Oct. 5, 1943. H. M. PFLAGER 2,330,912

RAILWAY TRUCK

Filed June 26, 1941 2 Sheets-Sheet 1

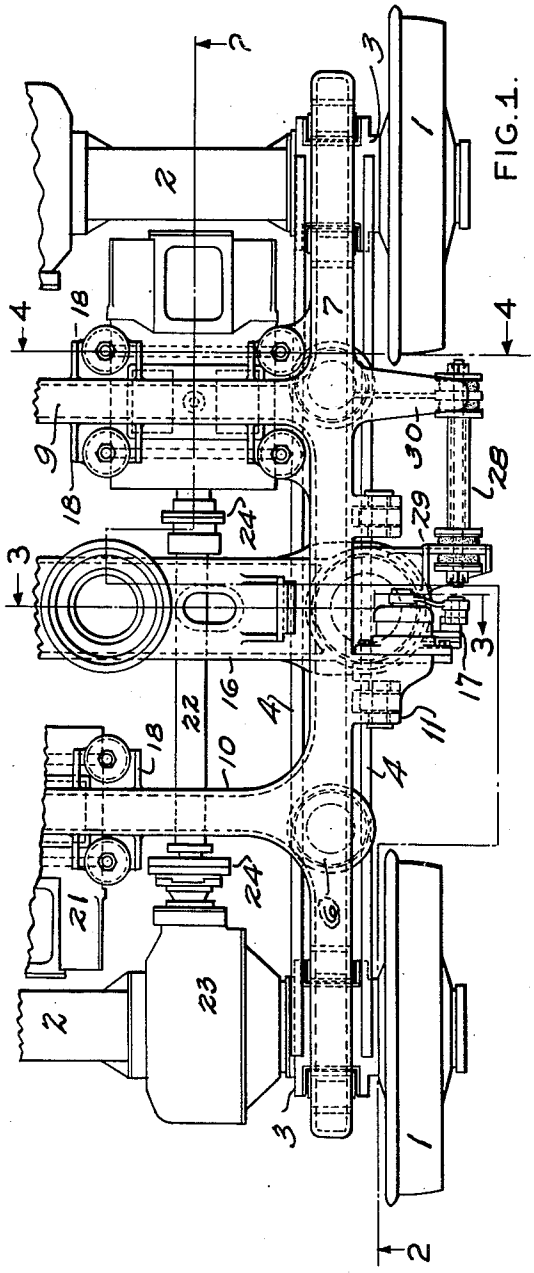

FIG. 1.

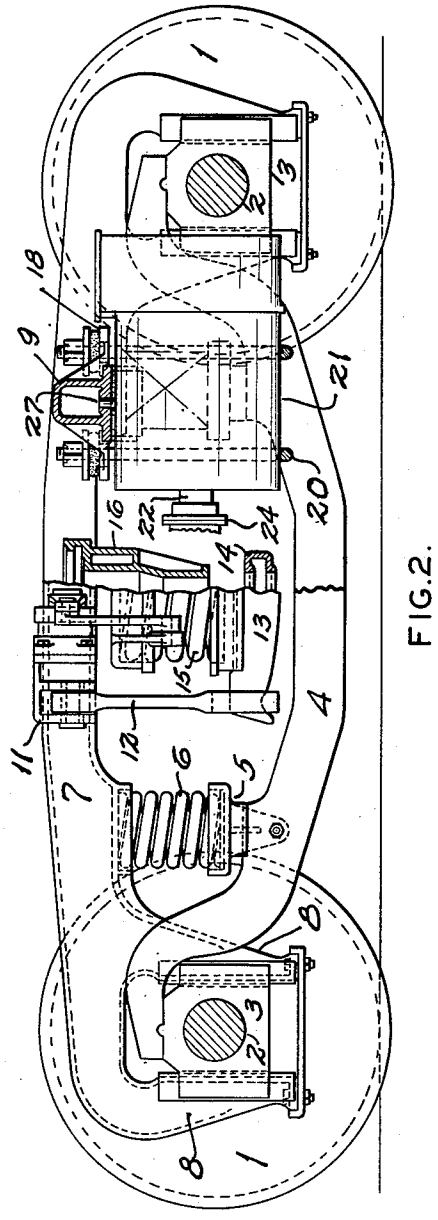

FIG. 2.

