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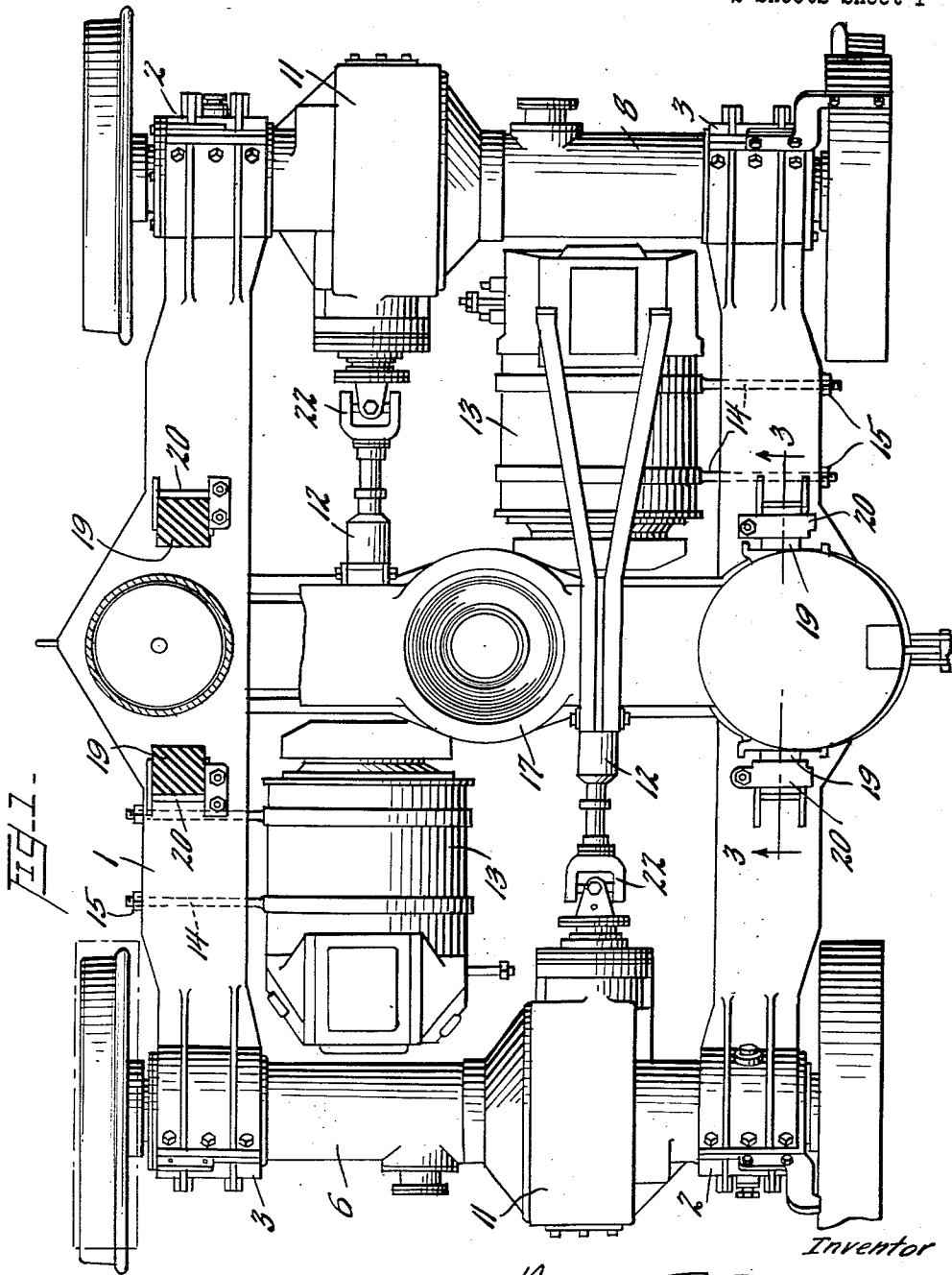
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2,950,689

