United States Patent [19]

Jones

[11] **3,811,722**

[45] **May 21, 1974**

[54] **FOUNDATION STRUCTURE FOR MOBILE HOME**

[76] Inventor: **George T. Jones,** P.O. Box 3217, Blue Jay, Calif. 92317

[22] Filed: **Dec. 7, 1972**

[21] Appl. No.: **311,739**

[52] **U.S. Cl.** ..... **296/23 R,** 296/31 R, 52/73

[51] **Int. Cl.** **B60b 3/32**

[58] **Field of Search** ..... 296/23 R, 31 R; 52/73, 52/79, 223

[56] **References Cited**

UNITED STATES PATENTS

3,716,267	7/1973	Lindsay	296/23 R
925,964	6/1909	Strauss	296/31 R
1,574,180	2/1926	Strauss	296/31 R

Primary Examiner—Philip Goodman

Attorney, Agent, or Firm—Herbert E. Kidder

[57] **ABSTRACT**

A foundation structure for mobile homes, comprising a prestressed, or post-stressed, lightweight concrete base, having longitudinally and transversely extending flanges on the underside, which give it structural stiffness and rigidity. The concrete base is much heavier than the conventional steel framework underbody, and a larger proportion of the total mass is incorporated in the foundation structure, so that the center of gravity of the complete mobile home is lowered to a level just about at the tops of the wheels, making it very stable. Cast concrete underbody requires less labor to build, its cost is less, no painting is required, needs no wood floor and therefor is less susceptible to termites, and conduits for plumbing, electric wires, and ventilation air can be cast in place. Prestressed steel reinforcing rods or cables are embedded in the flanges, and are bent to obtain maximum vertical force vectors at the ends of the concrete structure.