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RAILWAY TRUCK

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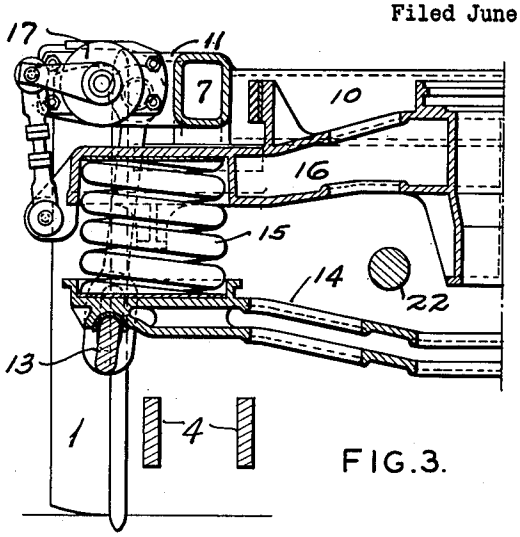

FIG. 3.

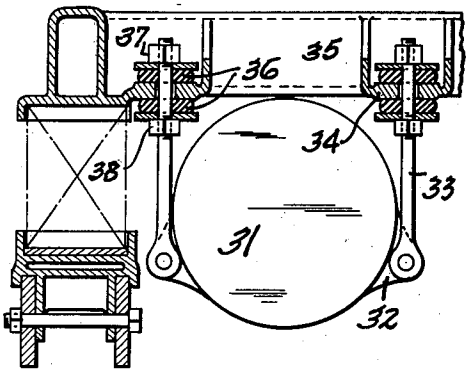

FIG. 5.

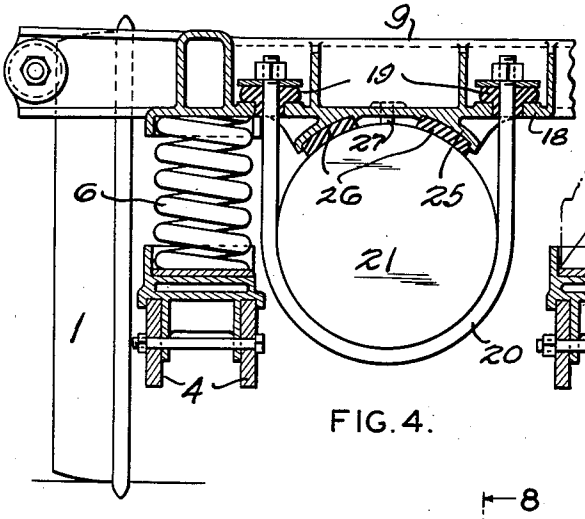

FIG. 4.

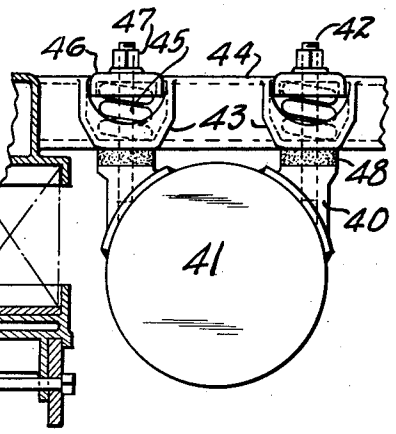

FIG. 6.

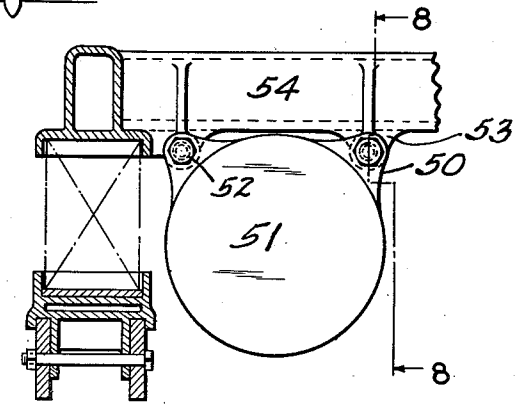

FIG. 7.

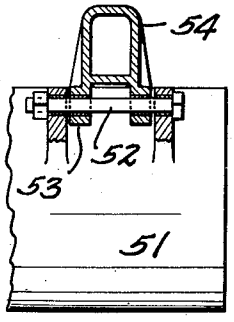

FIG. 8.

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2,330,912

UNITED STATES PATENT OFFICE

2,330,912

RAILWAY TRUCK

Harry M. Pflager, St. Louis, Mo., assignor to General Steel Castings Corporation, Granite City, Ill., a corporation of Delaware

Application June 26, 1941, Serial No. 399,799

6 Claims. (Cl. 105—190)

The invention relates to railway trucks and consists in a novel arrangement of the support for lateral motion bolsters and for the support of axle driving motors.

One object of the invention is to support the motor directly from the truck frame and preferably from a transverse transom of the frame, and an additional object is to support the motor stably direct from the transom. Such mounting requires the motor to extend longitudinally of the truck beyond the transom, and it is a further object of the invention to adapt a truck having a lateral motion bolster for such arrangement of the motor.

