June 15, 1965 H. G. HAMMAR 3,188,694

MOBILE HOME FRAME

Filed Jan. 4, 1962 2 Sheets-Sheet 1

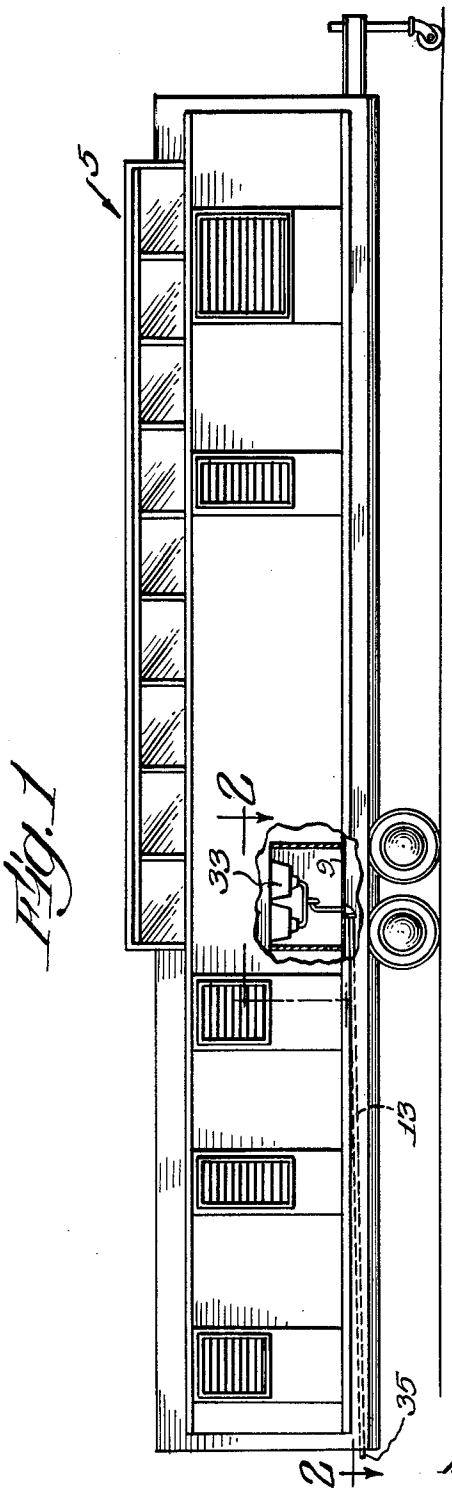


Fig. 1

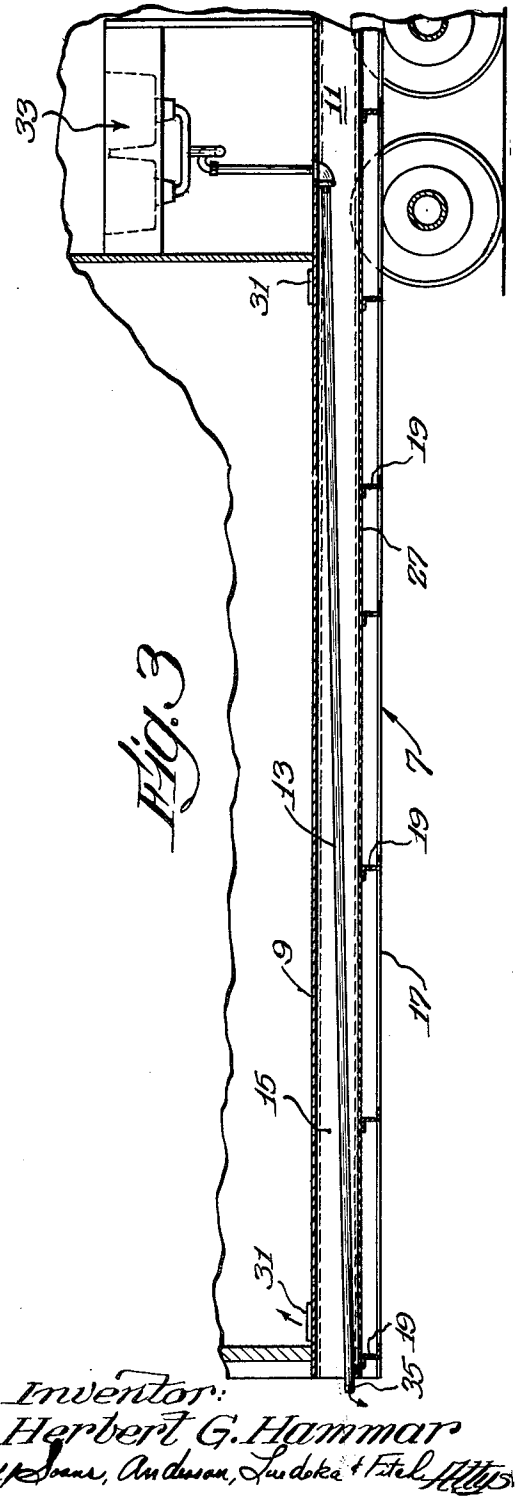


