

Sept. 19, 1939.

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2,173,725

RAILWAY TRUCK

Filed Oct. 23, 1937

3 Sheets-Sheet 1

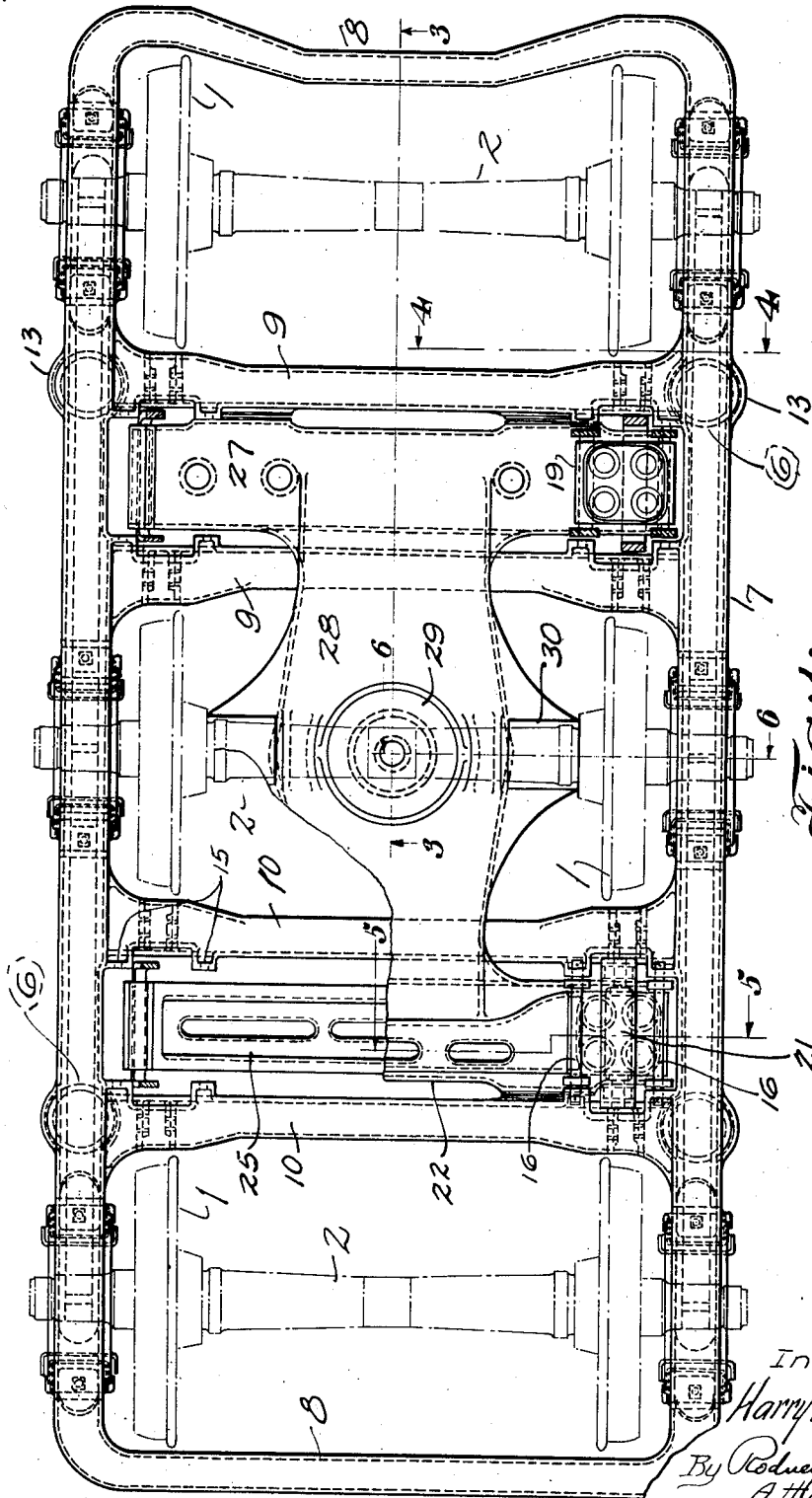


Fig. 1.

