which may be connected to sections 29 and 30 of angle 26 in any convenient, but adjustable, manner. For example, each of angles 31 and 32 bile home site, the coupling is usually removed and dis- 15 and sections 29 and 30 of angle 26 may be provided with a series of equally spaced holes 33 whereupon a plurality of bolts 34 may be extended through corresponding holes 33 and secured by nuts 35.

In the embodiment of FIGS. 1-4, connecting means 20 24 and 25 may include short lengths of angles 36 and 37, respectively, connected to the upper ends of angles 31 and 32, such as by welding. Angles 36 and 37 include horizontal and vertical arms adapted to contact nected to one end of a threaded shaft 18, the body of transverse support member 12' of frame 13 of mobile home 10. Such horizontal and vertical arms may include a plurality of holes 38 whereupon a plurality of bolts 39 may connect angles 36 and 37 to support member 12' from the side or the bottom thereof.

> The portion of emergency support 20 just described, including base member 21 and legs 22 and 23, is operative to provide an emergency support for frame 10 and to adequately support frame 10 in the presence of sideto-side lateral forces, in the absence of piers 16. In order to insure the strength of emergency support 20 in the presence of front-to-back lateral forces, support member 20 also includes a second pair of legs 40 and 41 which are connected to base member 21 or legs 22 and 23, respectively, and which extend upwardly and 40 backwardly at an actue angle relative to the ground for attachment to structural frame 13 of mobile home 10, intermediate the front and back thereof. As shown in FIGS. 1-4, legs 40 and 41 may simply consist of a pair of rigid angles 42 and 43, first ends of which are connected via bolts and nuts 44 and 45, respectively, to sections 29 and 30, respectively, of emergency support 20. One arm of each of angles 42 and 43 contains a hole 46 and 47, respectively, at the other ends 48 and 49 thereof for receipt of bolts (not shown) which permit connection of ends 48 and 49 to longitudinal support members 11 or one of transverse support members 12 of mobile home 10. For ease in connection, ends 48 and 49 of angles 42 and 43, respectively, may be bent, as shown in FIG. 4, so as to be essentially horizontal. Angles 42 and 43 may also be rotated to make sections 48 and 49 of angles 42 and 43, respectively, horizontal or vertical for ease in connection to structural frame

In operation, after mobile home 10 is positioned on piers 16 on a suitable mobile home site, emergency support 20 may be readily attached thereto. More specifically, the lengths of legs 22 and 23 may be adjusted by moving angles 31 and 32 relative to sections 29 and 30, respectively, of angle 26 until angles 36 and 37 contact transverse support member 12' and base 21 is in contact with the ground. Angles 31 and 32 would then be secured relative to sections 29 and 30, respectively, of angle 26 by bolts 34 and nuts 35. It is then a simple matter to connect angles 36 and 37 to support member 12 by extending bolts 39 through holes 38 therein and into support member 12. Thereafter, legs 40 and 41 may be connected to frame 13 by extending bolts similar to bolts 39 through holes 46 and 47 in sections 48 and 49 of angles 42 and 43, respectively, and into any portion of structural frame 13.

With emergency support 20 positioned as just described, there is provided a third leg, which while not 10 providing a highly stable support for mobile home 10, provides an emergency support therefor, together with the wheels thereof, preventing damage thereto in the event frame 13 slips or is shaken from piers 16.

Referring now to FIGS. 5-8, there is shown a second 15 embodiment of emergency support, generally designated 60, for a structure such as mobile home 10. which eliminates the hazardous situation and the resulting destruction created by the forces generated by an earthquake. Emergency support 20 is based on the 20 same principal as emergency support 10, namely that of providing a third leg for use in combination with the wheels of mobile home 10. Emergency support 60 includes a base member 61 adapted to contact the ground and a first pair of legs 62 and 63 which are con- 25 nected to base member 61 and extend upwardly, in the same plane, in a generally "V" shape, for attachment to structural frame 13 of mobile home 10, on opposite sides of the longitudinal centerline thereof, adjacent the front thereof. Each of legs 62 and 63 is adjustable 30 in length to adapt emergency support 60 for different sizes and heights of mobile homes 10. Also, each of legs 62 and 53 includes connecting means 64 and 65, respectively, at the upper ends thereof, for permitting rigid attachment of legs 62 and 63, respectively, to 35 structural frame 13 of mobile home 10.

The primary difference between emergency support 60 and emergency support 20 is that emergency support 60 recognizes the fact that it may be difficult to attach connecting means 24 and 25 to front transverse support member 12' of frame 13. Accordingly, connecting means 64 and 65 are designed for connection to the bottom or side of any of transverse support members 12 of structural frame 13.

