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(71) Applicants **Rice Trailers Ltd., (United Kingdom), Portland Works, Cosby, Leicester LE9 5TG**
(72) Inventor **Trevor John Dew**
(74) Agent and/or Address for Service **Rice Trailers Ltd., Portland Works, Cosby, Leicester LE9 5TG**

(54) **Flat bed trailer construction**

(57) A trailer has a flat loading surface extending to the full width and length of the unit. Wheels are positioned within the body width and under the flooring. They do not protrude up through the floor. Single or multiple axles 1 are located under deep longitudinal members 2 which can extend to the length of the trailer. To support the floor crossmembers are positioned across the structure resting on top of the bearers. Longitudinal side members 4 are located to the crossmembers at the outer edges. Lower crossmembers 5 are positioned between the main bearers. Struts 6 are placed vertically between the top and lower crossmembers. Diagonal struts 7 extend from the side members to the base of each main bearer. The number of crossmembers and other supporting items vary according to the type of trailer.

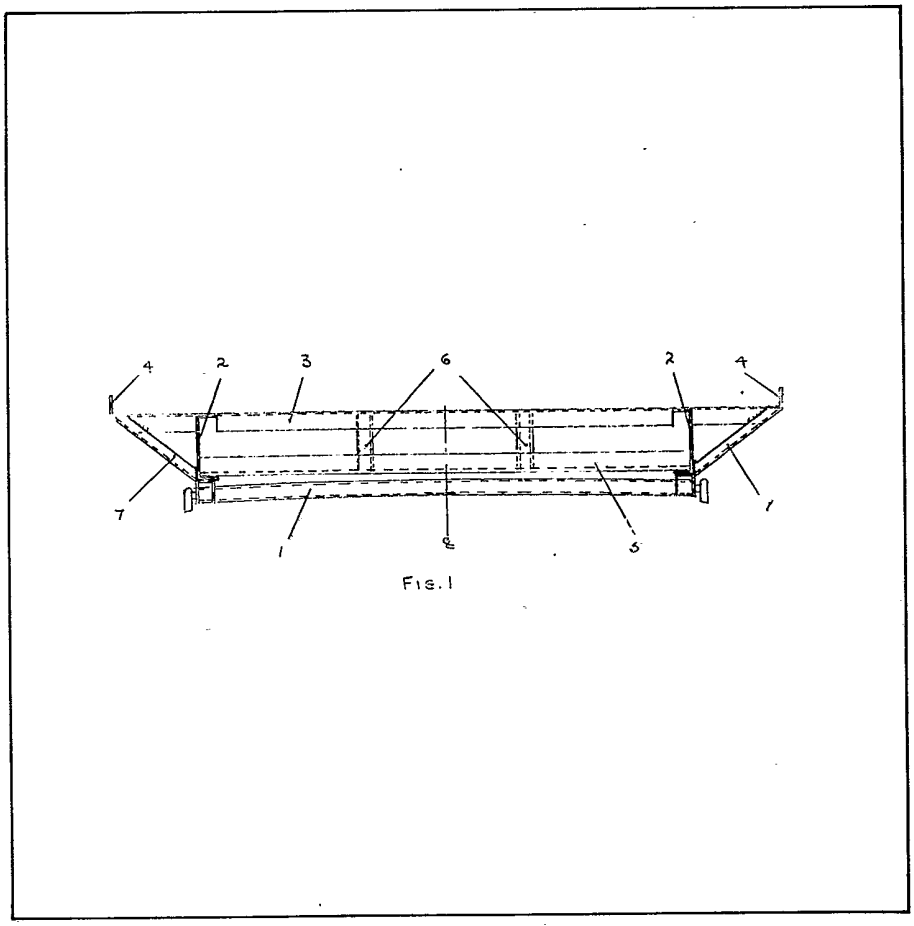

Fig. 1

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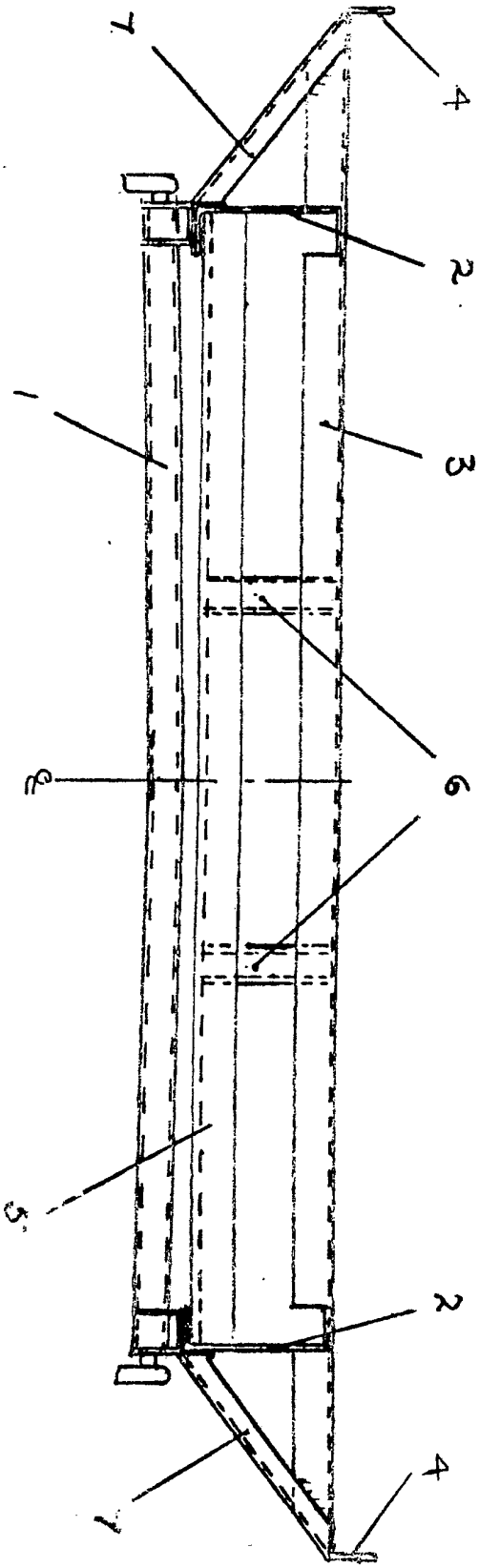