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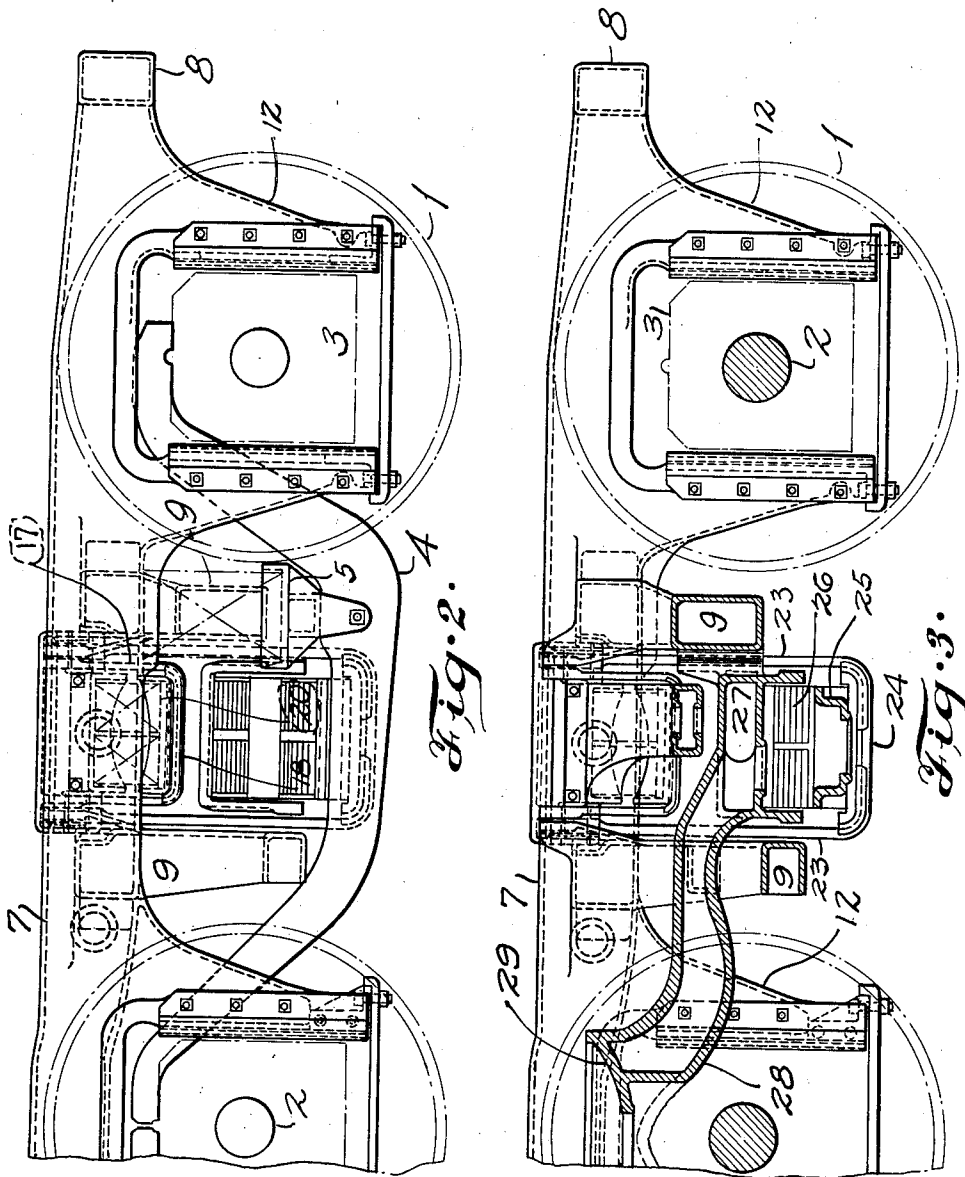
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

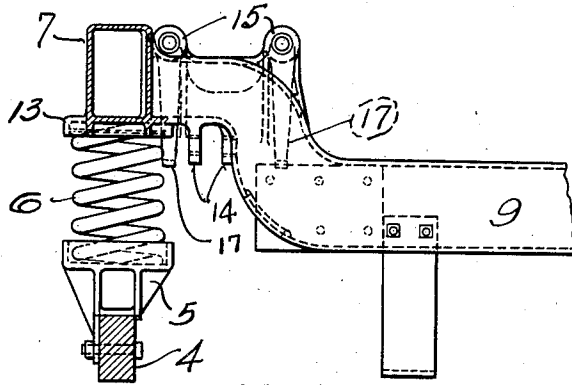


Fig. 4.