5 Claims, 6 Drawing Figures

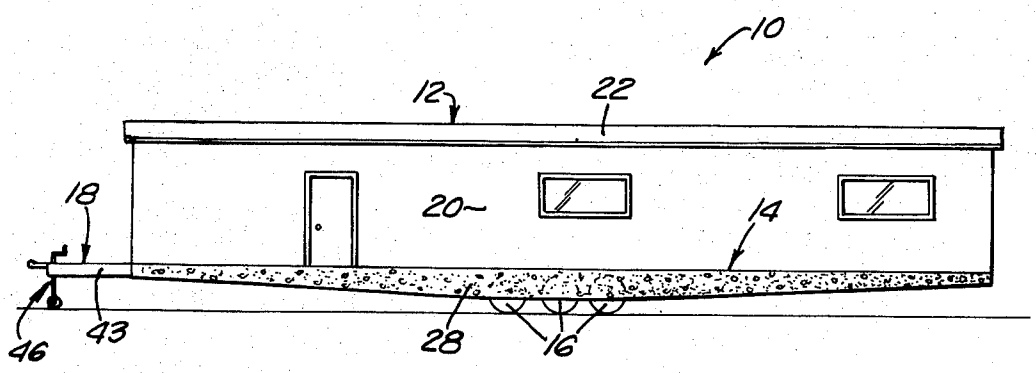


FIG. 1

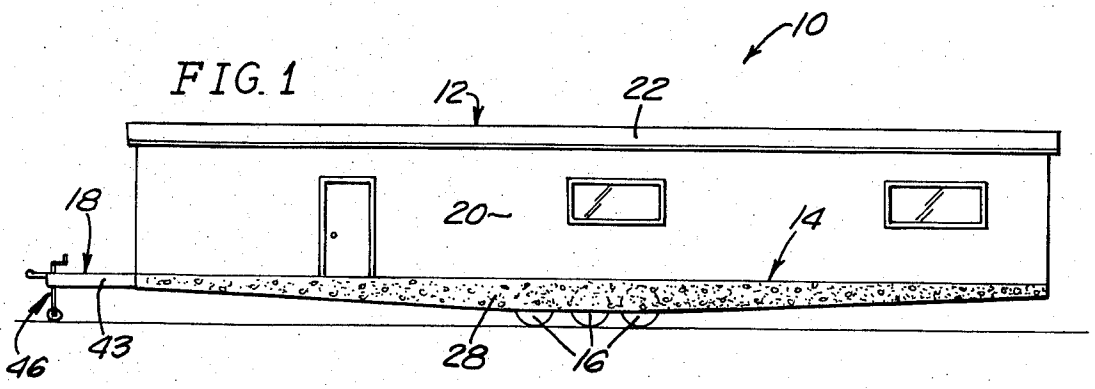


FIG. 2

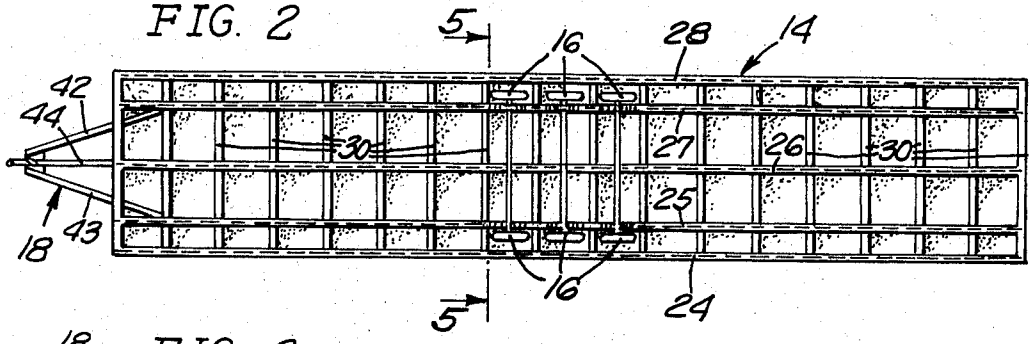


FIG. 3

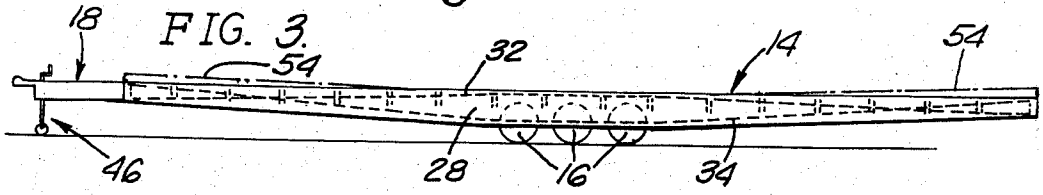


FIG. 4

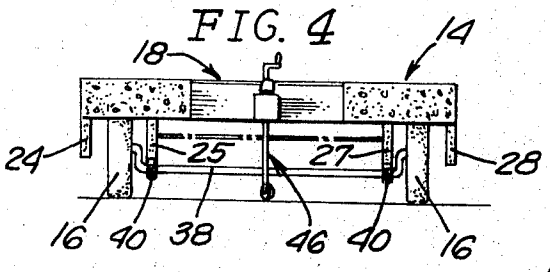
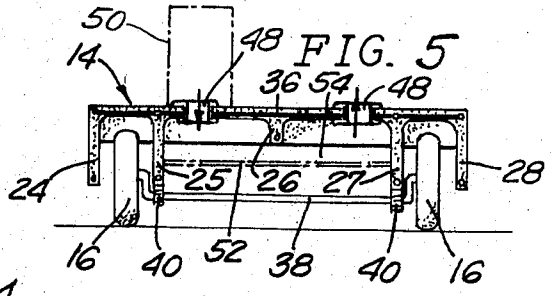