Fig. 3

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MOBILE HOME FRAME

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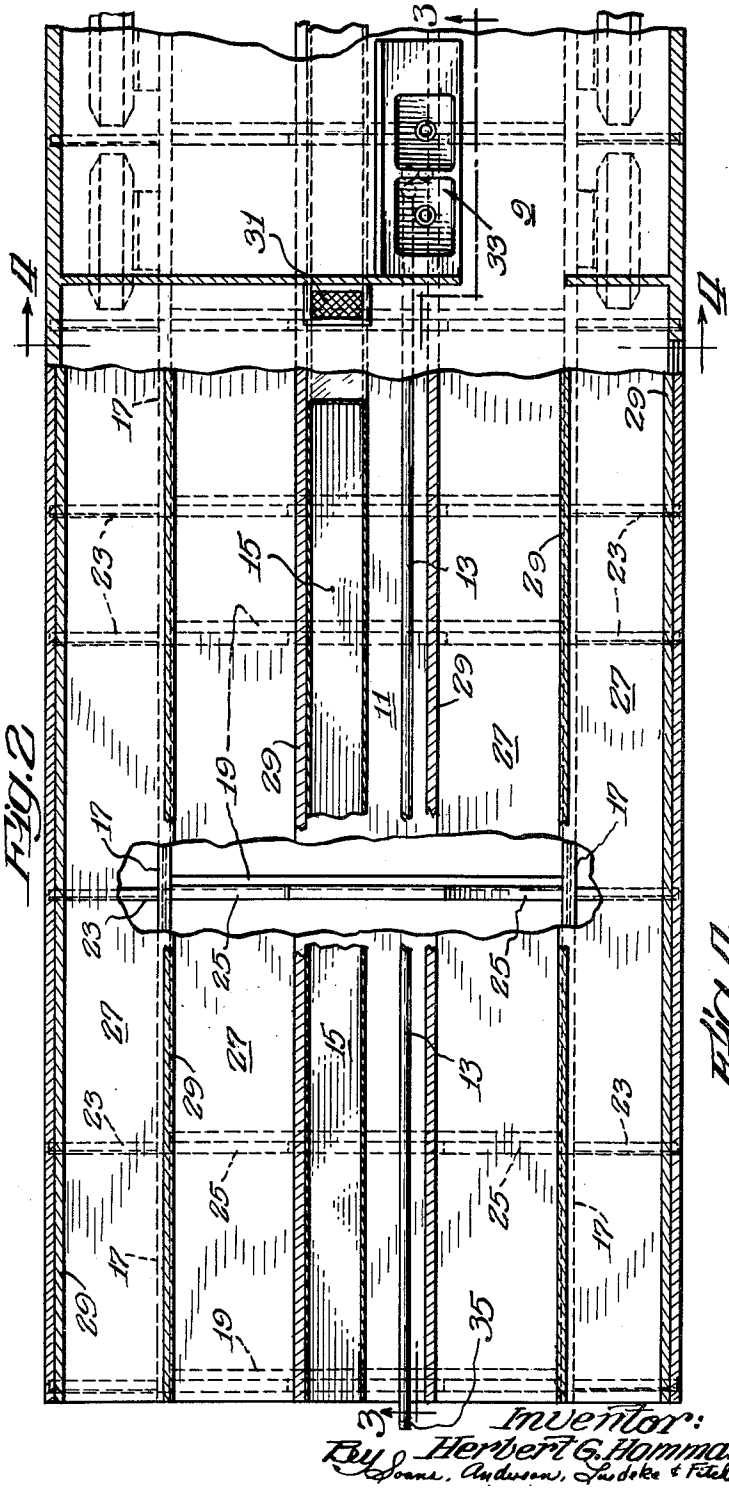