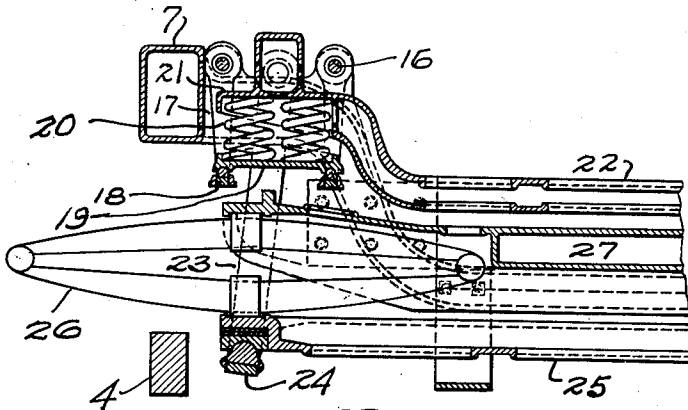


Fig. 5.

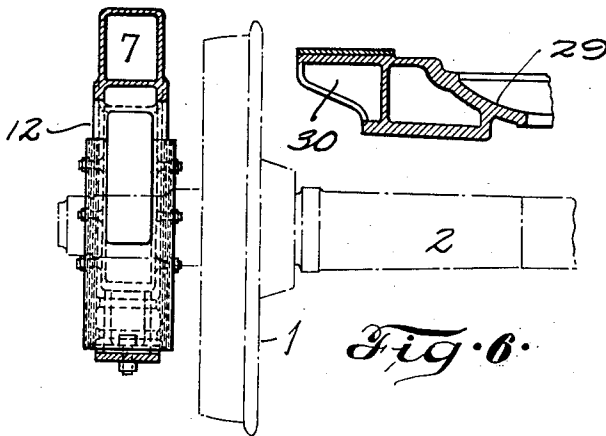


Fig. 6.

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## UNITED STATES PATENT OFFICE

2,173,725

## RAILWAY TRUCK

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Application October 23, 1937, Serial No. 170,561

14 Claims. (Cl. 105—188)

The invention relates to railway rolling stock and more particularly to six-wheel trucks for high speed railway train equipment. The invention consists in structure for supporting the truck bolster from the truck frame.

One object of the invention is to absorb or dissipate in the truck structure the shocks, both large and small, incident to operation.

Another object of the invention is to provide shock absorbing means in a six-wheel truck in addition to the usual springs for the truck frame and the bolster elliptic springs so as to maintain approximately the usual length of wheel base and a minimum increase in weight of the truck.

These and other detailed objects are generally advantageous in all types of railway rolling stock, but are particularly beneficial in high speed passenger trains in which the tendency of relatively unimportant irregularities in rail and road bed to produce rough riding is accentuated.

In my copending application Serial No. 17,415, filed April 20, 1935, now Patent No. 2,127,934 issued August 23, 1938, I have disclosed a double set of springs for supporting the bolster from the truck frame, which springs are arranged to absorb lateral jiggling forces as well as vertical shocks.

The present invention utilizes some of the general features disclosed in said application but includes additional features as will be apparent from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a railway six-wheel truck embodying one form of the invention, the truck bolster being broken away in part to more clearly illustrate the structure beneath.

Figure 2 is a side view of approximately one-half of the truck.

Figure 3 is a vertical longitudinal section on the line 3—3 of Figure 1.

Figures 4, 5 and 6 are detail cross-sectional views upon the corresponding section lines of Figure 1.