FIG. 5



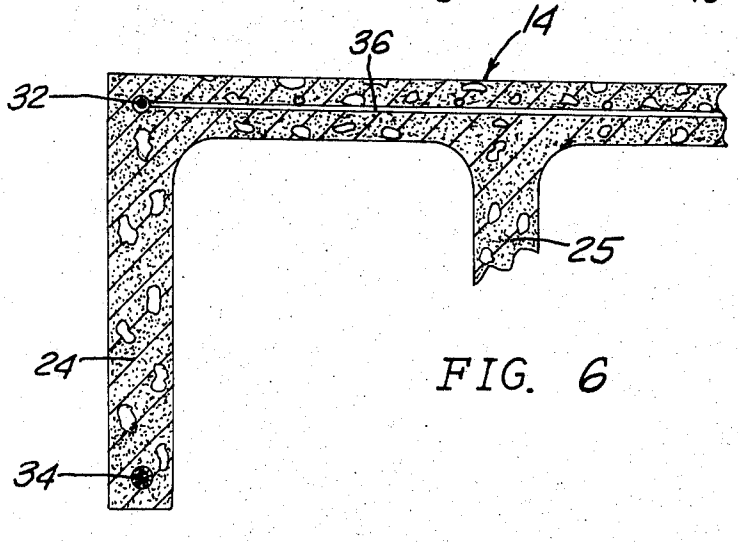


FIG. 6

FOUNDATION STRUCTURE FOR MOBILE HOME

BACKGROUND OF THE INVENTION

The present invention pertains to a base frame structure, or foundation, upon which a mobile home is supported.

The conventional practice in building mobile homes is to fabricate the base frame of steel beams which are welded, riveted, or bolted together. A wood floor is secured to the top side of this frame, and the walls of the mobile home are then built up from the wood floor, more or less in the same manner that conventional homes are constructed. A steel base frame constructed as just described has the following disadvantages: (1) it has an undesirable amount of flexibility, owing to the elasticity of the steel beams, and this requires that the walls be utilized as structural members to give the structure rigidity; (2) the relatively light weight of the steel base frame results in a high center of gravity, which reduces the stability of the structure when being towed in strong, gusty cross winds; (3) a wood floor is needed to bridge the open spaces between steel frame members, and this is vulnerable to termites; and (4) a fabricated steel base frame is relatively expensive to build and requires much skilled labor to put it together.

SUMMARY OF THE INVENTION:

The primary object of the present invention is to provide a base frame structure for mobile homes, that is inherently stiff and relatively inflexible, and which is completely self-supporting and does not require the structural reinforcement of the walls or other parts of the dwelling structure. With the walls thus relieved of all structural stresses in the base frame, it is possible to build into the walls large areas of window glass or other details which do not lend themselves to carrying structural stresses.

Another important object of the invention is to provide a foundation, or base frame structure, for a mobile home, which is considerably heavier than the conventional steel base frame, causing the center of gravity of the entire structure to be lowered to a level just about at the tops of the wheels. This adds greatly to the stability of the mobile home, and makes it safer to tow in strong, gusty cross winds.

Another object of the invention is to provide a base frame for a mobile home, which requires no wood floors, and therefore is less susceptible to damage from termites. Carpeting or tile can be applied directly to the flat top surface of a base frame made in accordance with the invention.

Still a further object of the invention is to provide a base frame structure for a mobile home that is simple and inexpensive to manufacture, requires less labor than the fabricated steel frame, requires no painting, and has many other advantages over the conventional steel frame.

These and other objects and advantages of the invention will become apparent to those skilled in the art from the following detailed description thereof, with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side elevational view of a mobile home constructed on a base frame structure embodying the principles of the present invention;

FIG. **2** is a bottom plan view of the same, showing the underside;

FIG. **3** is a side elevation of the base frame structure, or foundation, as it appears without the dwelling structure;

FIG. **4** is an enlarged front end view of the structure shown in FIG. **3**;

FIG. **5** is a sectional view through the base frame structure, taken at **5—5** in FIG. **2**, drawn to a somewhat larger scale; and

FIG. **6** is an enlarged fragmentary sectional view taken through the base frame structure at one side thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings, the mobile home is designated in its entirety by the reference numeral **10** and comprises a dwelling unit **12** mounted on a supporting base structure, or platform **14**, which is supported, in turn, by wheels **16**. At the front end of the platform **14** is a forwardly extending draft tongue **18**, which is connected to the usual towing connection on an automobile. The dwelling unit **12** may take any form, and is herein shown as a simple, rectangular box-like structure with walls **20** and a roof **22**; the walls having doors and windows provided therein, as required.