Fig. 2

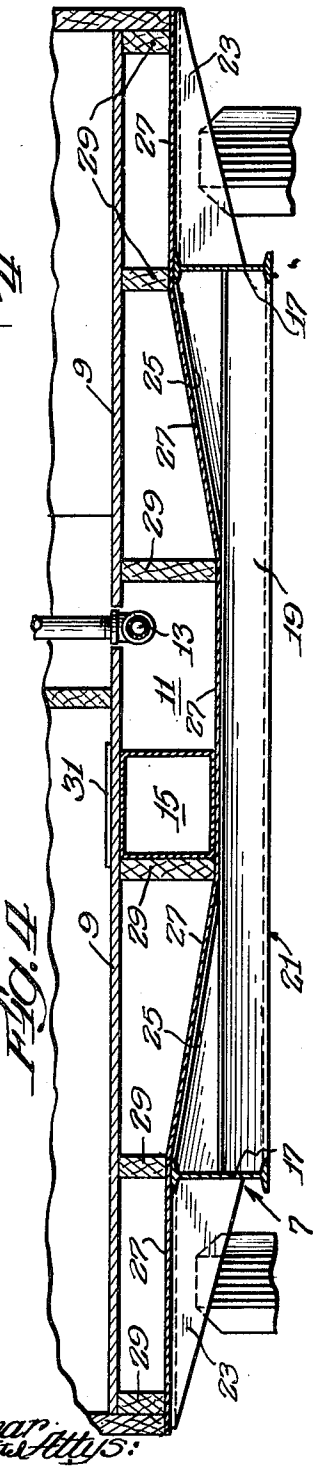


Fig. 4

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United States Patent Office 3,188,694 Patented June 15, 1965

3,188,694

MOBILE HOME FRAME

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Filed Jan. 4, 1962, Ser. No. 164,342
1 Claim. (Cl. 20—2)

This invention relates to mobile home coaches and more particularly to frame structures for mobile home coaches wherein plumbing and heating conduits are situated below the floor of the coach.

In designs of mobile home coaches heretofore, any facility requiring drainage, such as a kitchen or bathroom, was generally located near the rear of the coach. Such an arrangement was deemed necessary because the floor support provided only limited vertical distance between the floor and supporting frame in which to pitch the drain pipes. Since it had become standardized to locate drain outlets at the rear end of the coach, the height of the space in which the drain pipe was located limited the distance forward a kitchen or bathroom could be placed in the coach.

However, new designs in mobile homes make desirable more flexibility in room placement in the coaches with more forward placement of the rooms requiring drainage facilities. As before indicated, it is not readily possible for manufacturers to locate drains under the floors in coaches and still maintain a satisfactory pipe pitch from various points in the coaches. To overcome this difficulty, some manufacturers increased the distance between the floor and the frame so as to provide a greater vertical distance in which a drain pipe could be pitched. But such a change raised the floor and in turn necessitated a compensating increase in the overall height of the coach. This solution of the difficulty, consequently, was not altogether satisfactory.

As an alternate approach, some manufacturers moved the fixures requiring drainage to positions along a side wall of the coach and routed the drain pipes above the floor, adjacent the wall. This solution is likewise unsatisfactory because it necessitates additional cost to conceal the pipes. It is sometimes desirable to locate sinks or other fixtures with drains near the center of the coach, away from the coach wall. Drainage in such locations away from the rear of the coach has not been feasible.