Fig. 1

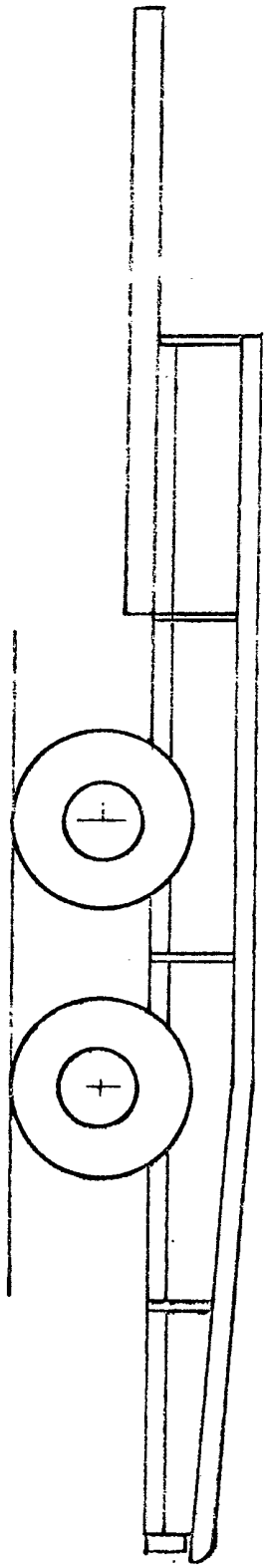

FIG 2

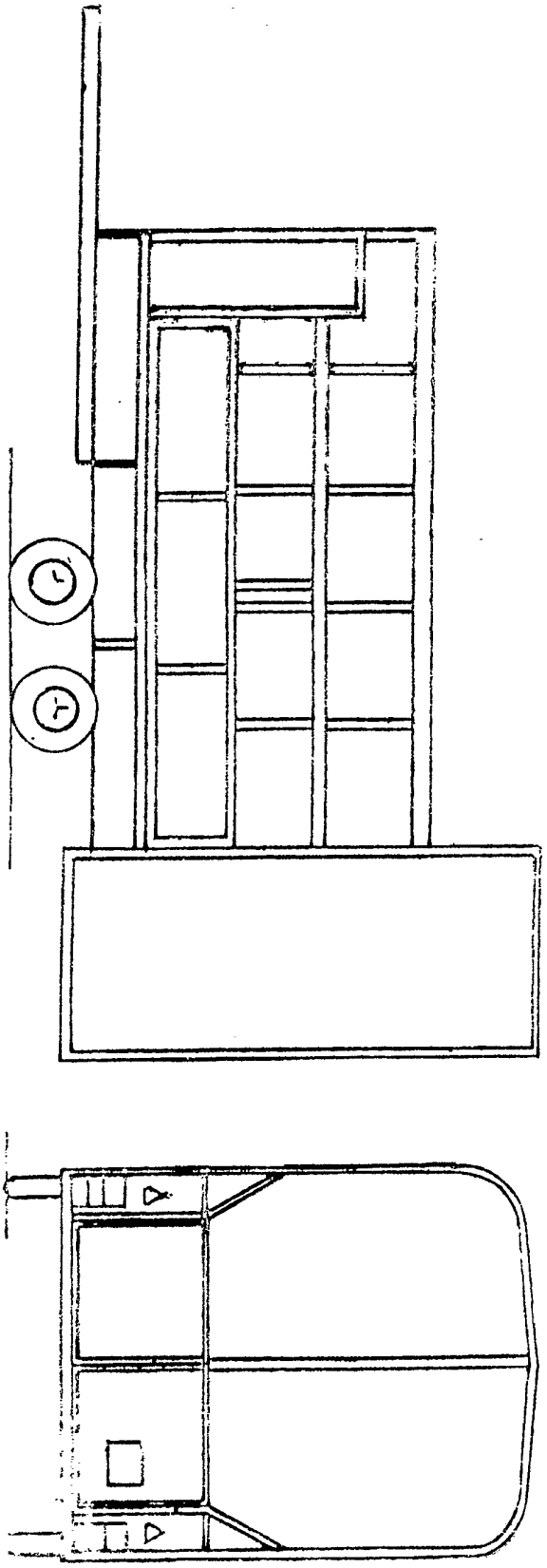

Fig 3

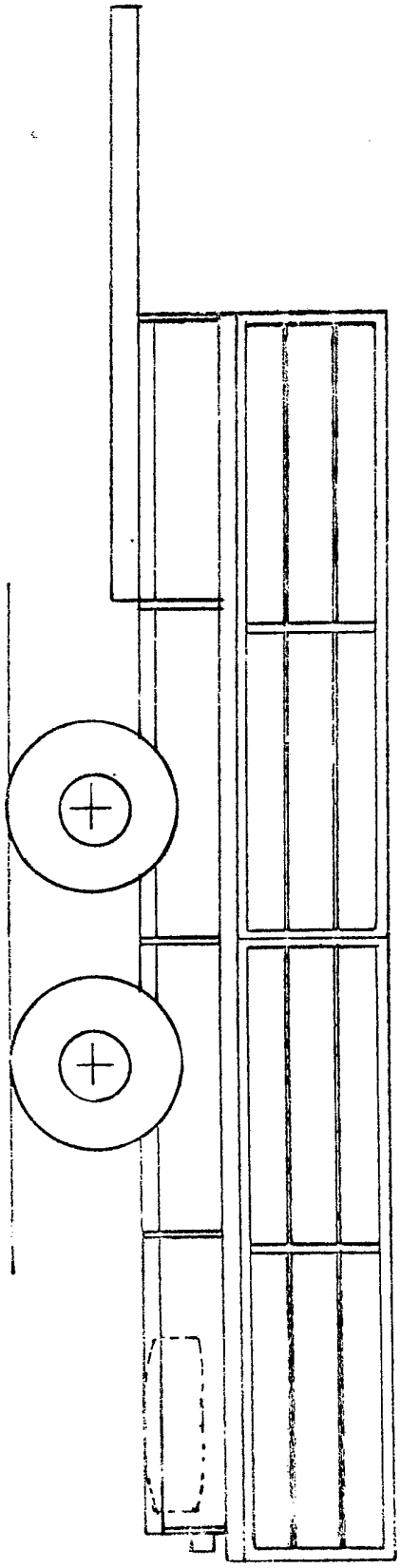

FIG 4

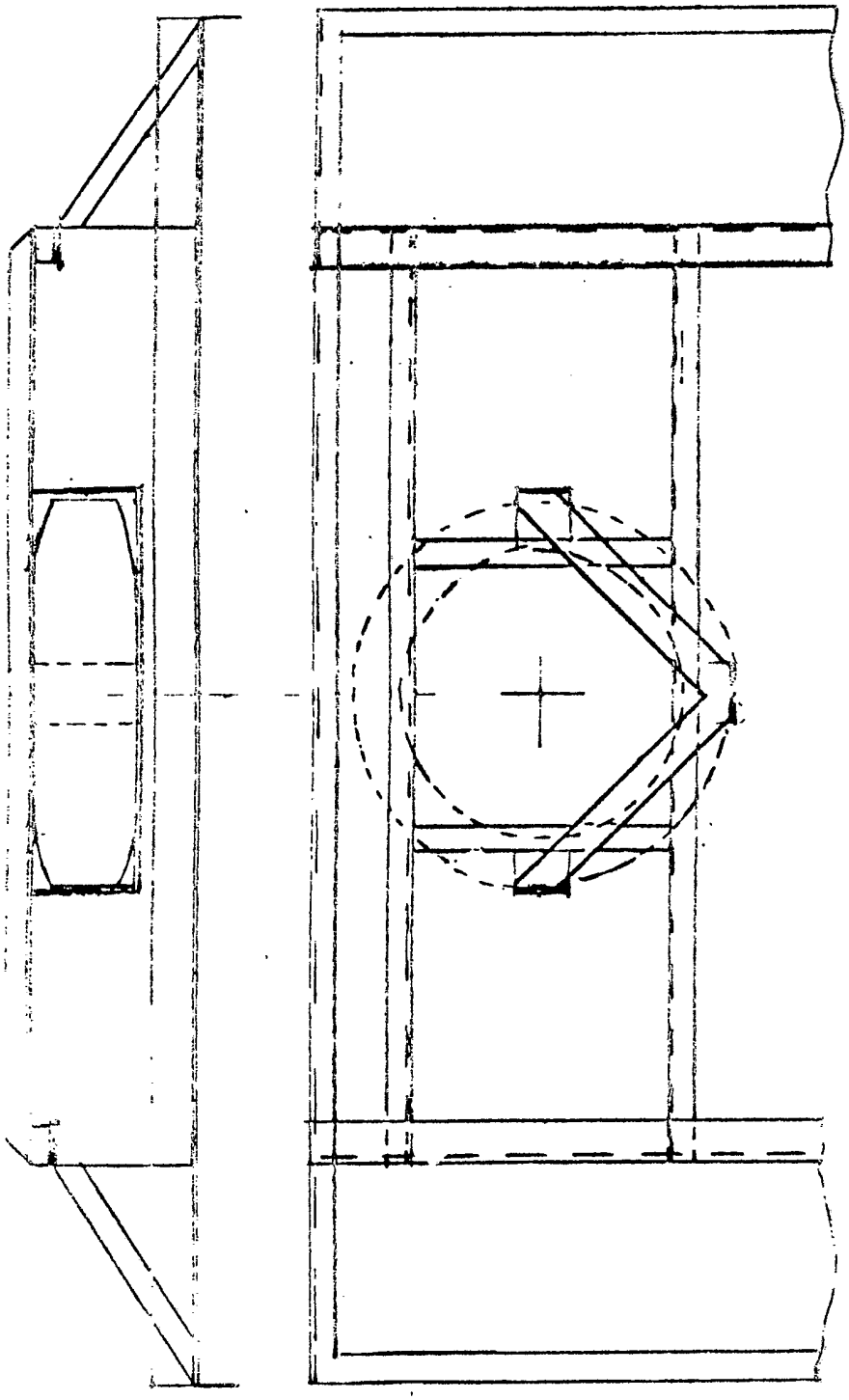

FIG 5

SPECIFICATION

Flat bed trailer construction

The method of construction described in this application is used for the manufacture of wide platform trailers where the wheels are located within the overall body width, under the floor.

The design eliminates the need for wheel arches protruding up through the floor loading area when producing a low platform loading height in conjunction with using small diameter tyres.

Trailers can thus be manufactured with flat loading surfaces to the maximum statutory width.

To obtain sufficient clearance under the floor for the wheels during deflection, the floor has to be supported on a plinth. Standard rolled steel channels and angles of thick section are normally used to obtain the plinth height and to provide a firm location for the axles. Heavy structures result with insufficient rigidity.

Figure 1 indicates in a general cross-sectional view, the method used to improve structural rigidity whilst limiting component weight.