More specifically, and in accordance with the em- 45 bodiment of FIGS. 5-8, base member 61 includes a flat plate 66 having a pair of plates 67 and 68 connected to the upper surface thereof to form a "T." Plate 67, which is adapted to be positioned parallel to transverse support members 12 of structural frame 13, has a pair of holes therethrough, on opposite sides of plate 68. In like manner, plate 68 has a single hole therethrough. Leg 62 may consist of a pair of angles 70 and 71 whereas leg 63 may consist of a similar pair of angles 72 and 73. First ends of angles 70 and 72 may have holes therethrough to permit connection to plate 67 by passing bolts 74 through the respective holes therein and securing bolts 74 with nuts 75. Angles 71 and 73 may be connected to angles 70 and 72, respectively, in 60 any convenient, but adjustable, manner. For example, each of angles 70-73 may be provided with a series of equally spaced holes 76 whereupon a plurality of bolts 77 may be extended through corresponding holes 76 and secured by nuts 78.

In the embodiment of FIGS. 5-8, connecting means 64 and 65 may be formed by simply bending the upper ends of angles 71 and 73, respectively, until such ends

are either horizontal or vertical. Each of such ends of angle 71 and 73 may be provided with a hole 79 and 80, respectively, for receipt of bolts (not shown) which permit connection of angles 71 and 73 to the bottom or side of one of transverse support members 12 of structural frame 13 of mobile home 10.

The portion of emergency support 60 just described, including base member 61 and legs 62 and 63, is operative to provide an emergency support for frame 10 in the same manner as base member 21 and legs 22 and 23 of emergency support 20. In order to insure the strength of emergency support 20 in the presence of front-to-back lateral forces, emergency support 60 also includes a second pair of legs 81 and 82 which are connected to base member 61 and which extend upwardly and backwardly at an acute angle relative to the ground for attachment to structural frame 13 of mobile home 10, intermediate the front and back thereof. In this embodiment, legs 81 and 82 may simply consist of a pair of rigid angles 83 and 84, respectively, first ends of which have holes therein and which are connected via a single bolt 85 and a nut 86 to plate 68 of base member 61. Angles 83 and 84 may be bent slightly, adjacent the first ends thereof, so as to extend backwardly at an angle relative to each other. The other ends of angles 83 and 84 may be similar to angles 42 and 43 and may contain holes 87 and 88, respectively, therein for receipt of bolts (not shown) which permit connection of such ends to longitudinal support members 11 or one of transverse support members 12 of mobile home 10. For ease in connection, such other ends of angles 83 and 84 may be bent, as shown in FIG. 8, so as to be essentially horizontal.

The operation of emergency support 60 is identical to that of emergency support 20. The lengths of legs 62 and 63 may be adjusted by moving angles 71 and 73 relative to angles 70 and 72 until connecting means 64 and 65 contact transverse support member 12 and base 61 is in contact with the ground. Angles 71 and 73 would then be secured relative to angles 70 and 72, respectively, by bolts 74 and nuts 75. It is then a simple matter to connect angles 71 and 73 to support member 12 by extending bolts through holes 79 and 80 therein and into support member 12. Thereafter, legs 81 and 82 may be connected to structural frame 13 by extending bolts through holes 87 and 88 in angles 83 and 84, respectively, and into any portion of structural frame 13.

Referring now to FIG. 9, there is shown a third embodiment of emergency support, generally designated 90, for a structure such as mobile home 10, which may be used in a manner similar to emergency supports 20 and 60. Emergency support 90 includes a base member 91 which may be a flat plate, such as plate 66 of emergency support 60. Emergency support 90 also includes a leg 92 which is connected to plate 91 and extends upwardly for attachment to structural frame 13 of mobile home 10, along a line extending on opposite sides of the longitudinal centerline thereof, adjacent the front thereof. As before, leg 92 is adjustable in length to adapt emergency support 90 for different sizes and heights of mobile homes 10. Leg 92 includes connecting means 93 at the upper end thereof for permitting rigid attachment of leg 92 to structural frame 13 of mobile home 10.

In accordance with the embodiment of FIG. 9, leg 92 includes a first rigid tubular member 94, one end of

which is securely connected to plate 91, and a second rigid tubular member 95 adapted to extend over member 94 and be telescopically adjustable relative thereto. Members 94 and 95 may be connected together in any convenient manner. For example, each of members 94 and 95 may be provided with a series of equally spaced holes 96 and 97, respectively, whereupon one or more bolts 98 may be extended through corresponding holes 96 and 97 and secured by nuts (not shown).

In the embodiment of FIG. 9, connecting means 93 10 consists of a relatively long piece of angle 99, having a horizontal arm adapted to be connected to the upper end of member 95, such as by welding. The horizontal and vertical arms of angle 99 are adapted to contact the bottom and front respectively, of transverse support 15 member 12' of frame 13 of mobile home 10 as was the case with angles 36 and 37 of emergency support 20. Such horizontal and vertical arms may include a plurality of holes 100 whereupon a plurality of bolts (not shown) may connect angle 99 to support member 12' 20 from the side or the bottom thereof. Furthermore, emergency support 90 may include an additional pair of angles 101 and 102 connected between the body of member 95 and the ends of angle 99 to prevent sagging 25 of angle 99.