The base frame structure **14** is an elongated, rectangular, flat-topped platform of cast lightweight concrete, made with expanded shale or other lightweight aggregate and entrained air. Projecting downwardly from the underside of the platform are laterally spaced, longitudinally extending flanges **24, 25, 26, 27** and **28**, and a plurality of longitudinally spaced, parallel, transverse flanges **30**. The two outer pairs of longitudinal flanges **24, 25** and **27, 28** are considerably deeper at the midpoint of the platform than at the ends thereof, as best seen in FIGS. **3, 4** and **5**, while the center flange **26** and transverse flanges **30** are all constant in depth from one end to the other.

Upper and lower, lengthwise extending, steel reinforcement cables, or rods **32** and **34** are cast into the outer pairs of longitudinal flanges **24, 25**, and **27, 28**, and these are tensioned at the time of casting and curing the concrete, so as to give the structure maximum stiffness and rigidity. The rods **32** and **34** are also positioned and bent, as shown in broken lines in FIG. **3**, so as to obtain maximum vertical force vectors at the free ends of the concrete platform. This is accomplished by placing the upper rods **32** close to the top edge of the flange at the midpoint of the platform, and bending the rods downwardly on both sides of the midpoint so that their ends lie close to the bottom edges of their respective flanges at the ends of the flanges. The lower rods **34** are placed close to the bottom edges of the flanges at the midpoint of the platform, and bent upwardly on both sides, so that their outer ends lie close to the top edges of their respective flanges at the ends thereof. Upper reinforcement bars **32** are thus positioned to resist downward deflection of the ends of the platform **14**, while lower bars **34** are positioned to resist upward deflection. Other reinforcing bars **36** extend trans-

versely across the platform, and are embedded in the transverse flanges **30** near the top and bottom edges thereof.

The wheels **16** are conventional automotive-type wheels with pneumatic tires, and are journaled at the ends of transverse axles **38,** which are connected to the bottom edges of flanges **25** and **27** by leaf springs **40.** Wheels **16** are positioned between the outer pairs of flanges **24, 25** and **27, 28.** While the drawing shows three tandem wheels on each side of the platform, it will be understood that any number of wheels might be used, and they can be arranged in any desired grouping.

The draft tongue **18** comprises two forwardly converging steel beams **42** and **43,** and a central, fore-and-aft extending beam **44,** which come together and are welded to a gusset plate. A screw-jack **46** engages the ground to support the front end of the draft tongue when the latter is disconnected from its towing vehicle.

The dwelling unit **12** is built up on platform **14** in the usual way, using the top surface of the platform as a floor or sub-floor. Sills of 2×4 lumber may be cemented to the platform, using epoxy cement, or the like, or they may be attached by using fasteners that are cast into the concrete. Carpeting or tile can be applied directly to the top surface of the platform **14,** or a wood flooring can be laid onto the surface. Ducts, raceways, and conduits may be cast into the platform or on the underside thereof, and vent openings **48** may be provided in the floor (FIG. **5**) for heaters or air conditioner **50.** FIG. **5** also shows how a horizontal panel **52** of plywood or the like material may be secured along its edges to the inner longitudinal flanges **25** and **26** a short distance below the bottom edges of the transverse flanges **30,** to form a plenum chamber **54** for the heating and air-conditioning system. Thermal insulation for the floor may be formed in place on the underside of the platform **14** after the concrete has cured. This is easily done by pouring the liquid resin composition onto the inverted platform, and allowing the liquid to spread out and seek its own level as it foams.