Wheels 1, axles 2, journal boxes 3, equalizers 4, spring seats 5 and springs 6 thereon are all of well known construction and arrangement. The truck frame is of general rectangular contour and includes wheel pieces 7, end members 8, and spaced pairs of transoms 9—9, 10—10. Preferably the frame is a one-piece casting and includes pedestal jaws 12, spring caps 13 and brake hanger brackets 14. Near the ends of the transoms are bearings 15 for pins 16 from which are suspended transversely spaced auxiliary U-shaped hangers with uprights 17 and bottom cross bars 18 which carry a spring seat 19 between the transoms.

Groups of coil springs 20 are mounted on seats 19 and in turn support cap members 21, and preferably members 21 at opposite sides of the

truck are rigidly connected by a cross piece 22, a pair of spring cap members 21 and the cross bar 22 forming an auxiliary bolster. A U-shaped swing hanger with uprights 23 and cross bar 24 is pivotally suspended from the auxiliary bolsters at each spring cap member 21, the upright members 23 of each swing hanger straddling the spring cap member, a group of coil springs 20, and a spring seat 19. Spring planks 25 extend between the cross bars 24 at opposite sides of the truck and mount elliptic springs 26 which in turn support the ends of cross bolsters 27 which are rigid with a center bolster 28 having a center plate 29 for supporting the superstructure. This superstructure may include the usual car body and center plate spaced inwardly from the end thereof, but the present drawings illustrate a truck particularly arranged for an articulated car in which the adjacent end portions of two cars will both be carried on the truck center plate 29.

With this arrangement coil springs 20 and elliptic springs 26 are disposed one above the other as are also the corresponding spring planks 25, cross bolsters 27, and auxiliary bolsters 21—22. Hence the arrangement provides for an additional shock absorbing means in a six-wheel truck with but very little, if any, increase in truck length over the usual construction, thereby also keeping the weight of the truck with such additional shock absorbing means down to a minimum.

Since auxiliary U-shaped hangers 17—18 and U-shaped swing hangers 23—24 straddle the auxiliary bolsters, cross bolsters, spring plank and associated springs, the loads are applied centrally of each group of springs whereby the parts may resist the loads and other forces applied thereto with a minimum of twisting and uneven distribution of forces.

In moving over track inequalities, the equalizer springs 6 are first to absorb the jars and thrusts which are then transferred through the truck frame and auxiliary swing hanger structure to the auxiliary coil springs 20. The auxiliary coil springs, due to their coiled structure and swinging mounting, are particularly adapted to absorb transverse jiggling in addition to a large portion of the major jars and thrusts and any remaining jars or thrusts will then be transferred and absorbed by elliptic springs 26, thereby minimizing the swaying and jarring movements of the car body.

In my above mentioned copending application, I describe a double spring arrangement which is particularly adapted for use in four-wheel trucks, and the present structure provides a double spring arrangement which is well adapted for six-wheel trucks as there is no arrangement of swinging hangers, cross bars, spring plank and bolster springs adjacent the middle portion of the truck

to interfere with the middle axle of the truck and the brake gear associated with the wheels of the middle axle. While the construction described herein is designed for a six-wheel truck, the novel features may be embodied in a double bolster four-wheel truck and in other four-wheel trucks.

The bolster may be designed for maximum strength without being unduly elongated and without having its side bearing portions 30 restricted because of spring or swing motion parts.

Various combinations of coiled and elliptic springs may be used different from that illustrated, and rubber blocks may be substituted for the metal springs illustrated, and other variations in the details of the structure may be made without departing from the spirit of the invention. The exclusive use of such modifications as come within the scope of the claims is contemplated.

I claim:

1. In a railway truck, a frame, spaced swing hangers mounted on said frame, spring seats carried by said hangers, springs on said seats, spring caps on said springs, swing hangers supported on said caps, a spring plank carried by said latter mentioned swing hangers, and bolster supporting springs on said spring plank in substantial vertical alignment with said first-mentioned springs.

2. In a railway truck, wheels, axles, journal boxes, equalizers extending between and resting on said boxes, springs on said equalizers, a truck frame mounted on said springs, spring seats carried by said frame, coil springs on said seats, a rigid member extending from side to side of the truck and carried by said latter mentioned springs, swing links depending from said member, springs carried by said links, and a bolster supported thereby and extending beneath said frame carried springs.