RAIL TRUCK

Filed Jan. 20, 1958

2 Sheets-Sheet 1



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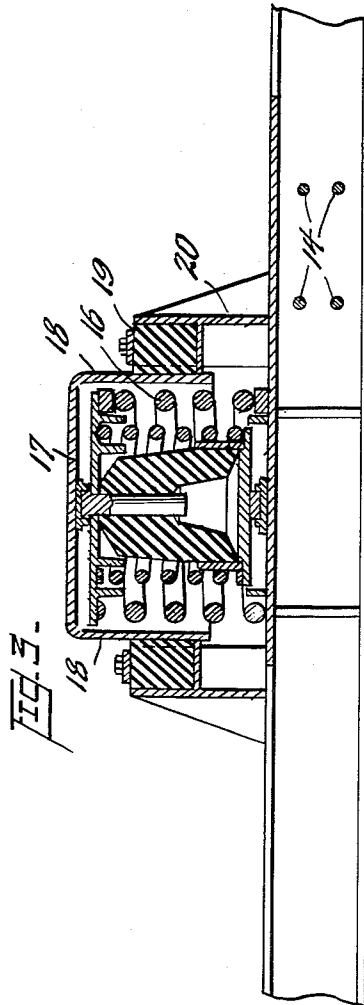
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RAIL TRUCK

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6 Claims. (Cl. 105—133)

This invention relates to rail trucks and has for its object to provide a truck which will provide improved riding quality and which is particularly adapted to rapid transit service.

A type of truck which has been highly satisfactory for street car service is so designed that the relation between the axles with their axle housings always form right angles with the side frames at two opposite corners but which permits flexibility at the other two opposite corners. The fixed right angle relation has proved very effective in eliminating hunting, but the rigidity is somewhat severe for higher speeds. An object of this invention is to provide a truck frame which will operate in essentially the same way but which will incorporate a degree of resiliency at all four corners.

More specifically, it is the object of this invention to provide a truck frame in which the axle housings will be rigidly attached to the side frames at two diagonally opposite corners, which will be flexibly attached to the side frames at the other two corners and which will be attached to the journal bearings at each end of each axle through a resilient medium, thus introducing a small amount of resiliency at the corners which were previously rigid and increasing the amount of resiliency at the other corners.

Another object of the invention is to provide a truck with simplified motor mountings. In powered trucks it is conventional to support each of the motors from a cross member springingly supported on the side frames. The ends of the cross members must be guided as to vertical movements relative to the side frames and the assembly is a source of constant maintenance. I simplify this by strapping the motors directly to their adjacent side frames as now becomes possible because both ends of the side frames are resiliently supported on the axles.

Another object is to provide side frames with motors supported directly thereby and to counterbalance the weight and torque of the motors in such manner that the side frames are not subjected to torsion of consequence with respect to their inherent strength. As will be seen, the counterbalancing is done by offsetting the bolster supporting springs with respect to a vertical bisecting plane through the side frames.

Other objects and advantages will become hereinafter more fully apparent as reference is had to the accompanying drawings wherein my invention is illustrated and in which:

Figure 1 is a top plan view of my improved truck,

Figure 2 is a side elevation thereof with the wheels removed and the journal bearings shown in vertical section, and

Figure 3 is a diametric vertical section taken along the line 3—3 of Figure 1, showing a bolster supporting spring.

More particularly, 1 refers to the two side frames, each of which terminates in an arcuate formation at each end against which an arcuate cap 2 is bolted to form a circular opening at one end and a similar cap 3 is

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bolted to form a similar circular opening at the other end. The opening formed by the end having the cap 3 is of larger diameter than that formed at the end having the cap 2.

The openings at both ends of the side frame receive a journal bearing 4 each of which is encircled by a rubber ring 5. At the end covered by the cap 2, the axle housing 6 is inserted between the rubber ring 5 and the end of the side frame 1, thus giving metal to metal contact between the axle housing and the side frame 1 with its cap 2. The bolts 7 are employed to rigidify this relationship.