The cement used in making the platform **14** is preferably portland cement, although any other substance having similar properties might be used. For example, various plastic materials such as polyester resin might be substituted for portland cement, and the said resin might be used with a particulate aggregate, or glass fibers, or both. Accordingly, the term "concrete" as used in the claims includes any material formed by concretion or coalescence of separate particles of matter in one body. The reinforcing rods **32, 34** may be prestressed, as described earlier, or the platform can be cast in slightly cambered form, as indicated by broken lines **54** in FIG. **3,** so that it flattens out by gravity when inverted. In this latter case, the reinforcing rods are tensioned by what is called "post-stressing". A 12×60 foot concrete underbody constructed in accordance with the invention weighs about 15000 pounds, whereas a steel platform and wood floor of similar size weighs approximately one-third as much. As a result of the placement of this large mass at the bottom of the mobile home, the center of gravity of the entire structure is just slightly above the level of the top of the wheels **16.**

Casting the platform **14** of concrete requires relatively little labor, and the total cost of manufacturing the platform is less. No painting is required, and the concrete structure is virtually immune to corrosion or deterioriation by weathering. The concrete underbody can also be used for prefabricated modular homes, in which case there would be no wheels or axles, or draft tongue. The platform **14** would be transported to the building site on a flat bed trailer, and them becomes the foundation of the building.

While I have shown and described in considerable detail what I believe to be the preferred embodiment of the invention, it will be understood by those skilled in the art that the invention is not limited to such details, but might take various other forms within the scope of the claims that follow.

I claim:

1. A foundation structure for a mobile home, comprising a prefabricated rectangular platform of cast, concrete-like material, having a flat top surface which serves as a floor for the mobile home, and downwardly projecting flanges on the underside thereof, some of said flanges extending parallel to the longitudinal axis of said platform and some extending transversely with respect thereto;

a plurality of longitudinally extending tensioned reinforcing members embedded in said platform to prevent vertical flexing of the ends thereof, certain of said members being located adjacent the top surface thereof, and others of said members being located adjacent the bottom edges of said longitudinally extending flanges, said certain members being bent downwardly from the midsection of the platform to the ends thereof, and said other members being bent upwardly from the midsection of the platform to the ends thereof; and

a plurality of wheels supporting said platform intermediate the ends thereof.

2. A foundation structure for a mobile home, comprising a prefabricated rectangular platform of cast concrete, having a flat top surface which serves as a floor for the mobile home, and downwardly projecting flanges on the underside thereof, some of said flanges extending parallel to the longitudinal axis of said platform and some extending transversely with respect thereto;

said longitudinally extending flanges being deeper at the midpoint of the platform than they are at the ends;

a plurality of longitudinally extending tensioned reinforcing members embedded in said concrete platform to prevent vertical flexing of the ends thereof, said reinforcing members comprising steel rods or cables extending lengthwise of the platform, some of said rods or cables being located adjacent the top surface of the platform at the midpoint thereof and bending downwardly so that their ends are adjacent the bottom edges of their respective flanges, and others of said rods or cables being located adjacent the bottom edge of their respective flanges at the midpoint of the platform and bending upwardly so that their ends are adjacent the top edges of their respective flanges;

a plurality of wheels supporting said platform intermediate the ends thereof; and

a draft tongue attached to one end of said platform and having means adapted for connection to a towing vehicle.

3. A foundation structure for a mobile home, as in claim 2, wherein means is provided on the underside of the platform which defines a plenum chamber for the heating and ventilation system with register openings formed in the floor, through which air passes.

4. A foundation structure for a mobile home, as in claim 2, wherein said reinforcing rods or cables are prestressed at the time the concrete is poured and cured.

5. A foundation structure for a mobile home, as in claim 2, wherein said reinforcing rods or cables are post stressed by casting said platform with a slight upward camber on either side of the midpoint, the ends of said platform then deflecting downwardly by gravity to produce a level top surface, said downward deflection of the ends serving to tension at least some of said reinforcing rods or cables.

* * * * *