Another object of the invention is to maintain the bolster springs in alignment with the wheels whether or not the journal bearings are of the inside or outside type.

These and other detailed objects of the invention are attained by the structures illustrated in the accompanying drawings in which—

Figure 1 is a top view of one longitudinal half of a railway motor truck.

Figure 2 is in part a side elevation and in part a longitudinal vertical section and is taken approximately on the line 2—2 of Figure 1.

Figures 3 and 4 are vertical transverse sections taken on the corresponding section lines of Figure 1.

Figures 5, 6 and 7 correspond to Figure 4 but illustrate respectively different arrangements of the motor mounting.

Figure 8 is a detailed section and elevation taken on the line 8—8 of Figure 7.

The truck illustrated comprises four wheels 1 mounted on axles 2 equipped with journal boxes 3 positioned inwardly of the truck from wheels 1 and supporting the ends of drop equalizers 4 provided with seats 5 for coil springs 6. A one-piece truck frame rests on springs 6 and includes wheel pieces 7, provided with depending pedestal legs 8, and transverse transoms 9 and 10.

Brackets 11 project outwardly of the truck from wheel pieces 7 and swing hangers 12 are pivotally suspended from brackets 11 and carry cross bars 13 which support a spring plank 14 extending from side to side of the truck and carrying coil springs 15 on which rests the bolster 16 movable laterally of the truck by the action of the swing hangers.

The ends of spring plank 14 and bolster 16 project laterally of the truck beyond equalizers 4 and wheel pieces 7 and each bolster spring 15 is in substantial vertical alignment with the wheel piece and the equalizers. This arrangement is possible because of the suspension of the swing hangers from the outer side of the wheel piece and provides support of the bolster at points spaced widely transversely of the truck, notwithstanding the use of the inside bearings. This produces better riding and reduces the amount of tilting of the car due to track conditions and tends to maintain the car body in a more normal or stable upright position.

The location of the swing hangers, the bolster springs and the spring seats on the spring plank and bolsters in substantial vertical alignment reduces to a minimum the bending moments on the spring plank and consequently the weight of the spring plank can be held to a minimum.

The coil springs for the bolster are of relatively large diameter to provide sufficient resiliency to absorb as much as possible vertical and lateral shocks due to track irregularities before such shocks can be transmitted to the car body and a shock absorber 17 is provided between the ends of the truck bolster and the sides of the truck frame to dampen the recoil of the bolster springs.

Each of the transoms 9 and 10 is of box-shaped cross section and is provided with brackets 18 extending longitudinally of the truck and arranged in pairs at opposite sides of the transom.

Pads 19 of rubber or similar material are seated on brackets 18 and U-bolts 20 are suspended from pads 19 and brackets 18 and surround and support the housing of a motor 21 which is operatively connected by a drive shaft 22 and suitable gearing (not shown), enclosed in a casing 23, to the truck axle at the opposite side of the bolster. Universal joints 24 in the drive shaft accommodate the vertical movement of the bolster relative to the axle as follows the action of truck springs 6.

Preferably the lower face of the transom is shaped to the general contour of the motor, as indicated at 25, and pads 26 of rubber or like material between elements 25 and the motor housing cooperate with pads 19 to provide a cushion mounting for the motor. A pin 27 is seated in the bottom wall of transom 9 and in the motor housing to prevent rotation of the motor housing and shifting of the motor transversely of the transom.

Ordinarily swing motion trucks of the type described are held against excessive movement longitudinally of the truck by abutting chafing plates mounted on the bolster and transoms but such chafing plates cannot be used when the transoms are spaced so widely apart as in the present arrangement, as is required to accom-

modate extension of the motors longitudinally of the truck at opposite sides of the transoms. To hold the bolster against substantial movement longitudinally of the truck frame there are provided anchor rods **28** each having its ends secured respectively to a bracket **29** on the bolster and a bracket **30** on the truck frame.

Figure 5 illustrates another arrangement of the motor support in which the motor housing **31** has integral lugs **32** to which suspension rods **33** are attached, the upper ends of the rods extending through brackets **34** on transom **35** and corresponding to bracket **18**. Resilient pads **36** applied to the upwardly and downwardly facing surfaces of brackets **34** are compressed by nuts **37** and **38** to stably position the motor although the latter is provided with a cushion support from the frame.

Figure 6 illustrates another form of the invention in which lugs **40** are secured to the motor housing **41** and rods **42** are threaded into lugs **40** and extend upwardly therefrom through brackets **43** on the transom **44** and corresponding to brackets **34** and **18**.

Coil springs **45** are seated upon the brackets and mount caps **46** which seat the nuts **47** on rods **42**. Preferably pads **48** are placed between the tops of lugs **40** and the bottom of brackets **43** and cooperate with springs **45** to provide a cushion mounting for the motor.