It is a principal object of the invention to provide an improved frame structure for trailer and mobile home coaches.

Another object of the invention is the provision of a chassis frame for trailer and mobile home coaches having space beneath the floor for location of pipes, especially affording space for the proper pitch of plumbing drain pipes.

A further object of the invention is the provision of a chassis frame having high strength and fulfilling the requirements for roadability.

A still further object is to provide a frame structure of the above type which can be readily and inexpensively manufactured.

Other objects and advantages of the invention will be apparent from the following description thereof, when considered in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a side elevational view, partially broken away, of a mobile home embodying the invention;

FIGURE 2 is an enlarged fragmentary plan view, partially broken away and partially in cross-section, taken along line 2—2 of FIGURE 1;

FIGURE 3 is an enlarged fragmentary view taken along line 3—3 of FIGURE 2; and

FIGURE 4 is an enlarged sectional view taken along line 4—4 of FIGURE 2.

As shown in the drawings, one preferred embodiment of the invention is illustrated as a mobile home 5 including a base frame designated generally by the numeral 7 and a floor 9 between which there lies a region or cavity 11 adapted for the location of utility conduits, such as drain pipes 13 and a heating duct 15. The illustrated construction provides a region 11 with a sufficiently large vertical dimension that the minimal requirements for pitch of the drain pipes 13 may be met even when the fixures requiring drains are spaced relatively long distances from the drain outlets.

More particularly, as best seen in FIGURE 4, the base frame 7 includes a substructure or skeleton 21 comprising a pair of longitudinally extending beams 17 connected by cross-members 19, which skeleton 21 provides the main load bearing structure of the mobile home 5. Suitable structural steel units may be used as beams 17. In the preferred embodiment, the beams 17 are 8 inch I-beams which have been found well adapted to this application. The cross-members 19 comprise structural units which may have different cross-sections. However, a cross-member 19 having a flange which provides a generally flat upper surface is preferred, for example, a channel or a Z-member. The height of the cross-member 19 must be less than that of the beam 17. In the preferred embodiment, a 4 inch Z-member is used and has proved adequate. The substructure 21 is assembled by fixedly connecting the cross-members 19 between the beams 17, as by welding, so that the beams 17 are fixed in a generally parallel position. It is desired that the cross-members 19 are joined to the lower vertical portions of the beams 17 in order to obtain maximum height for the region 11.

The base frame 7 is completed by combining struts or outriggers 23 and braces 25 with the substructure 21. The struts or outriggers 23 serve to extend the width of the substructure 21 by extending outwardly from each of the beams 17, to which they are fixedly connected, as by welding. The struts 23, as shown in the drawings, are triangular sections formed with top flanges which lie in a generally horizontal plane when the struts 23 have been mounted upon the beams 17. Struts 23 of other shapes may be used. The braces 25 serves to strengthen the substructure 21 by reinforcing the connection between the beams 17 and the cross-members 19. Each of the braces 25 extends between an upper portion of a beam 17 and a point on a cross-member 19 and is secured to both these members, as by welding. Preferably, the braces 25 are of standard bar stock and have a length less than one-half the length of the cross-members 19 so as not to reduce the cross sectional area of the region 11.

To provide a weather-bottom for the structure, sheathing 27 extending the length of the coach is suitably attached atop the base frame 7, as best seen in FIGURE 4. The sheathing 27 is preferably a weather proof composition fiber board which will withstand exposure to the weather and protect the flooring and other elements disposed above it.

Supported by the base frame 7 and resting on the top of the sheathing are stringers 29 which are disposed longitudinally of the coach. These stringers 29 are appropriately attached to the base frame 7 through the sheathing 27. In the illustrated embodiment, best seen in FIGURES 2 and 4, six stringers 29 are spaced laterally across the width of the base frame 7 so that their top surfaces define a horizontal plane. Individual boards are then mounted transversely upon these stringers 29 to create a flooring 9 for the coach.