The rubber ring 5 at the end of the side frame having the cap 3, is encompassed by the end of the axle housing 8. The axle housing 8 is separated from the end of the side frame 1 and the cap 3 by a second rubber ring 9.

It is to be noted that the ends of the two side frames having the caps 3 are reversed as to position in the assembled truck, thus giving flexibility of the frame at diagonally opposite corners and rigidity at two diagonally opposite corners, the frame being considered as the two side frames and the axle housings.

The axle housings each house an axle 10 which has gearing contained in a gear housing 11. The gearing includes a quill connection which is well known and which could be of the type illustrated in the co-pending application of William T. Rossell, Serial Number 660,871, filed May 22, 1957. The quill gearing permits an angular movement of the axle with respect to its primary driving gear, which is necessary in view of the possible movements between the journal bearings 4 and the axle housings 6 and 8.

The axle gearings are driven by the propeller shafts 12 through universal joints 22, the propeller shafts each being connected for rotation by main motors 13.

The main motors 13 are provided with straps 14 which terminate in threaded legs which project through the side frames 1. The ends of the legs 14 are provided with nuts 15. The motors are, thus, strapped directly to their adjacent side frames. Their weight tends to produce a torsional stress in the side frames.

In order to overcome or counter balance the weight of the motors 13 on the side frame, I offset the bolster supporting springs 16 with respect to a longitudinal plane bisecting the side frames.

The springs 16 are best shown in Figure 3, where it is seen that these springs are of nested type resting directly on the side frames 1 and directly supporting the bolster 17. The bolster has skirts 18 for contact by rubber masses 19 held in brackets 20 arising from the side frames 1. The driving and retarding forces imposed on the bolster 17 by the frame members 1 are thus transmitted through the rubber masses 19.

Various changes may be made without departing from the spirit of my invention and I desire to be extended protection within the scope of the appended claims.

What I claim is:

1. A rail truck comprising side frames and axle housings rigidly connected together at diagonally opposite corners and connected through a mass of rubber at their other corners, each of said axle housings having a journal bearing at each end of each thereof, said axle housings being connected to each of said journal bearings through a mass of rubber.

2. A rail truck comprising axles having journal bearings at each end thereof, side frames and axle housings, a mass of rubber separating each end of each of said axle housings from its journal bearing whereby each of said axle housings is resiliently supported from said journal bearings, each of said side frames terminating in a hollow circular end which houses an end of one of said housings, said circular ends being rigidly secured to

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said housings at diagonally opposite corners of the truck and resiliently connected to said housings at the outer corners thereof.

3. A rail truck comprising side frames and axle housings rigidly connected together at diagonally opposite corners and resiliently connected together at the other two corners, and driving motors parallel with said side frames, one of said motors being connected directly to one of said frames and supported thereby independently of the other side frame and the other motor being directly connected to the other side frame and supported thereby independently of the other motor and the first named side frame.

4. In a rail truck, the combination of side frames, cross members connecting said side frames and main driving motors, one of said motors being bolted directly to one of said side frames and being supported thereby independently of the other side frame, the other motor being bolted directly to the other side frame and also being supported thereby independently of the first named side frame.

5. A rail truck comprising side frames, axle housings connected to said side frames constituting truck cross members, main driving motors, one of said motors being bolted directly to one side frame and the other motor being bolted to the other side frame, a bolster, springs supporting each end of said bolster on said side frames, said springs being offset from vertical planes longitudinal-

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ly bisecting said side frames in counterbalance of the weight of said motors.

6. A rail truck comprising axles having journal bearings at each end thereof, side frames, housings for said axles, said side frames and said axle housings being resiliently connected together at diagonally opposite corners and rigidly connected together at the other two corners, a mass of rubber separating each end of each of said axle housings from one of said journal bearings whereby said axle housings are resiliently supported by said journal bearings, driving motors, one of said motors being bolted directly and independently to one of said side frames and the other motor being bolted directly and independently to the other thereof, a bolster and springs supporting each end of said bolster on said side frames, said springs being offset from vertical planes longitudinally bisecting said side frames in counterbalance of the weight imposed by said motors.

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