The portion of emergency support 90 just described, including base member 91 and leg 92, is operative to provide an emergency support for frame 10 in the same manner as the base members and legs of emergency supports 20 and 60. In order to insure the strength of emergency support 90 in the presence of front-to-back lateral forces, emergency support 90 may include a plate 102 connected to the upper surface of plate 91 in identically the same manner as plate 68 of emergency support 60. Plate 102 supports a pair of legs 103 and 104 which are identical to and connected in the same manner, as legs 81 and 82 of emergency support 60. Accordingly, no further discussion thereof is deemed necessary.

The operation of emergency support 90 is identical to that of emergency support 20 and 60. The length of leg 92 may be adjusted by moving member 95 relative to member 94 until connecting means 93 contacts transverse support member 12' and base 91 is in contact with the ground. Members 94 and 95 would then be secured by bolts 98 and nuts (not shown). It is then a simple matter to connect angle 99 to support member 12' by extending bolts through holes 100 therein and into support member 12'. Thereafter, legs 103 and 104 may be connected to structural frame 13 by extending bolts through the holes therein and into any portion of structural frame 13.

It can therefore be seen that in accordance with the present invention, the hazardous situation created by the forces generated by an earthquake and the resulting desctruction may be eliminated by providing an emergency support for a structure such as a mobile home. The present emergency supports are designed with a recognition of the fact that although not normally used to support a mobile home, the wheels thereof usually remain attached thereto, providing two points of support, on opposite sides thereof, adjacent the back thereof. Emergency supports 20, 60 and 90 provide a third leg, which while not providing highly stable supports for a structure such as a mobile home, provide relatively stable emergency supports therefor, prevent-

ing damage thereto, until the normal supports may be restored.

While the invention has been described with respect to the preferred physical embodiments constructed in accordance therewith, it will be apparent to those skilled in the art that various modifications and improvements may be made without departing from the scope and spirit of the invention. For example, while emergency supports 20, 60 and 90 have been described with reference to a mobile home of the coach type, it will be apparent to those skilled in the art that they are equally applicable to other types of structures, vehicles and mobile homes. In addition, while it has been mentioned that the present emergency supports are effective in providing a third leg in combination with the wheels of a mobile home, it is obvious that several of the present supports could be used to provide adequate supports for a mobile or modular home independently of any wheels or other existing supports. Accordingly, it is to be understood that the invention is not to be limited by the specific illustrative embodiments, but only by the scope of the appended claims.

I claim:

1. An emergency support for a structure such as a mobile home having wheels on opposite sides thereof, adjacent the back thereof, and a structural frame on the bottom thereof, said mobile home being adapted to be supported above the ground by piers connected to said structural frame, comprising:

a base member adapted to contact the ground beneath the longitudinal centerline of said mobile home, adjacent the front thereof;

a first pair of legs connected to said base member, each of said legs extending upwardly and outwardly for attachment to said structural frame of said mobile home at two points equally spaced on opposite sides of said longitudinal centerline, the angle of each leg of said first pair of legs relative to said base member being adjustable and the length of each leg of said first pair of legs being adjustable; and

a second pair of legs connected to said base member and extending upwardly in a generally "V" shape at an acute angle relative to the ground for attachment to said structural frame of said mobile home, on opposite sides of said longitudinal centerline thereof, intermediate said front and back thereof, said acute angle between each of said legs of said second pair of legs and the ground being adjustable.

2. An emergency support according to claim 1 wherein said base member comprises:

a first plate adapted to contact the ground; and second and third plates connected to the upper surface of said first plate in a "T" configuration, said first, second, and third plates being arranged in mutually orthogonal directions with said second plate being parallel to said front of said mobile home and said third plate being parallel to and aligned with said longitudinal centerline of said mobile home, first ends of said legs of said first pair of legs being connected to said second plate, on opposite sides of said third plate, first ends of said legs of said second pair of legs being connected to said third plate, said connections between said legs of said first and second pairs of legs and said second and third plates permitting pivotal movement of said legs to adjust the angles thereof relative to the ground.

- 3. An emergency support according to claim 1 wherein each of said legs of said first and second pairs of legs includes means at the upper ends thereof for permitting rigid attachment to said structural frame of said mobile home.
- 4. An emergency support according to claim 1 wherein each of said legs of said first pair of legs comprises:
  - a first rigid angle, one end of which is connected to said base member;
  - a second rigid angle, one end of which is adapted to be connected to said structural frame, each of said
- angles having a series of spaced holes therein; and at least one nut and bolt adapted to extend through at least one of said holes in said first and second angles for securely, adjustably connecting said angles together.
- 5. An emergency support according to claim 4 wherein each of said legs of said second pair of legs comprises:
  - a rigid angle, one end of which is connected to said base member and the other end of which is adapted to be connected to said structural frame.

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