In the embodiment shown, four of the six stringers 29 are 2 x 4, while the center two stringers are 2 x 8. The

two center stringers define the region **11** between the flooring **9** and the sheathing **27** in which the conduits are housed. The invention illustrated provides the region **11** with a vertical dimension equal to about 7⅝ inches, i.e., the longer dimension of the 2 x 8. The additional height herein provided results in significant advantages over previous constructions in which the base frames **7** were built with generally flat top surfaces whereby all the stringers used had the same dimensions.

The region **11** is adapted for housing the heating duct **15** which is utilized in the coach heating system in combination with floor registers **31**. The added vertical height of the region **11** allows a heating duct **15**, of sufficient capacity for the requirements of the coach, to be made with a generally square-cross section. Such a duct, as compared to the relatively flat, rectangular duct necesary to achieve a like capacity in a region of lesser height, results in a saving in material costs because of the reduced peripheral surface possible. Likewise, there will be less total heat lost by transfer through the surfaces of the duct **15** than through the aforementioned rectangular duct.

The region **11** is especially adapted for housing a drain pipe **13** for passage of the drain from a fixture, such as a kitchen sink **33**, to a drain outlet **35** on the rear of the coach. Under the approved standards set up by the Mobile Homes Manufacturers Association (MHMA), a mobile home shall have only one drain for fixtures other than the water closet, and this drain shall terminate horizontally. These standards also specify that the drain outlet for mobile homes over twenty-four feet in length shall horizonally terminate at the rear of the mobile home. These standards often make it necessary, as in illustrated mobile home **5** which is a forty-eight foot long coach, to route the drain pipes for considerable distances. Inasmuch as the MHMA standards require a minimum pitch of ⅛ inch per foot for plumbing drains, it is necessary to have an area with a large enough vertical dimension to accommodate the needed pitch. MHMA standards require drain pipe with a minimum of 1½ inch diameter for the accommodation of from one to three individual fixtures. Thus, previous coaches which used 2 x 4 for stringers would have only enough space available between the floor and frame to drain a fixture approximately sixteen feet. In the illustrated embodiment of the invention, 2 x 4 are used as the basic stringers, yet the frame structure provides the region **11** with a greater vertical dimension. This region, under the aforesaid conditions, allows drainage up to a distance of approximately forty-six feet. Such an arrangement thus allows placement of drainage-requiring fixtures anywhere in the illustrated coach.

The illustrated structure also meets the requirements of strength and roadability necessary in a mobile home. The welded construction of the frame substructure **21** from 8 inch junior I-beams and 4 inch 12 gauge Z-members with 1½ inch top and bottom flanges, reinforced by braces of 1½ inch strips of 12 gauge stock, has provided a strong and stable load bearing unit. The struts **23** are located so as to be in alignment with the cross-members **19**. This assembly of the aligned struts **23** with the frame substructure **21** produces a base frame of substantial strength. A considerable saving in cost of material is also effected by the reduction in size of the cross-members **19** from the larger sizes previously used.

The various features of the invention which are believed to be new are set forth in the accompanying claim.

What is claimed is:

A chassis frame for trailer and mobile home coaches, which frame comprises a pair of generally parallel structural beams extending lengthwise of the coach, a plurality of structural cross-members of a height substantially less than the height of said structural beams, said cross-members extending between and connected to lower portions of said beams to provide a base frame skeleton wherein there is provided a longitudinal cavity, utility conduits disposed in said cavity, a plurality of struts extending outwardly from said beams, a plurality of braces extending downwardly and inwardly from the upper portions of said beams to said cross-members, a weatherproof sheathing disposed upon and coextensive with the base frame whereby a weatherproof bottom is formed, a plurality of longitudinal stringers supported by said base frame and disposed upon said sheathing, said stringers which are supported upon said cross-members being of a height greater than said stringers which are supported upon said struts, and a plurality of flooring members mounted above and supported by said stringers, said flooring members and said sheathing providing a closed cavity therebetween suitably housing said conduits.

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