The axle or axles 1 are located under two longitudinal bearers 2. The bearers can extend to the full length of the trailer. They may be parallel or tapered in web height, depending on whether a flat or an angles loading surface is required. The angled type offers a reduced rear end loading height.

The bearers consist of formed channel sections manufactured from thin gauge sheet steel or a light alloy, strengthened locally if necessary, and may have lightening holes pierced in the webs. Alternatively composite materials may be used. The height of the webs produce the required plinth clearance between the axles and the underside of the floor. They are positioned equi-distant each side of the trailed centre line. The axles are located on the underside flanges to mounting plates or attachments positioned at the outer extremities of the axle beam or beams.

To support the loading floor on the bearers and stabilise the structure crossmembers 3 are located across it and rest on the top flanges of the bearers at various dimensions along the body length. They may be cut away locally to slip over and rest on the bearers extending to full trailer width. At the outer extremities they are connected to longitudinal side members 4, one at each side.

At the base of the bearers, the lower crossmembers 5 are positioned between the webs to match the upper floor crossmembers. Vertical struts 6 are inserted between the top and lower crossmembers.

The structure is finally stabilised by diagonal struts 7 positioned between the lower outer corners of each bearer and the underside of the outer longitudinal members.

The tow bar is positioned under the bearers at the front end and located to the bottom crossmembers.

The transverse components are attached to the bearers at longitudinal positions which provide adequate support and also permit clearance for the axles and for the wheels when under deflection.

The materials used for the construction of chassis indicated in Figure 1 may be of steel, light alloy or composite materials. The section sizes may be of angular form, hollow section including circular tube, I form, channel form, or any other section shape. The section shape chosen for any component would depend on the material chosen and its location in the structure.

Jointing of all components may be by welding, riveting, bolting, structural adhesives or combinations of any of these processes.

The materials used for the floor may be timber of any type, mild steel, galvanised steel, light alloy, composite materials, or combinations of these materials.

The longitudinal main bearers may extend to the full length of the trailer. They may be less than the overall length, enabling lighting and reflective components to be included under the rear end of the floor. Figure 2 illustrates the side view of such a trailer with a sloping rear end floor, offering a reduced loading height.

Another trailer derived from the basic design is illustrated in Figure 3. It is the Rice "Signmaster" and used for the transport of signs and highway cones.

A further derivative from this chassis design is shown in Figure 4. This illustrates a flat bed trailer with side panels, which may be fixed or removable and includes a spare wheel contained under the rear end of the trailer as shown in Figure 5.

CLAIMS (filed on 20.12.83)

1. A flat bed trailer with the wheels located within the overall body width under the floor, the axle or axles supporting deep longitudinal main bearers upon which rest crossmembers, being connected to longitudinal side members at the trailer sides for the purpose of supporting the floor, with lower cross members connecting the bases of the main bearers, vertical struts inserted between the top and bottom crossmembers and diagonal struts connecting to longitudinal side members to the bases of the main bearers with reference to Figure 1 of the accompanying drawings.

2. A flat bed trailer as claimed in Claim 1 wherein the main bearers can be manufactured from thin gauge steel, light alloy or from composite materials, with local strengthening or lightening holes if so required.

3. A flat bed trailer as claimed in Claim 1 or Claim 2 where the materials used for the construction of the chassis may be of steel, light alloy or composite materials, wherein the section sizes of these said materials may be of angular form, of hollow section including circular tubing.

4. A flat bed trailer as claimed in any preceding claim where jointing of alll components may be by welding, rivetting, bolting structural adhesives or combinations of any of these processes.

5. A flat bed trailer as claimed in any preceding claim where the materials used for the floor may be timber of any type, mild steel, galvanised steel, light alloy, composite materials or combinations of these materials.

This print takes account of replacement documents later filed to enable the application to comply with the formal requirements of the Patents Rules 1978 or 1982.

6. A flat bed trailer with a sloping rear end floor offering a reduced loading height substantially as described herein with reference to Figure 2 of the accompanying drawings.

7. A flat bed trailer as claimed in Claims 1 - 5, where the longitudinal main bearers may not extend to the full length of the trailer body, enabling a low loading platform to be incorporated.

8. A flat bed trailer as claimed in Claim 7 with a superstructure fitted with reference to Figure 3 of the accompanying drawings.

9. A flat bed trailer as claimed in Claims 1 - 5 with the addition of front side and rear panels with reference to Figure 4 and 5 of the accompanying drawings.

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