Figures 7 and 8 illustrate another arrangement of the motor mounting in which lugs **50** on the motor housing **51** have horizontal apertures for bolts **52** which also pass through brackets **53** depending from the transom **54** and corresponding to brackets **43**, **34** and **18**. This arrangement eliminates the cushion mounting of the motor on the frame and it will be understood that if this cushion mounting feature is not desired it may be omitted from the other arrangements shown and the motor rigidly secured to the frame.

Each of the arrangements described forms a good support for the motor and eliminates the separate motor mounting elements provided in previous motor truck. The motor is permitted to ride with the spring-supported frame instead of being supported directly by the axle and subject to the direct shocks resulting from movement of the wheels over the rails.

The arrangement also provides for ample size transoms with sufficient strength to resist the stresses and strains that are applied in lateral and longitudinal directions in each of the wheel pieces without increasing the length of the wheel base. In some instances the wheel base could be made less than in previous arrangements.

The truck is of light weight which is highly desirable, particularly in high speed service.

The advantageous features of the truck will be apparent to those skilled in the art and the details of the construction may be changed or some of the features eliminated without departing from the spirit of the invention, and the exclusive use of those modifications coming within the scope of the claims is contemplated.

What is claimed is:

1. In a railway truck, wheels, axles, journal boxes on said axles at the inner sides of said wheels, equalizers extending between with their ends resting on said journal boxes and their intermediate portions dropped below the level of their end portions, springs on said equalizers and spaced apart longitudinally of the truck, a frame mounted on said springs and including wheel pieces extending over said equalizers and above the level of said axles, said wheel pieces being provided with outwardly extending bracket structure, swing hangers pivotally suspended from said bracket structure with their lower ends extending into the general longitudinal vertical plane of said wheels, spring seats supported from the lower ends of said swing hangers and positioned between the level of said wheel pieces and the level of the intermediate portion of said equalizers and extending into said plane, springs on said seats, and a bolster extending transversely of the truck beneath said wheel pieces and having portions in said plane resting upon said springs.

2. In a railway truck, wheeled axles, a frame carried thereby and including a transverse transom, and provided with brackets extending from both sides thereof longitudinally of the truck, a motor beneath said transom, and U-bolts suspended from said brackets and supporting said motor from said transom.

3. In a railway truck, wheeled axles, a frame carried thereby and including a main transverse transom provided with brackets depending from opposite sides thereof and having upright faces, a motor beneath said transom and including a housing having projecting lugs extending alongside of said bracket faces and horizontally disposed bolt-like elements extending through said brackets and lugs to support said motor from said transom.

4. In a railway truck, wheeled axles, equalizers with their ends supported by said axles, springs on said equalizers widely spaced apart longitudinally of the truck and inwardly of said axles, a truck frame mounted on said springs and including wheel pieces and a pair of spaced transoms connecting said wheel pieces at the points of support of said wheel pieces on said springs, and a bolster supported by said truck frame, each of said transoms consisting of a relatively narrow box section member provided with lateral brackets, and an axle driving motor disposed substantially symmetrically beneath each transom and suspended from said brackets and carried thereby independently of the bolster and axles.

5. In a railway truck, wheeled axles, equalizers with their ends supported by said axles, springs on said equalizers widely spaced apart longitudinally of the truck and inwardly of said axles, a truck frame mounted on said springs and including wheel pieces, adjacent the level of the tops of the axle wheels, and a pair of spaced relatively shallow transoms positioned at said level connecting said wheel pieces at the points of support of said wheel pieces on said springs, and a relatively deep bolster supported by said truck frame between and spaced substantially from the transoms, there being an anchoring device secured to said bolster and frame and positioning the bolster longitudinally of the truck independently of the transoms, and an axle driving motor suspended from each transom abreast of the bolster and extending longitudinally of the truck at both sides of the associated transom and carried thereby independently of the bolster and the associated axle.

6. In a railway truck, wheeled axles, equalizers with their ends supported by said axles, springs on said equalizers widely spaced apart longitudinally of the truck and inwardly of said axles, a truck frame mounted on said springs and including wheel pieces and a pair of spaced transoms connecting said wheel pieces at the points

of support of said wheel pieces on said springs and having flanges projecting longitudinally of the truck, a bolster supported by said truck frame and spaced from said transoms, an axle driving motor and housing directly beneath each transom, and means supporting the motor from the transom comprising elongated rods secured to the lower portion of the motor housing and extending upwardly therefrom with their upper ends projecting through said flanges, there being rubber-like pads applied to the upper and lower surfaces of said flanges about said rods, and elements on said rods clamping said pads to said flanges, whereby the motor support may yield vertically, longitudinally and transversely of the truck relative to the frame.

H. M. PFLAGER.