3. In a railway truck, wheels, axles, journal boxes, equalizers extending between and resting on said boxes, springs on said equalizers, a truck frame mounted on said springs, spring seats pivotally suspended from said frame to swing laterally of the truck, spring structure carried by said seats, swing hangers carried by said structure, and a bolster extending beneath said structure and supported by said hangers.

4. A truck as described in claim 3 in which the bolster is spring supported upon said hangers.

5. A truck as described in claim 3 in which the spring structure on the swinging seats is of coiled structure and springs of leaf structure support the bolster from the swing hangers.

6. In a railway truck, a truck frame, swing hangers suspended therefrom, spring seats carried by said hangers, spring structure on said seats, swing hangers suspended from said structure, springs carried by said latter-mentioned swing hangers in substantial vertical alignment with said structure, and a bolster supported by said springs.

7. In a railway truck, a truck frame including a pair of spaced transoms, a pair of swing hangers suspended from the adjacent ends of said transoms, a spring seat carried by said hangers and movable transversely of the frame by the swinging of said hangers, springs carried on said seat, a cap on said springs, a swing hanger straddling said cap intermediate the legs of said first-mentioned hangers, a spring supported by said second mentioned hanger beneath said first-mentioned springs, and a bolster member carried by said second-mentioned spring.

8. In a railway truck, a truck frame, vertically

disposed coil springs carried thereby with their upper ends movable laterally of the truck relative to their lower ends, spring caps mounted on said springs and movable vertically and laterally with said springs, swing hangers suspended from said caps, and a bolster extending directly beneath said springs and carried on said hangers.

9. In a railway six-wheel truck, axles, a pair of spaced transoms between each axle and the adjacent axle or axles, springs supported from the ends of each pair of transoms and between the adjacent transoms, seat members supported by said springs, additional springs carried by said seat members beneath said first-mentioned springs, and a bolster structure having cross bolsters between the transoms of each pair and extending between the corresponding first-mentioned springs and additional springs and supported on the latter.

10. In a railway truck, a frame, spaced swing hangers mounted at each side of said frame, spring seats carried by said hangers, springs on said seats, spring caps on said springs, wing hangers supported on said caps, and bolster supporting springs carried by said latter mentioned hangers in substantial vertical alignment with said first-mentioned springs.

11. In a railway truck, wheels, axles, journal boxes, equalizers extending between and resting on said boxes, springs on said equalizers, a truck frame mounted on said springs, spring seats pivotally suspended from said frame to swing laterally of the truck, spring structure carried by said seats, a tie member extending from the spring structure at one side of the truck to the spring structure at the opposite side of the truck, swing hangers carried by said structure, and a bolster extending beneath said structure and supported by said hangers.

12. In a railway truck, wheels, axles, journal boxes, equalizers extending between and resting on said boxes, springs on said equalizers, a truck frame mounted on said springs, spring seats pivotally suspended from said frame to swing laterally of the truck, spring structure carried by said seats, a tie member extending from the spring structure at one side of the truck to the spring structure at the opposite side of the truck, swing hangers carried by said structure, and bolster supporting springs directly beneath said spring structure and carried by said hangers.

13. In a railway truck, wheels, axles, journal boxes, equalizers extending between and resting on said boxes, springs on said equalizers, a truck frame mounted on said springs, spring seats pivotally suspended from said frame to swing laterally of the truck, coiled springs carried by said seats, a tie member extending from the coiled spring at one side of the truck to the coiled spring at the opposite side of the truck, swing hangers carried by said coiled springs, leaf springs carried by said hangers, and a bolster extending beneath said coiled springs and resting on said leaf springs.

14. In a railroad truck, a truck frame, spring seats suspended from said frame and movable laterally thereof, springs on said seats, swing hangers carried by said latter-mentioned springs, bolster springs supported by said swing hangers, a bolster mounted on said bolster springs, said bolster and bolster springs being positioned directly beneath said springs carrying said swing hangers.

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